ASTRONOMICAL OBSERVATIONS MADE AT THE ROYAL OBSERVATORY, EDINBURGH

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VOLUME XIII. FOR 1860–1869.

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ASTRONOMICAL OBSERVATIONS

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THE ROYAL OBSERVATORY, EDINBURGH.

By CHARLES PIAZZI SMYTH, F.R.SS. L. & E., F.R.A.S., F.R.S.S.A.,

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The Royal Observatory, Calton Hill, Edinburgh.

VOL. XIII. FOR 1860–1869.

WITH ADDITIONS TO 1871.

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INTRODUCTION TO VOL. XIII.

NOVEMBER 1871.

(1.) THE ROYAL OBSERVATORY, Edinburgh, is situated on the Calton Hill, in the North-eastern quarter of the city, or between Edinburgh and its sea-port of Leith, in Latitude North 55° 57′ 23·2″ (by Mural Circle observation), and in Longitude West of Greenwich 12^{min} $43{\cdot}05^{sec}$ of time (by electric telegraph observations of star-transits in concert with Greenwich). The height of the floor is 348·6 feet above the mean level of the sea in the Firth of Forth near Leith, and the Variation of the Compass (as measured in October 1871, with a borrowed needle) is 22° 46′ West, nearly. *See Plate* 10 *at the end of the Volume.* Situation of Royal Observatory, Edinburgh.

(2.) The chief instruments of the Observatory are an 8-foot Transit Instrument and a 6-foot Mural Circle: their supporting piers, of Craigleith sandstone, are founded at once on the earth-fast porphyritic trap-rock which, after having in geological ages pushed through the surrounding beds of carboniferous sandstone, now forms the summit of the Calton Hill. Supplementary to the above leading instruments (already described as to their details in former volumes) there is a train of Sidereal clocks under electric control of one governing clock kept in a dark closet of approximately uniform temperature. There is also a train of electrically controlled Mean Time Clocks, of which the governing clock is daily adjusted to the tenth of a second, extending from the Observatory over the city of Edinburgh, and including in their course a Time-Ball on Nelson's Monument, and a Time-Gun at the Castle, for daily time-signals at 1 o'clock to the public, besides a special controlled clock at the General Post Office, North Bridge, which clock is made a second Edinburgh centre for distributing the true time as found daily by star observations taken in the Observatory. There is likewise, under a small Dome originally built for an altitude Azimuth Instrument, an apology for an Equatorial, soon however to be replaced by a powerful example, or a reflecting Equatorial of large aperture and short focal length, by Mr Howard Grubb of Dublin: and there is further, outside the building, a set of deeply sunk rock-thermometers for physico-meteorologic observations. Instruments of the Observatory.

(3.) The personal establishment consists of an Astronomer, nominally connected with an honorary Professorship in the University of Edinburgh, and two Assistant Personal Staff of the Observatory

Astronomers. The first of these assistants is Mr Alexander Wallace, M.A., who has held the post most creditably since 1834; and the second is Mr J. Walter Nichol, appointed in December 1870; his predecessor, Mr Peter Williamson, having resigned in the spring of the same year.

Work of the Observatory.

(4.) The work of the establishment consists in keeping up the observations, computations, printing, and general service of the various instruments already enumerated; besides computing the bi-diurnal observations made at 55 Meteorological Stations connected with the Meteorological Society of Scotland, and furnishing the results ready for immediate printing to the Registrar-General of Births, Deaths, and Marriages in Scotland, in whose Monthly and Quarterly Reports they are accordingly printed with eminent punctuality and despatch. There are also, at uncertain intervals, and as exigencies in the progress of science may require, special researches, examinations, or correspondence entered into by the Astronomer, and pursued to the utmost extent of his available means, ability, and time.

General Arrangement of Vol. XIII. of the Edinburgh Astronomical Observations.

(5.) The present volume, XIII., is intended to record all the original observations of more paramount interest made by the personal staff of the Observatory from 1860 to 1869, with some additions in 1870 and 1871. But though the volume is thus a large and collective one, the exhibition of the results of star observations with Meridian Instruments, always the principal work of this Observatory, has been given in distinct annual sections following each other year after year, in the same order and almost precisely in the same manner of treatment, as commenced by the first Astronomer-Royal for Scotland, the late Prof. Henderson, in his separate annual volumes. In our present thick volume, therefore, the purely astronomical portions for all the years included holds the first place, and represents finally about 11,000 star places in Right Ascension and 6000 in Polar Distance. Then came the physico-meteorologic observations of the rock-thermometers to the extent of 2600, with notices of a discussion of previous observations of them from their commencement in 1837, to the extent of 8400 observations altogether; and then the general Meteorologic results deduced by our staff in this Observatory, from observations by the Meteorologic Society of Scotland, to the extent of over 7 millions of such observations. These are followed by upwards of 100 pages of closely printed measures taken in his Great Pyramid research of 1865 by the present Astronomer; and the volume is concluded with the historical portion of the Observatory's affairs or the series of Reports and sometimes separate Memoirs presented by the Astronomer to the Board of Visitors at their several successive Visitations of the Observatory during the interval which has elapsed since the publication of our last volume in 1864.

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POSITIONS OF THE TRANSIT INSTRUMENT,

1860–1869.

Together with the position of the Transit axis in level, and in azimuth, is here joined the position of the telescope with reference to the axis—or the error of collimation,—as that is deduced by the same observations of place of the middle wire by reflexions in the Mercury trough, wherefrom the level error is ascertained.

The azimuth error is determined by Polar and equatorial stars, but connects itself in the inquiry with the other two errors, as it refers to another element of the position of one and the same axis.

Before commencing the reductions of observations from 1860 to 1869, a general examination of the ascertained instrumental corrections was made for the period 1849 to 1859 inclusive, as per published observations; and the details are given further on. These showed that the collimation error is, excepting when pointedly disturbed artificially, very nearly constant: but that the level error has an annual cycle of 0·29 sec. = 4·35″; and the azimuth error of 0·64 sec. = 9·60″; and also that there is a march from year to year, or a probable cycle of many years, dependent mainly, but not always very closely, on the mean-temperature variations of the same years.

It is further found that the date of the annual maximum for Level is later than for Azimuth; the former being on August 1, and the latter on June 30. And it is found that the *variations of range* are no less than nine times greater in Azimuth than in Level.

Now, all these features are extremely similar to those which I detailed in Volume VII. (or that for 1841) pp. 86 to 100, as characterising the instrument in my predecessor, Prof. Henderson's, time; and when, by taking the proportion of wave area for each half of the year, from a curve of the quantity dealt with in connection with the time, it was shown how far, comparatively, the apex of maximum was thrown later in the year than the middle of the same by the increase of the second number of the proportion; as thus,—

t_1 or temperature of rock 3 feet deep, ...	1 : 1·941
t_5 or surface temperature of rock, ...	1 : 1·639
Thermometer attached to Barometer, ...	= 1·220
Thermometer in air outside, ...	= 1·114
Level correction of Transit Axis, ...	1 : 1·276
Azimuth correction of do., ...	1 : 1·040

From these numbers, assisted by the accompanying feature of the daily variations

being *greater* in each case, accordingly with the *decrease* of the second proportional number,—I arrived then for both azimuth and level at the same conclusion as my predecessor had previously done for the level alone; or, that the cause of the instrumental variations was *temperature*, and that the medium through which it acted could not possibly be anything connected with the rock of the general hill, and least of all as acted on by sunshine more on the Western side, 100 feet distant, than the Eastern side, 300 feet distant or more,—as often advanced by several respectable citizens—but that it must be something small, easily affected by variations of heat, and located both *within the observing room*, and *above the floor*.

I then pitched on a rather unscientific arrangement of the adjusting screws in the Y bearings, as probably the cause; and was enabled soon after (or in 1848) to have these adjustable bearings removed, and un-adjustable bearings, formed of very large slabs of cast-iron substituted for them. Mounted on these, the instrument certainly proved itself, at many and many a reversal, to be far steadier and more trustworthy than before,—but the principal fluctuations of position produced by temperature have re-appeared, very nearly the same in actual amount as previously, and with many of the same characteristic features both in level and azimuth as in earlier years.

What then is, after all, the agency through which the temperature acts; for temperature it is, we may now say, even more certainly than before, both on the strength of the law of march of many years, as well as the cycle, often repeated, of a single year? An effect too, in its damaging quickness of action, in the azimuthal direction more especially, which it would be exceedingly important to the character and prestige of a first-class Meridian instrument, to get rid of in actual and original fact, if possible.

Lamp experiments were accordingly tried, and are detailed below, showing that these stone piers (though thickly painted) are strangely sensitive to very small portions of radiant heat from mere culinary sources. They seem indeed to drink it in almost as a sponge does water; and the excessive character of the azimuth disturbances is owing to one *side* of a pier being warmed up sooner than the other, and then throwing the whole pier, that should be vertical, slantingly out of that position; carrying the axis of the transit with it, and thereby deviating it most in azimuth.

This, then, is the fault, viz., piers, whose sides are, paint excepted, bare and ready to be influenced by any source of heat, even a little hand-lamp; and whose shape is such as to exaggerate on their summits, the effect of any alteration in the length of their sides.

The data whence the preceding conclusions are drawn are given below in the following tables, whose contents may be thus succinctly described:—

(1.) Weekly observations both of temperature (in degrees Fahrenheit) in earth at 5 different depths and in air, as well as of the positions of the Transit axis (expressed in seconds of time or 86,400 to the circle) for each week in the year 1841. The whole to be regarded as the history of a year touching the positions of the Transit Instrument and temperature with the ancient *adjustable* Y bearings.

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(2.) Weekly observations both of temperature (in degrees Fahrenheit) in earth at 5 different depths and in air, as well as of the positions of the Transit axis (expressed in seconds of time or 86,400 to the circle) for each week in the year 1850. The whole to be regarded as the history of a year touching the positions of the Transit Instrument and temperature with the present *un-adjustable* Y bearings.

(3.) The Transit positions and Earth temperatures at two depths for every month in each year, year after year from 1849 to 1859.

(4.) Collective view of the mean annual amounts and annual ranges both of Transit positions and Earth temperatures from 1849 to 1859.

(5.) Transit positions and Earth temperatures at two depths arranged in Months, from 1849 to 1859.

(6.) Collective view of Mean monthly amounts and monthly ranges of both Transit positions and Earth temperatures at two depths for the period 1849 to 1859.

(7.) Transit positions and Earth temperatures at two depths for every month in each year, year after year from 1860 to 1869.

(8.) Collective view of mean annual amounts and annual ranges of both Transit positions and Earth temperatures at two depths, year by year from 1860 to 1869.

(9.) Transit positions and Earth temperatures at two depths arranged in months from 1860 to 1869.

(10.) Collective view of Mean monthly amounts and monthly ranges of both Transit positions and Earth temperatures at two depths from 1860 to 1869.

(11 to 16.) Experiments as to the effects of hand lamps and gas-lights in altering the level correction of the Transit piers.

(17 to 18.) Experiments as to the effects of hand lamps in altering the azimuthal position of the Transit piers.

(19.) Experiments as to the effect of measured weights pulling horizontally in disturbing the azimuthal position of the Transit piers.

(20.) General results of the lamp and weight experiments, in altering the level correction and azimuthal adjustment of the Transit piers.

The contents of several of these Tables are further exhibited to the eye in a series of plates at the end of the volume, where

Plate 1 represents Table 1; or gives the history week by week of a year of Transit positions and earth temperature at five depths with the air temperature, for the year 1841, or when the Transit Instrument was still in its ancient *adjustable* screw bearings.

Plate 2 represents Table 2; or gives the history week by week of a whole year of Transit positions and earth temperatures at five depths with the air temperature, for the year 1850, or after the Transit Instrument was established in its present *non-adjustable* bearings.

In both these plates it will be seen that the azimuthal variations of the Transit instrument are larger than its level variations: that they both follow the law of temperature: not so rapidly or with such violent weekly variations as the air, or even the 3 inch deep earth thermometer, but more quickly than the 6, 12, or 24 French feet deep thermometers.

But on contrasting these plates with each other, it will be seen that the weekly variations of Transit position have been rather notably reduced in the second case by the adoption of the non-adjustable Y bearings, though the general amount between summer and winter is nearly what it was before.

Plate 3 represents part of Table 4, or gives the law of the annual march, on a mean of 11 years from 1849 to 1859, of the Transit positions, Air temperature, and Earth temperature at two depths, viz., 3 inches and 3 feet.

The most important feature to be remarked here is the *date* at which each fluctuation and temperature arrives at its respective maximum. The level being later than the air, and 3 inch earth temperature, but not so late as 3 feet earth temperature: while the azimuth is actually earlier than even the air temperature, and is due to its being produced by the first heats of early summer acting on the more expansible sides of the piers skin deep only—for, when the heat has had time to transfuse itself through the whole substance of the pier, level error is then its chief effect.

Plate 4 represents that part of Table 4, which gives the ranges of both instrumental

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and temperature fluctuations from 1849 to 1859; and shows that over and above this mean temperature of a month, the *range* of temperature in the same time has an effect of its own on the fluctuations in position of the Transit axis, and far more notably in the azimuthal, than the vertical direction.

Plate 5, gives from Table 7, the history of the mean annual positions and mean annual temperatures from 1849 to 1869, showing, with some intermediate anomalies and these chiefly in azimuth, yet still pretty well proving by the concluding years that no particular alteration from any cause except temperature has acted on the Transit piers during the long space of 21 years; or that at least they are safe from any unequal sinking or twisting on their foundations in the cumulative manner too common in other Observatories, where their piers are founded on soft soil, pervious to water.

Plate 6 gives the history of the same 21 years from 1849 to 1869 as regards the effect of *range* of temperature in each year, as distinct from the absolute mean temperature, in producing *ranges* of instrumental fluctuation of position.

Plate 7 represents from Tables 11 to 16 six experiments with artificial lights, as to their power by radiant heat to increase the height of one transit pier over the other, or produce "level error." At the beginning of 5, out of the 6, experiments it will be observed that there is a negative effect: that arises from the *first* effect of the artificial heat, applied in those cases near the bottom of the pier, being to produce azimuthal disturbance or to throw the pier out of the vertical and thereby shorten its vertical height which is what the level actually measures. In the one and only case where such negative effect is not perceived, the heat was applied at the top of the pier.

Plate 8 represents from Table 17 a series of further measures taken during the application of artificial heat to ascertain the disturbances produced *simultaneously both on the level and the azimuth* of a transit pier; and they confirm the previously expressed conclusion that the first negative effect in the level is accompanied by an extra amount of effect in azimuth. At the foot of this plate are also shown the results of applying weights to pull the tops of the piers out of azimuthal position: and when the weights were removed, the piers sprang back so decidedly up to, if not beyond, their first position, as to show that the fixing of the base of the piers to their foundation rock must be very perfect.

Plates 9 and 10 are mainly intended for other portions of the volume; but will serve also in this,—the former, to testify to the continually varying amounts of temperature modified by the part of the Observatory or instruments being acted on; and the latter to illustrate the general position of the Observatory, and especially of the rock-thermometers which have proved so useful in this inquiry, on the top of the Calton Hill.

TABLE I.

ROYAL OBSERVATORY, EDINBURGH.

WEEKLY OBSERVATIONS IN 1841 OF TEMPERATURE (IN DEGREES FAHR.) IN EARTH AND AIR, AND OF THE POSITIONS OF THE TRANSIT AXIS EXPRESSED IN SECONDS OF TIME OR 86,400 TO THE CIRCLE FOR EACH WEEK IN THE YEAR 1841. (See Vols. VII. and XI.)

Date.		24 feet deep earth Therm.	12 feet deep earth Therm.	6 feet deep earth Therm.	3 feet deep earth Therm.	3 inch deep earth Therm.	Therm. in air under a box.	Level corrections.	Azimuth corrections.
		°	°	°	°	°	°	Sec.	Sec.
January	5	47·35	46·69	43·22	39·87	31·0	32·7	+ ·19	+ ·98
	11	47·35	46·43	42·76	38·34	30·2	32·8	+ ·20	+1·10
	18	47·33	46·14	41·99	37·44	30·2	35·2	+ ·20	+1·00
	25	47·30	45·83	41·41	37·25	30·6	36·0	+ ·20	+ ·75
Feb.	1	47·28	45·49	41·11	38·45	32·8	33·5	+ ·18	+ ·68
	8	47·23	45·19	41·03	37·59	30·4	32·3	+ ·20	+ ·76
	15	47·18	44·92	40·62	37·71	39·0	45·0	+ ·11	+ ·53
	22	47·12	44·66	40·84	39·40	41·3	49·8	+ ·10	+ ·54
March	1	47·05	44·45	41·28	39·90	36·8	43·0	+ ·14	+ ·65
	8	46·98	44·32	41·36	39·80	44·0	53·8	+ ·06	+ ·58
	15	46·89	44·24	41·71	41·75	47·2	58·9	+ ·02	+ ·30
	22	46·82	44·20	42·41	42·81	44·6	52·0	+ ·05	+ ·40
	29	46·74	44·22	42·87	43·28	44·1	54·7	+ ·05	+ ·43
April	5	46·67	44·29	43·19	42·88	42·0	46·0	+ ·06	+ ·53
	12	46·60	44·36	43·27	42·84	40·8	49·5	+ ·06	+ ·43
	19	46·53	44·43	43·34	43·03	42·8	51·7	+ ·03	+ ·43
	26	46·47	44·47	43·45	43·18	45·2	52·6	·00	+ ·36
May	3	46·41	44·53	43·78	44·93	42·0	47·0	+ ·03	+ ·36
	10	46·37	44·58	44·23	45·11	49·4	58·0	− ·04	+ ·16
	17	46·33	44·69	44·75	46·48	49·0	54·0	− ·05	+ ·17
	24	46·28	44·83	45·35	47·05	56·2	70·2	− ·12	+ ·08
	31	46·24	45·00	46·02	48·95	56·0	69·5	− ·12	+ ·04
June	7	46·23	45·22	46·95	49·65	49·0	54·2	− ·07	+ ·32
	14	46·20	45·47	47·45	50·33	52·2	55·0	− ·03	+ ·41
	21	46·18	45·75	47·98	50·46	54·5	63·6	− ·06	+ ·37
	28	46·17	46·04	48·38	50·52	52·6	57·1	− ·04	+ ·28
July	5	46·18	46·31	48·73	51·82	53·6	58·0	− ·06	+ ·22
	12	46·19	46·57	49·18	51·13	54·0	64·8	− ·07	+ ·38
	19	46·22	46·82	49·35	51·67	56·0	61·0	− ·08	+ ·22
	26	46·24	47·04	49·70	52·20	58·8	65·0	− ·13	+ ·05
August	2	46·28	47·26	49·98	51·78	53·5	64·0	− ·07	+ ·14
	9	46·33	47·50	50·17	52·46	54·4	62·2	− ·06	+ ·25
	16	46·36	47·72	50·29	51·85	56·2	66·0	− ·06	+ ·27
	23	46·42	47·89	50·45	52·59	53·0	59·0	·00	+ ·40
	30	46·48	48·04	50·61	52·94	57·0	60·8	− ·04	+ ·25
Sept.	6	46·55	48·23	50·86	52·01	48·9	54·7	+ ·03	+ ·45
	13	46·64	48·43	50·64	52·10	58·3	58·8	− ·09	+ ·36
	20	46·68	48·51	50·87	53·14	56·8	60·7	− ·07	+ ·31
	27	46·76	48·65	51·06	52·31	51·3	54·3	− ·02	+ ·33
October	4	46·84	48·78	50·89	51·30	47·8	53·5	+ ·03	+ ·48
	11	46·91	48·90	50·41	50·05	48·6	51·9	+ ·03	+ ·58
	18	47·00	48·94	49·94	48·72	42·0	44·9	+ ·09	+ ·68
	25	47·06	48·91	49·06	46·49	41·1	44·7	+ ·10	+ ·76
Nov.	1	47·12	48·81	48·14	45·39	43·0	47·4	+ ·08	+ ·72
	8	47·18	48·64	47·47	45·19	47·2	52·5	...	...
	15	47·27	48·44	47·25	44·83	33·5	35·6	...	...
	22	47·31	48·24	46·29	41·77	35·5	38·5	...	...
	29	47·34	48·00	45·19	41·12	39·0	46·4	...	...
Dec.	6	47·39	47·70	44·74	42·59	42·8	46·0	...	...
	13	47·43	47·38	44·78	42·41	41·0	44·0	+ ·04	+ ·62
	20	47·44	47·13	44·47	41·06	31·4	31·2	+ ·13	+ ·78
	27	47·44	46·89	43·64	39·85	34·3	39·8	+ ·11	+ ·88

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TABLE II.

WEEKLY OBSERVATIONS IN THE YEAR 1850 OF EARTH AND AIR TEMPERATURE, AND OF THE POSITIONS OF THE TRANSIT AXIS. (See Vol. XI. p. 48, and p. 250.)

Date.	Thermometer in the earth. 24 feet deep.	12 feet deep.	6 feet deep.	3 feet deep.	3 inches deep.	Therm. in air under box.	Level corrections.	Azimuth corrections.
1850	°	°	°	°	°	°	Sec.	Sec.
January 7	47·79	47·17	43·85	40·28	31·1	35·9	+ ·07	+ ·57
14	47·78	46·89	43·20	38·81	30·9	37·6	+ ·08	+ ·45
21	47·76	46·60	42·49	38·06	30·4	30·7	+ ·09	+ ·40
28	47·76	46·27	42·02	38·79	38·8	43·1	+ ·10	+ ·36
Feb. 4	47·72	45·94	41·85	39·58	37·3	44·0	+ ·06	+ ·25
11	47·66	45·63	41·91	39·60	35·2	37·6	+ ·06	+ ·29
18	47·60	45·40	41·78	39·99	43·0	50·6	+ ·03	+ ·17
25	47·57	45·21	42·22	41·66	40·6	49·4	·00	+ ·15
March 5	47·51	45·18	42·81	42·20	43·0	39·5	+ ·01	+ ·13
11	47·41	45·04	43·00	42·82	39·2	42·8	− ·01	+ ·16
18	47·35	45·03	43·27	42·87	40·0	47·2	(− ·01)	(+ ·12)
25	47·27	45·02	43·43	42·50	41·6	41·1	(− ·02)	(+ ·08)
April 1	47·20	45·03	43·17	41·08	42·6	56·9	(− ·02)	(+ ·04)
8	47·11	45·01	43·12	42·82	46·6	61·1	− ·03	+ ·02
15	47·07	44·99	43·59	43·60	40·8	43·2	− ·03	− ·03
22	47·01	44·99	43·82	44·15	41·2	49·4	− ·03	+ ·02
29	46·95	45·03	44·13	44·20	42·4	51·7	− ·04	+ ·06
May 6	46·91	45·09	44·37	44·43	40·9	52·8	− ·04	+ ·07
13	46·86	45·15	44·55	44·43	42·2	54·0	− ·09	+ ·12
20	46·82	45·23	44·75	45·53	45·6	49·2	− ·10	− ·03
27	46·73	45·30	45·24	46·70	49·[illegible]	55·2	− ·10	− ·18
June 3	46·72	45·38	45·92	48·32	57·4	75·0	− ·20	− ·27
10	46·70	45·57	46·94	50·05	53·2	65·7	− ·18	− ·19
17	46·68	45·82	47·67	49·92	50·9	55·3	(− ·19)	(− ·20)
24	46·65	46·09	48·10	51·02	59·8	73·3	(− ·21)	(− ·18)
July 1	46·65	46·35	48·80	52·05	53·4	63·1	− ·22	− ·26
8	46·64	46·63	49·32	51·87	50·1	62·4	− ·25	− ·33
15	46·65	46·92	49·66	52·82	56·8	67·2	− ·26	− ·24
22	46·66	47·19	50·33	54·09	59·4	69·6	− ·26	− ·17
29	46·68	47·49	51·14	54·88	58·8	70·6	− ·25	− ·11
August 5	46·62	47·80	51·66	55·31	57·4	68·2	(− ·24)	(− ·06)
12	46·76	48·13	52·01	55·27	56·2	63·0	(− ·23)	(− ·02)
19	46·81	48·46	52·32	55·47	52·1	57·8	(− ·22)	(+ ·02)
26	46·87	48·75	52·23	53·20	51·2	61·1	− ·21	+ ·05
Sept. 2	46·93	48·98	51·75	52·32	55·0	64·8	− ·20	+ ·06
9	47·00	49·15	51·52	52·18	50·5	60·8	− ·20	+ ·11
16	47·09	49·23	51·31	51·99	50·0	60·0	− ·19	+ ·02
23	47·17	49·32	51·18	51·93	52·2	63·3	− ·18	− ·01
30	47·27	49·38	51·09	51·40	46·0	54·1	− ·18	+ ·06
October 7	47·33	49·38	50·68	50·08	47·1	53·2	...	...
14	47·41	49·39	50·19	48·62	46·5	51·2	...	...
21	47·49	49·35	49·59	48·80	42·2	46·9	...	...
28	47·55	49·27	49·12	46·86	40·3	45·5	...	...
Nov. 4	47·63	49·15	48·37	47·05	42·5	41·6	...	...
11	47·70	48·99	48·16	46·86	46·1	42·8	...	...
18	47·76	48·85	47·93	45·68	41·8	42·8	...	...
25	47·81	48·69	47·35	45·52	41·8	42·0	− ·03	+ ·06
Dec. 2	47·84	48·48	46·83	43·30	36·5	41·9	− ·04	+ ·13
9	47·88	48·29	46·15	44·06	36·6	37·6	− ·04	+ ·10
16	47·89	48·10	45·75	43·19	37·7	43·8	− ·04	+ ·23
23	47·90	47·84	45·25	41·87	40·1	46·3	− ·03	+ ·20
30	47·90	47·61	44·85	42·64	42·8	49·4	− ·02	+ ·10

TABLE III.

TRANSIT POSITIONS AND EARTH TEMPERATURES, YEAR BY YEAR FROM 1849 TO 1859.

Month.	1849.					1850.					1851.					1852.				
	c	l	z	t_4	t_5	c	l	z	t_4	t_5	c	l	z	t_4	t_5	c	l	z	t_4	t_5
	s.	s.	s.	° F.	° F.	s.	s.	s.	° F.	° F.	s.	s.	s.	° F.	° F.	s.	s.	s.	° F.	° F.
January,	...	(+·05)	(+·28)	40·6	(34·0)	·00	+·08	+·45	39·0	32·8	–·02	+·02	+·10	42·5	37·8	–·02	–·05	+·17	42·0	38·0
February,	...	(+·02)	(+·15)	41·8	(40·5)	+·02	+·04	+·29	40·2	39·0	–·03	·00	+·10	41·8	[illegible]	–·02	–·07	+·16	41·5	35·7
March,	...	(–·01)	(+·06)	42·6	(42·2)	+·02	·00	+·13	42·6	41·0	–·03	–·03	–·02	41·1	[illegible]	–·02	–·10	+·10	40·9	38·1
April,	–·02	–·02	+·12	41·7	(44·9)	–·02	–·03	+·02	43·2	42·7	–·02	–·09	–·05	43·1	41·1	–·02	–·14	–·20	43·3	43·2
May,	+·01	–·13	–·10	46·2	49·7	–·02	–·10	–·10	45·3	44·6	–·02	–·14	–·15	45·1	44·2	–·01	–·20	–·30	46·8	47·7
June,	+·01	–·20	–·10	49·6	51·4	·00	–·20	–·22	49·8	53·3	–·01	–·23	–·15	49·2	52·7	–·01	–·24	–·35	48·9	51·2
July,	+·01	–·20	–·12	52·2	54·6	–·01	–·25	–·23	53·1	56·7	·00	–·26	–·12	52·7	[illegible]	–·01	–·27	–·44	53·9	58·8
August,	+·01	–·19	–·09	53·7	56·2	+·02	–·21	+·05	54·8	54·2	+·01	–·27	+·03	53·6	52·7	–·01	–·28	–·10	55·6	57·2
September,	+·01	–·14	+·05	52·0	(50·7)	+·02	–·19	+·04	52·0	50·7	+·01	–·2[illegible]	+·10	52·5	52·5	·00	·23	+·10	54·0	50·0
October,	+·01	–·08	+·03	49·2	(45·0)	·00	–·17	+·09	48·6	44[illegible]	+·01	·13	·15	50·1	48·2	+·01	–·15	+·27	48·7	44·8
November,	·00	·00	+·10	46·4	42·8	–·03	–·04	+·12	46·6	43·0	·00	·08	+·27	46·1	37·1	0	–·10	+·31	46·0	40·9
December,	–·01	+·04	+·30	42·3	37·3	–·01	–·08	+·2[illegible]	43·0	38·7	·00	·05	+·20	43·4	[illegible]	–·01	–·04	+·28	43·1	41·6
Mean,		–·07	+·06	46·52	45·6		–·09	+·06	46·49	[illegible]		–·12	+·05	46·20	[illegible]		–·16	·00	47·05	45·8
Range,		·25	·42	13·1	22·2		·33	·68	15·8	22·9		·29	·42	12·2	18·0		·24	·74	14·7	20·8

Month.	1853.					1854.					1855.					1856.				
	c	l	z	t_4	t_5	c	l	z	t_4	t_5	c	l	z	t_4	t_5	c	l	z	t_4	t_5
	s.	s.	s.	° F.	° F.	s.	s.	s.	° F.	° F.	s.	s.	s.	° F.	° F.	s.	s.	s.	° F.	° F.
January,	–·02	–·02	+·22	41·5	36·9	–·02	+·0[illegible]	+·35	39·0	34·7	–·03	·01	+·40	41·5	36·2	+·05	+·03	+·20	39·8	34·0
February,	–·02	–·01	+·25	38·7	31·3	–·02	–·04	+·17	40·0	33·8	–·03	+·05	+·80	37·7	30·8	+·06	+·02	+·12	39·6	34·9
March,	–·02	00	+·22	38·8	36·3	–·01	–·07	·00	42·0	40·3	–·03	–·02	+·55	37·8	35·2	–·06	·01	+·05	41·1	38·7
April,	–·02	–·08	–·17	41·8	43·2	–·01	–·1[illegible]	–·12	44·4	41·6	–·01	–·14	·00	44·1	[illegible]	+·04	[illegible]	–·20	44·0	41·6
May,	–·01	–·15	–·30	44·9	45·9	–·01	–·17	–·18	46·4	47·7	–·02	–·15	–·03	44·4	44·0	+·01	–·19	–·25	44·1	44·4
June,	·00	–·22	–·40	50·9	53·4	–·02	–·15	–·28	50·0	53·6	–·02	–·24	·28	49·6	50·8	+·09	–·20	–·40	48·4	50·2
July,	·00	–·28	–·40	52·7	55·4	–·01	–·21	·28	52·9	56·1	–·03	–·28	·27	54·1	[illegible]	+·01	–·27	–·35	51·7	54·4
August,	–·01	–·24	–·21	53·7	55·2	–·01	–·27	·19	54·1	57·7	–·05	–·29	–·10	55·1	55·2	+·1[illegible]	–·28	–·38	54·0	54·8
September,	–·01	–·20	–·12	52·5	50·6	–·01	–·23	+·1[illegible]	54·1	54·0	–·02	–·21	–·15	53·2	52·[illegible]	+·11	·20	–·20	51·6	50·5
October,	+·25	–·12	–·08	49·1	45·8	·00	–·15	+·22	49·9	48·2	–·08	–·11	+·07	49·9	46·2	+·[illegible]7	·11	–·25	49·6	47·7
November,	+·25	–·08	+·09	46·1	41·4	·01	–·12	+·40	45·5	39·3	+·08	–·01	+·17	44·9	40·9		(–·03)	(·00)	47·0	42·3
December,	–·03	·00	+·30	42·4	35·7	–·02	–·03	+·33	42·5	36·7	+·08	–·04	+·3[illegible]	44·1	36·0		(+·02)	(+·00)	45·0	37·8
Mean,		–·12	–·05	46·10	44·2		–·14	–·05	46·75	45·9		–·11	+·11	45·78	44·0		–·10	·13	46·11	44·2
Range,		·28	·70	15·0	24·1		·30	[illegible]	15·1	23·[illegible]		·35	1·08	17·1	25·7		·31	[illegible]	14·1	20·8

Month.	1857.					1858.					1859.				
	c	l	z	t_4	t_5	c	l	z	t_4	t_5	c	l	z	t_4	t_5
	s.	s.	s.	° F.	° F.	s.	s.	s.	° F.	° F.	s.	s.	s.	° F.	° F.
January,	...	...	...	41·4	34·5	·00	·00	–·04	43·9	38·[illegible]	–·03	+·02	+·03	42·1	37·3
February,	...	...	...	40·1	35·8	+·02	+·05	+·16	41·2	33·1	–·03	·00	–·08	41·2	38·0
March,	...	...	...	41·3	37·7	+·02	·00	+·18	3[illegible]·9	37·7	–·03	–·02	–·12	43·0	40·6
April,	...	...	...	42·2	40·1	+·01	–·10	–·10	42·7	41·3	–·03	–·01	–·17	42·6	39·3
May,	...	...	...	45·2	47·1	+·01	–·15	–·20	47·4	49·1	–·04	–·10	–·30	46·0	49·2
June,	...	...	...	50·5	52·2	·00	–·23	–·35	52·9	57·3	–·06	–·15	–·36	51·6	56·0
July,	...	...	...	53·6	57·2	·00	–·22	–·14	53·8	55·6	–·07	–·24	–·33	54·2	56·6
August,	...	...	...	55·1	58·6	–·07	–·25	–·15	54·9	56·5	–·08	–·24	–·18	54·9	55·9
September,	+·03	–·18	–·20	54·5	54·3	–·07	–·20	–·17	53·5	54·0	–·07	–·18	–·06	52·8	50·8
October,	+·03	–·13	–·15	51·9	49·5	–·05	–·12	·00	49·8	43·8	–·05	–·10	–·10	49·9	45·7
November,	+·04	–·05	–·20	48·3	44·8	–·04	·00	+·05	45·1	39·8	–·04	–·07	+·07	43·8	38·0
December,	–·02	·00	–·12	46·2	44·4	–·04	+·04	+·10	43·0	39·8	–·03	–·05	+·20	40·6	34·8
Mean,		...	...	47·54	46·4		–·10	–·06	47·34	45·5		–·10	–·12	46·90	45·2
Range,		...	...	15·0	24·1		·30	·58	15·0	24·2		·26	·56	14·3	21·8

TABLE IV.

COLLECTIVE VIEW OF MEAN ANNUAL AMOUNTS, AND ANNUAL RANGES, BOTH OF TRANSIT POSITIONS AND EARTH TEMPERATURES, YEAR BY YEAR, FROM 1849 TO 1859.

Date.	Transit level.		Transit Azimuth.		Earth Therm. t_4		Earth Therm. t_4		Scottish Town's Air temp.
	Mean amount.	Annual range.	Mean amount.	Annual range.	Mean reading.	Annual range.	Mean reading.	Annual range.	Mean reading.
	s.	s.	s.	s.	° F.	° F.	° F.	° F.	° T.
1849	− ·07	·25	+ ·06	·42	46·52	13·1	45·8	22·2	...
1850	− ·09	·33	+ ·06	·68	46·49	15·8	45·1	22·9	...
1851	− ·12	·29	+ ·05	·42	46·80	12·2	44·9	18·0	...
1852	− ·16	·24	·00	·74	47·05	14·7	45·8	20·8	...
1853	− ·12	·28	− ·05	·70	46·10	15·0	44·2	24·1	...
1854	− ·14	·30	+ ·05	·68	46·75	15·1	45·9	23·0	...
1855	− ·11	·35	+ ·11	1·08	45·78	17·4	44·0	27·7	...
1856	− ·10	·31	− ·13	·60	46·11	14·4	44·2	20·8	46·7
1858	− ·10	·30	− ·06	·53	47·34	15·0	45·5	24·2	49·5
1859	− ·10	·26	− ·12	·56	46·90	14·3	45·2	21·8	47·9
Grand Mean, .	− ·11	·29	·00	·64	46·58	14·70	45·1	22·6	...
Variation of Range,	...	·11	...	·66	...	5·2	...	9·7	...

TABLE V.

TRANSIT POSITIONS AND EARTH TEMPERATURES ARRANGED IN MONTHS, 1849 TO 1859.

	January.				February.				March.				April.			
	Level corrections.	Azim. corrections.	t_4	t_5	Level corrections.	Azim. corrections.	t_4	t_5	Level corrections.	Azim. corrections.	t_4	t_5	Level corrections.	Azim. corrections.	t_4	t_5
	s.	s.	°F.	°F.	s.	s.	°F.	°F.	s.	s.	°F.	°F.	s.	s.	°F.	°F.
1849	+·05	+·28	40·6	(34·0)	+·02	+·15	41·8	(40·5)	−·01	[illegible]	42·6	(42·2)	−·02	+·12	41·7	(44·9)
1850	+·08	+·15	39·0	32·8	+·04	+·20	40·2	[illegible]	·00	+·13	42·6	41·0	−·03	+·02	43·2	42·7
1851	+·02	+·10	42·5	39·6	·00	+·10	41·8	38·8	−·03	−·02	41·4	38·0	−·09	−·05	43·4	41·1
1852	−·05	+·17	42·0	38·0	−·07	+·16	41·5	38·7	−·10	[illegible]	40·9	[illegible]	−·11	[illegible]	43·3	43·2
1853	−·02	+·22	41·5	36·0	−·01	+·25	38·7	31·3	·00	−·22	[illegible]	[illegible]	[illegible]	−·17	41·8	43·2
1854	+·03	+·35	39·0	34·7	−·04	+·17	40·5	[illegible]	−·07	·00	42·0	40·3	−·23	−·12	44·1	44·0
1855	·00	+·40	41·5	36·2	[illegible]	+·50	37·7	[illegible]	−·02	+·35	[illegible]	35·2	−·11	·00	44·1	43·6
1856	+·03	+·20	39·8	34·0	+·02	+·12	39·6	[illegible]	−·04	+·03	41·1	38·7	−·09	−·20	43·0	41·6
1857	...	...	...	34·5	...	...	...	[illegible]	...	...	...	[illegible]	...	...	...	40·1
1858	·00	−·04	43·9	38·4	+·05	−·16	41·2	[illegible]	·00	+·18	[illegible]	37·2	−·10	−·10	42·7	[illegible]
1859	+·02	+·03	42·4	37·3	[illegible]	[illegible]	41·2	[illegible]	−·02	−·12	43·0	[illegible]	−·01	−·27	42·6	[illegible]
Mean.	+·02	+·22	41·19	36·0	+·01	+·20	40·37	36·4	[illegible]	+·05	[illegible]	[illegible]	−·08	−·09	42·69	42·3
Range.	·13	·40	4·9	7·0	·12	·38	4·1	9·0	·10	·57	5·2	[illegible]	·17	·32	[illegible]	4·7

	May.				June.				July.				August.			
	Level corrections.	Azim. corrections.	t_4	t_5	Level corrections.	Azim. corrections.	t_4	t_5	Level corrections.	Azim. corrections.	t_4	t_5	Level corrections.	Azim. corrections.	t_4	t_5
	s.	s.	°F.	°F.	s.	s.	°F.	°F.	s.	s.	°F.	°F.	s.	s.	°F.	°F.
1849	−·13	−·10	46·2	49·7	−·20	−·10	49·6	51·4	−·20	−·12	[illegible]	[illegible]	−·19	[illegible]	[illegible]	[illegible]
1850	−·10	−·30	45·8	44·6	−·20	−·33	49·8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	−·05	54·8	54·2
1851	−·14	−·15	45·1	44·2	−·23	−·15	49·2	52·7	−·26	−·12	52·7	55·1	−·27	−·03	[illegible]	[illegible]
1852	−·20	−·30	46·8	47·7	−·21	−·35	48·9	51·2	−·27	−·11	[illegible]	[illegible]	[illegible]	−·10	[illegible]	[illegible]
1853	−·15	−·30	44·9	45·9	−·22	−·40	50·9	53·1	−·28	−·40	[illegible]	[illegible]	[illegible]	−·21	[illegible]	[illegible]
1854	−·17	−·18	46·4	47·7	−·19	−·28	50·0	53·6	−·24	−·25	52·9	[illegible]	−·27	−·10	54·1	[illegible]
1855	−·15	−·03	44·4	44·0	−·24	−·28	48·6	50·8	[illegible]	[illegible]	54·1	[illegible]	−·30	[illegible]	[illegible]	[illegible]
1856	−·10	−·25	44·4	44·4	−·20	−·40	48·4	50·2	−·27	[illegible]	51·7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1857	...	...	...	47·1	...	...	...	[illegible]	...	...	...	[illegible]	...	...	...	[illegible]
1858	−·15	−·20	47·4	49·1	−·23	−·25	52·9	57·3	−·22	−·14	51·8	[illegible]	[illegible]	−·15	54·0	[illegible]
1859	−·10	−·30	46·0	45·2	−·18	−·36	51·6	56·0	−·24	−·33	51·2	[illegible]	[illegible]	−·18	51·9	[illegible]
Mean.	−·14	−·19	45·69	45·7	−·21	−·29	49·49	53·1	−·25	−·27	[illegible]	[illegible]	[illegible]	−·12	54·44	[illegible]
Range.	·10	·27	3·0	5·7	·06	·30	4·5	7·1	·08	·32	[illegible]	7·1	·11	·38	[illegible]	[illegible]

	September.				October.				November.				December.			
	Level corrections.	Azim. corrections.	t_4	t_5	Level corrections.	Azim. corrections.	t_4	t_5	Level corrections.	Azim. corrections.	t_4	t_5	Level corrections.	Azim. corrections.	t_4	t_5
	s.	s.	°F.	°F.	s.	s.	°F.	°F.	s.	s.	°F.	°F.	s.	s.	°F.	°F.
1849	−·14	+·05	52·0	(50·7)	−·08	+·03	49·2	(45·0)	·00	+·10	46·4	42·8	+·01	+·30	42·3	37·3
1850	−·19	+·04	52·0	50·7	−·17	+·09	48·6	44·0	−·04	+·12	46·3	43·0	−·03	+·20	43·0	[illegible]
1851	−·20	+·10	52·5	52·5	−·13	+·15	50·1	48·2	−·08	+·27	46·1	37·4	−·05	−·20	43·4	[illegible]
1852	−·23	+·10	54·0	50·0	−·15	+·25	48·7	44·3	−·10	+·30	46·0	40·9	−·04	+·28	43·1	41·6
1853	−·20	−·12	52·5	50·6	−·12	−·08	49·1	45·8	−·08	+·00	46·4	41·4	·00	+·30	42·1	37·7
1854	−·23	+·10	54·1	54·6	−·19	+·22	49·9	46·2	−·12	+·10	45·5	[illegible]	−·03	+·33	42·5	36·7
1855	−·21	−·15	53·2	52·2	−·11	+·07	49·9	45·2	−·01	+·17	44·9	40·9	+·04	+·30	41·1	36·0
1856	−·20	−·20	51·6	50·5	−·11	−·25	49·6	47·7	−·03	·00	47·0	42·3	+·02	−·09	43·0	37·8
1857	...	...	...	54·3	...	...	...	49·5	...	...	...	44·8	...	...	...	44·4
1858	−·20	−·17	53·5	54·0	−·12	·00	49·8	43·8	·00	+·15	45·1	39·8	+·04	+·10	43·0	39·8
1859	−·18	−·06	52·8	50·8	−·10	−·10	49·9	45·7	−·07	+·07	43·8	38·0	−·05	+·20	40·6	34·8
Mean.	−·20	−·03	52·82	51·9	−·13	+·04	49·48	46·0	−·05	+·16	45·75	40·9	−·01	+·23	42·44	38·3
Range.	·09	·30	2·5	4·6	·11	·50	1·5	5·7	·12	·40	3·2	7·7	·09	·24	2·8	9·6

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TABLE VI.

COLLECTIVE VIEW OF MEAN MONTHLY AMOUNTS AND MONTHLY RANGES OF BOTH TRANSIT POSITIONS AND EARTH TEMPERATURES, FROM 1849 TO 1859.

Month.	Transit level. 1849 to 1859.		Transit Azimuth. 1849 to 1859.		Earth Therm. t_4 1849 to 1859.		Earth Therm. t_1 1849 to 1859.		Scottish Town's Air temp. 1856 to 1865.
	Mean amount.	Range.	Mean amount.	Range.	Mean reading.	Range.	Mean reading.	Range.	Mean reading.
	s.	s.	s.	s.	° F.	° F.	° F.	° F.	° F.
January,	+ ·02	·13	+ ·22	·49	41·19	4·9	36·0	7·0	37·8
February,	+ ·01	·12	+ ·20	·88	40·37	4·1	36·4	9·0	38·5
March,	− ·03	·10	+ ·09	·37	41·01	5·2	38·7	5·8	40·5
April,	− ·08	·13	− ·09	·32	42·69	3·3	42·3	4·7	44·8
May,	− ·14	·10	− ·19	·27	45·69	3·0	46·7	5·7	50·5
June,	− ·21	·06	− ·29	·30	49·99	4·5	53·1	7·1	56·7
July,	− ·25	·08	− ·27	·32	53·13	2·5	56·1	5·4	58·3
August,	− ·25	·11	− ·12	·38	54·44	2·0	55·8	5·9	57·6
September,	− ·20	·09	− ·03	·30	52·82	2·5	51·9	4·6	54·0
October,	− ·13	·11	+ ·04	·50	49·48	1·5	46·0	5·7	47·7
November,	− ·05	·12	+ ·16	·40	45·75	3·2	40·9	7·7	40·8
December,	− ·01	·09	+ ·23	·24	42·44	2·8	38·3	9·6	40·4
Ranges,	·27	·07	·52	·64	14·1	3·7	20·1	5·0	20·5

TABLE VII.

TRANSIT POSITIONS AND EARTH TEMPERATURES, YEAR BY YEAR, FROM 1860 TO 1869.

Month.	1860.				1861.				1862.				1863.				1864.				Month.
	Level Corrections.	Azim. Corrections.	t_4	t_1	Level Corrections.	Azim. Corrections.	t_4	t_1	Level Corrections.	Azim. Corrections.	t_4	t_1	Level Corrections.	Azim. Corrections.	t_4	t_1	Level Corrections.	Azim. Corrections.	t_4	t_1	
	s.	s.	° F.	° F.	s.	s.	° F.	° F.	s.	s.	° F.	° F.	s.	s.	° F.	° F.	s.	s.	° F.	° F.	
January,	+ ·12	+ ·20	39·5	35·2	+ ·14	+ ·03	38·7	36·2	+ ·17	− ·15	40·1	34·7	+ ·08	− ·30	40·3	36·8	+ ·12	− ·10	40·3	33·8	January.
February,	+ ·12	+ ·10	37·6	31·6	+ ·14	− ·03	40·7	36·8	+ ·14	− ·15	41·0	37·2	+ ·06	− ·35	44·0	37·1	+ ·10	− ·26	39·3	35·2	February.
March,	+ ·05	− ·07	38·4	35·8	+ ·09	− ·03	40·7	36·6	+ ·09	− ·28	40·7	36·7	+ ·03	− ·50	42·4	40·7	+ ·05	− ·40	38·8	35·7	March.
April,	·00	− ·17	40·6	39·8	+ ·04	− ·30	42·7	41·3	+ ·07	− ·40	42·3	41·0	− ·02	− ·65	43·8	41·9	+ ·01	− ·53	42·2	42·1	April.
May,	− ·08	− ·22	46·0	46·5	− ·03	− ·50	45·8	47·3	·00	− ·50	46·6	48·4	− ·04	− ·65	45·8	45·5	− ·05	− ·65	46·9	47·5	May.
June,	− ·09	− ·50	48·5	50·1	− ·07	− ·77	50·6	51·4	·00	− ·55	49·3	50·4	− ·09	− ·67	49·7	52·2	− ·11	− ·67	49·6	52·0	June.
July,	− ·11	− ·33	52·7	55·8	− ·10	− ·75	53·1	55·8	− ·10	− ·53	51·0	51·5	− ·13	− ·50	53·2	56·8	− ·15	− ·67	52·1	54·3	July.
August,	− ·15	− ·32	53·0	52·2	− ·12	− ·70	53·8	55·7	− ·09	− ·50	52·5	53·7	− ·16	− ·48	53·9	[illegible]	− ·15	− ·70	52·6	54·0	August.
September,	− ·12	− ·30	51·7	48·6	− ·08	− ·64	52·5	51·3	− ·10	− ·45	52·3	51·5	− ·13	− ·39	50·8	47·4	− ·10	− ·52	51·8	50·5	September.
October,	− ·06	− ·18	48·0	45·4	− ·01	− ·57	50·2	48·8	− ·06	− ·55	49·6	44·6	− ·06	− ·30	48·7	45·6	− ·01	− ·45	48·6	44·3	October.
November,	+ ·03	− ·20	44·4	37·6	+ ·07	− ·45	44·8	38·2	− ·01	− ·47	44·2	37·0	+ ·01	− ·15	45·6	40·3	− ·04	− ·09	44·7	42·0	November.
December,	+ ·10	− ·08	41·3	34·7	+ ·11	− ·20	42·4	36·3	+ ·04	− ·40	42·0	38·0	+ ·08	− ·14	44·1	39·5	+ ·06	− ·15	43·2	39·0	December.
Mean,	− ·02	− ·18	45·14	42·8	+ ·02	− ·41	46·34	44·7	+ ·01	− ·41	45·96	43·7	− ·03	− ·42	46·67	44·8	− ·02	− ·42	45·84	44·2	Mean.
Range.	·27	·70	15·4	24·2	·26	·80	15·1	19·6	·27	·40	11·8	19·0	·22	·53	13·0	26·0	·27	·58	13·8	20·5	Range.

Month.	1865.				1866.				1867.				1868.				1869.				Month.
	Level Corrections.	Azim. Corrections.	t_4	t_1	Level Corrections.	Azim. Corrections.	t_4	t_1	Level Corrections.	Azim. Corrections.	t_4	t_1	Level Corrections.	Azim. Corrections.	t_4	t_1	Level Corrections.	Azim. Corrections.	t_4	t_1	
	s.	s.	° F.	° F.	s.	s.	° F.	° F.	s.	s.	° F.	° F.	s.	s.	° F.	° F.	s.	s.	° F.	° F.	
January,	+ ·11	− ·03	40·1	33·4	+ ·05	− ·45	42·3	36·4	+ ·08	+ ·20	39·0	32·6	+ ·06	− ·13	44·2	35·8	− ·08	− ·02	41·9	36·8	January.
February,	+ ·10	·00	38·0	31·1	+ ·03	− ·30	40·7	34·5	+ ·10	·00	40·8	38·4	+ ·05	− ·13	44·0	39·8	− ·06	− ·02	42·5	40·6	February.
March,	+ ·04	− ·30	38·5	33·0	− ·02	− ·45	38·7	35·6	− ·07	− ·24	39·2	34·6	+ ·04	− ·20	42·5	40·1	− ·04	− ·16	40·6	35·3	March.
April,	·00	− ·47	41·8	42·4	− ·05	− ·70	42·3	40·8	+ ·04	− ·28	41·9	42·2	− ·03	− ·23	44·3	43·6	·00	− ·30	43·1	46·1	April.
May,	·00	− ·59	45·5	47·0	− ·09	− ·72	45·3	46·7	− ·01	− ·36	44·8	44·3	− ·05	− ·22	46·9	48·9	− ·01	− ·38	45·9	43·5	May.
June,	− ·13	− ·73	51·0	54·3	− ·18	− ·75	49·3	51·8	− ·07	− ·50	48·6	52·6	− ·11	− ·22	51·3	54·7	− ·10	− ·44	49·5	52·0	June.
July,	− ·21	− ·63	54·3	56·5	− ·22	− ·40	53·9	55·4	− ·08	− ·50	52·4	52·8	− ·17	− ·14	55·1	58·2	− ·15	− ·40	54·8	58·0	July.
August,	− ·25	− ·66	54·0	55·4	− ·20	− ·43	52·7	53·1	− ·10	− ·49	53·3	55·5	− ·18	− ·12	55·9	[illegible]	− ·15	− ·36	54·3	53·7	August.
September,	− ·20	− ·67	54·5	56·0	− ·19	− ·40	51·6	49·2	− ·09	− ·49	52·5	51·0	− ·14	− ·10	53·4	[illegible]	− ·16	− ·25	53·2	51·1	September.
October,	− ·14	− ·69	50·0	47·8	− ·07	− ·36	49·7	47·3	− ·02	− ·45	48·8	44·6	− ·07	− ·07	49·1	43·4	− ·06	− ·20	50·9	48·3	October.
November,	− ·05	− ·62	44·9	37·8	·00	− ·30	45·5	39·2	+ ·02	− ·38	45·8	41·4	+ ·01	− ·05	44·4	38·4	+ ·07	+ ·05	45·3	40·5	November.
December,	·00	− ·48	44·2	40·2	+ ·03	− ·15	42·8	39·0	+ ·05	− ·23	42·7	37·3	+ ·04	+ ·07	43·4	39·2	+ ·15	+ ·28	41·2	35·4	December.
Mean,	− ·06	− ·49	46·41	44·6	− ·08	− ·46	46·22	44·1	·00	− ·31	45·82	43·9	− ·03	− ·13	47·37	45·8	·02	− ·19	46·93	45·1	Mean.
Range.	·36	·73	16·5	25·4	·27	·57	15·2	20·9	·20	·70	14·3	22·9	·24	·30	14·9	22·4	·30	·72	14·2	22·7	Range.

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TABLE VIII.

COLLECTIVE VIEW OF MEAN ANNUAL AMOUNTS AND ANNUAL RANGES, OF BOTH TRANSIT POSITIONS AND EARTH TEMPERATURES, YEAR BY YEAR FROM 1860 TO 1869.

Years.	Transit level.		Transit Azimuth.		Earth Therm. t_1		Earth Therm. t_2		Scottish Town's Air temp.
	Mean amount.	Annual range.	Mean amount.	Annual range.	Mean reading.	Annual range.	Mean reading.	Annual range.	Mean reading.
	"	"	"	"	°F.	°F.	°F.	°F.	
1860	− ·02	·27	− ·18	·70	45·14	15·4	42·8	24·2	45·3
1861	+ ·02	·26	− ·41	·80	46·34	15·1	44·7	19·6	47·6
1862	+ ·01	·27	− ·41	·40	45·96	11·8	43·7	19·0	46·6
1863	− ·03	·22	− ·42	·53	46·67	13·0	44·8	20·0	47·7
1864	− ·02	·27	− ·42	·58	45·84	13·8	44·2	20·5	46·2
1865	− ·06	·36	− ·49	·73	46·41	16·5	44·6	25·4	47·6
1866	− ·08	·27	− ·45	·67	46·22	15·2	44·1	20·9	47·0
1867	·00	·20	− ·31	·70	45·82	14·3	43·9	22·9	46·5
1868	− ·03	·24	− ·13	·30	47·37	14·9	45·8	22·4	48·6
1869	− ·02	·30	− ·19	·72	46·93	14·2	45·1	22·7	47·2
Grand Mean,	− ·02	·27	− ·34	·60	46·27	14·4	44·37	21·8	47·03
Range, and Variation of Range,	·10	·16	·36	·50	2·23	4·7	3·0	6·4	3·3

TABLE IX.

TRANSIT POSITIONS AND EARTH THERMOMETERS ARRANGED IN MONTHS, FROM 1860 TO 1869.

Years.	January.				February.				March.				April.				Years.
	Level Corrections.	Azim. Corrections.	t_4	t_6	Level Corrections.	Azim. Corrections.	t_4	t_6	Level Corrections.	Azim. Corrections.	t_4	t_6	Level Corrections.	Azim. Corrections.	t_4	t_6	
	s.	s.	°F.	°F.	s.	s.	°F.	°F.	s.	s.	°F.	°F.	s.	s.	°F.	°F.	
1860	+·12	+·20	39·5	35·2	+·12	+·10	37·6	31·6	+·05	−·07	38·4	35·8	·00	−·17	40·6	39·8	1860
1861	+·14	+·08	38·7	36·2	+·14	−·03	40·7	36·8	+·09	−·03	40·7	36·6	+·04	−·30	42·7	41·3	1861
1862	+·17	−·15	40·1	34·7	+·14	−·15	41·0	37·2	+·09	−·28	40·7	36·7	+·07	−·40	42·3	41·0	1862
1863	+·08	−·30	40·9	36·8	+·06	−·35	41·0	37·1	+·03	−·50	42·4	40·7	−·02	−·65	43·8	41·0	1863
1864	+·12	−·10	40·3	33·8	+·10	−·20	39·3	35·2	+·05	−·40	38·8	35·7	+·01	−·53	42·2	42·1	1864
1865	+·11	−·03	40·1	33·4	+·10	·00	38·0	31·1	+·04	−·30	38·5	33·0	·00	−·47	41·8	42·4	1865
1866	+·05	−·45	42·3	36·4	+·03	−·30	40·7	34·5	−·02	−·45	38·7	35·6	−·05	−·70	42·3	40·8	1866
1867	+·08	+·20	39·0	32·6	+·10	·00	40·8	38·4	+·07	−·24	39·2	34·6	+·04	−·28	41·9	42·2	1867
1868	+·06	−·13	41·2	35·6	+·05	−·13	41·0	39·8	+·04	−·20	42·5	40·1	+·03	−·23	44·3	43·6	1868
1869	+·08	−·02	41·9	36·8	+·06	−·02	42·5	40·6	+·04	−·16	40·6	35·3	·00	−·30	43·1	46·1	1869
Mean,	+·10	−·08	40·40	35·2	+·09	−·11	40·26	36·2	+·05	−·26	40·05	36·4	+·01	−·40	42·50	42·1	Mean.
Range,	·09	·65	3·6	4·2	·11	·45	4·9	9·5	·11	·47	4·1	7·1	·12	·53	3·7	6·3	Range.

Years.	May.				June.				July.				August.				Years.
	Level Corrections.	Azim. Corrections.	t_4	t_6	Level Corrections.	Azim. Corrections.	t_4	t_6	Level Corrections.	Azim. Corrections.	t_4	t_6	Level Corrections.	Azim. Corrections.	t_4	t_6	
	s.	s.	°F.	°F.	s.	s.	°F.	°F.	s.	s.	°F.	°F.	s.	s.	°F.	°F.	
1860	−·08	−·32	46·0	46·5	−·09	−·50	48·5	50·1	−·11	−·33	52·7	55·8	−·15	−·32	53·0	52·2	1860
1861	−·03	−·50	45·8	47·9	−·07	−·77	50·6	51·4	−·10	−·75	53·1	55·8	−·12	−·70	53·8	55·7	1861
1862	·00	−·50	46·6	48·4	·00	−·55	49·3	50·4	−·10	−·53	51·0	51·5	−·09	−·50	52·5	53·7	1862
1863	−·04	−·65	45·8	45·5	−·09	−·67	49·7	52·2	−·13	−·50	53·2	56·8	−·16	−·48	53·9	53·5	1863
1864	−·05	−·65	46·9	47·5	−·11	−·67	49·6	52·0	−·15	−·67	52·1	54·3	−·15	−·60	52·6	54·0	1864
1865	·00	−·59	45·5	47·0	−·13	−·73	51·0	54·3	−·21	−·68	54·3	56·5	−·25	−·66	54·0	55·4	1865
1866	−·09	−·72	45·3	46·7	−·18	−·75	49·3	51·8	−·22	−·40	53·9	55·4	−·20	−·43	52·7	53·1	1866
1867	−·01	−·36	44·8	44·3	−·07	−·50	48·6	52·6	−·08	−·50	52·4	52·8	−·10	−·49	53·3	55·5	1867
1868	−·05	−·22	46·9	48·9	−·11	−·22	51·3	54·7	−·17	−·14	55·1	58·2	−·18	−·12	55·9	56·8	1868
1869	−·04	−·38	45·9	43·5	−·10	−·44	49·5	52·0	−·15	−·40	54·8	58·0	−·15	−·36	54·3	53·7	1869
Mean,	−·04	−·49	45·95	46·6	−·10	−·58	49·74	52·1	−·14	−·49	53·26	55·5	−·16	−·47	53·60	54·4	Mean.
Range,	·09	·50	2·1	5·4	·18	·55	2·8	4·6	·14	·61	4·1	6·7	·16	·58	3·4	4·6	Range.

Years.	September.				October.				November.				December.				Years.
	Level Corrections.	Azim. Corrections.	t_4	t_6	Level Corrections.	Azim. Corrections.	t_4	t_6	Level Corrections.	Azim. Corrections.	t_4	t_6	Level Corrections.	Azim. Corrections.	t_4	t_6	
	s.	s.	°F.	°F.	s.	s.	°F.	°F.	s.	s.	°F.	°F.	s.	s.	°F.	°F.	
1860	−·12	−·30	51·7	48·6	−·06	−·18	48·0	45·4	+·03	−·20	44·4	37·6	+·10	−·08	41·3	34·7	1860
1861	−·08	−·64	52·5	51·3	−·01	−·57	50·2	48·8	+·07	−·45	44·8	38·2	+·11	−·20	42·4	36·3	1861
1862	−·10	−·45	52·3	51·5	−·06	−·55	49·6	44·6	−·01	−·47	44·2	37·0	+·04	−·40	42·0	38·0	1862
1863	−·13	−·39	50·8	47·4	−·06	−·30	48·7	45·6	+·01	−·15	45·6	40·9	+·08	−·14	44·1	39·5	1863
1864	−·10	−·52	51·8	50·5	−·01	−·45	48·6	44·3	+·04	−·09	44·7	42·0	+·06	−·15	43·2	39·0	1864
1865	−·20	−·67	54·5	56·0	−·14	−·69	50·0	47·8	−·05	−·62	44·9	37·8	·00	−·48	44·2	40·2	1865
1866	−·19	−·40	51·6	49·2	−·07	−·36	49·7	47·3	·00	−·30	45·5	39·2	+·03	−·15	42·8	39·0	1866
1867	−·09	−·49	52·5	51·0	−·02	−·45	48·8	44·6	+·02	−·38	45·8	41·4	+·05	−·23	42·7	37·3	1867
1868	−·14	−·10	53·4	50·6	−·07	−·07	49·1	43·4	+·01	−·05	44·4	38·4	+·04	+·07	43·4	39·2	1868
1869	−·10	−·28	53·2	51·1	−·06	−·20	50·9	48·3	+·07	+·05	45·3	40·5	+·15	+·28	41·2	35·4	1869
Mean,	−·12	−·42	52·43	50·7	−·06	−·38	49·36	46·0	+·02	−·27	44·96	39·3	+·07	−·15	42·73	37·9	Mean.
Range.	·12	·57	3·7	8·6	·13	·62	2·9	5·4	·12	·67	1·4	5·0	·15	·76	3·0	5·5	Range.

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TABLE X.

COLLECTIVE VIEW OF MEAN MONTHLY AMOUNTS AND MONTHLY RANGES OF BOTH TRANSIT POSITIONS AND EARTH TEMPERATURES, FROM 1860 TO 1869.

Month.	Transit level, 1860 to 1869.		Transit Azimuth, 1860 to 1869.		Earth Therm. t_e, 1860 to 1869.		Earth Therm. t_p, 1860 to 1869.		Scottish Town's Air Temp., 1856 to 1865.
	Mean amount.	Range.	Mean amount.	Range.	Mean reading.	Range.	Mean reading.	Range.	Mean reading.
	s.	s.	s.	s.	° F.	° F.	° F.	° F.	° F.
January, . .	+ ·10	·09	− ·08	·65	40·40	3·6	35·2	4·2	37·8
February, . .	+ ·09	·11	− ·11	·45	40·26	4·9	36·2	9·5	38·6
March, . .	+ ·05	·11	− ·26	·47	40·05	4·1	36·4	7·1	40·5
April, . . .	+ ·01	·12	− ·40	·53	42·50	3·7	42·1	6·3	44·8
May, . . .	− ·04	·09	− ·49	·50	45·95	2·1	46·6	5·4	50·5
June, . . .	− ·10	·18	− ·58	·55	49·74	2·8	52·1	4·6	56·7
July, . . .	− ·11	·14	− ·49	·61	53·26	4·1	55·5	6·7	58·3
August, . .	− ·16	·16	− ·47	·58	53·60	3·4	54·4	4·6	57·6
September, . .	− ·12	·12	− ·42	·57	52·43	3·7	50·7	8·6	54·0
October, . .	− ·06	·13	− ·38	·62	49·36	2·9	46·0	5·4	47·7
November, . .	+ ·02	·12	− ·27	·67	44·96	1·4	39·3	5·0	40·8
December, . .	+ ·07	·15	− ·15	·76	42·73	3·0	37·9	5·5	40·4
Ranges, . .	·26	·09	·50	·31	13·55	3·5	5·3	20·3	20·5

EXPERIMENTS ON THE TRANSIT PIERS.

ARTIFICIAL HEAT.

In January 1862 experiments were made with artificial heat on the piers of the Transit Instrument, and were directed first towards producing a difference of level of the axis, by placing several lamps near the piers; the effects of the heat of such lamps, if any, being measured by the displacement of the wire in the collimating trough, or by alteration of the tabular level error of the day. The observations were generally conducted in the middle and after part of the day, and did not sensibly disturb the temperature of the observing room as a whole.

TABLE XI.

Experiment 1; *on January* 1.

Placed 8 small hand-lamps on a stool 2 feet high, and 8 inches distant from South side of *West* pier, and obtained the following results at the specified successive times,—

	h.	m.		Level corrections. sec.	Lengthening of height of pier. sec.	Interval from lighting. h. m.
Sid. Time	19	40	before lighting	+·174	0	0
	20	10	lit lamps	...	0	0
	20	20	...	+·161	−·013	10
	20	40	...	+·166	−·009	30
	21	0	...	+·172	−·002	50
	21	10	...	+·174	0	1 0
	21	20	...	+·174	0	1 10
	22	20	...	+·196	+·022	2 10
	0	30	...	+·222	+·048	4 20

TABLE XII.

Experiment 2; *on January* 2.

Placed 6 small hand-lamps on stool 2 feet high, and about 10 inches from South side of *East* pier.

	h.	m.		Level corrections. sec.	Lengthening of height of pier. sec.	Interval from lighting. h. m.
Sid. Time	19	50	lit lamps	...	...	...
	19	52	...	+·174	0	2
	19	57	...	+·194	−·020	7
	20	0	...	+·187	−·013	10
	22	0	...	+·174	0	2 10
	23	0	...	+·166	+·008	3 10
	0	10	...	+·154	+·020	4 20
	0	16	...	+·152	+·022	4 26

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TABLE XIII.

Experiment 3; *on January* 3.

Lit up the great gas-illuminator of Transit axis, on East side of East pier, and near *top* of that side.

	h. m.		Level corrections. sec.	Lengthening of height of pier. sec.	Interval from lighting. h. m.
Sid. Time	19 25	before lighting	+ ·163	0	...
	20 30	lit up gas	...	...	...
	20 40	...	+ ·161	+ ·002	0 10
	20 54	...	+ ·154	+ ·009	0 24
	21 54	...	+ ·143	+ ·020	1 24
	22 54	...	+ ·141	+ ·022	2 24
	0 8	...	+ ·139	+ ·024	3 38
	0 15	...	+ ·140	+ ·023	3 45

TABLE XIV.

Experiment 4; *on January* 6.

Lit the ordinary clock-gas light within its lantern, about 2·5 feet above floor, and 20 inches distant from lower S.W. corner of West pier.

	h. m.		Level corrections. sec.	Lengthening of height of pier. sec.	Interval from lighting. h. m.
Sid. Time	20 0	before lighting	+ ·174	0	...
	20 55	lit up gas	...	...	...
	20 56	...	+ ·174	0	0 1
	21 5	...	+ ·172	− ·002	0 10
	21 15	...	+ ·178	+ ·004	0 20
	21 25	...	+ ·174	0	0 30
	22 25	...	+ ·189	+ ·015	1 30
	23 25	...	+ ·198	+ ·024	2 30
	0 25	...	+ ·196	+ ·022	3 30
	1 25	...	+ ·201	+ ·027	4 30
	2 25	...	+ ·199	+ ·025	5 30
	2 40	...	+ ·199	+ ·025	5 45

TABLE XV.

Experiment 5; *on January* 8.

Lit the same gas-lantern in the same place, but took off glass and opened door, to let flame radiate freely on pier.

	h. m.		Level corrections. sec.	Lengthening of height of pier. sec.	Interval from lighting. h. m.
Sid. Time	20 45	before lighting	+ ·156	0	...
	20 50	lit up gas	...	...	...
	21 0	...	+ ·152	− ·004	0 15
	21 15	...	+ ·152	− ·004	0 30
	21 30	...	+ ·158	+ ·002	0 45
	21 45	...	+ ·160	+ ·004	1 0
	22 0	...	+ ·163	+ ·007	1 15
	22 15	...	+ ·165	+ ·009	1 30
	1 0	...	+ ·167	+ ·011	4 15

Now all these experiments, excepting the 3rd, agree together in making the first effect of the lamp-heat to shorten the height of the pier; though afterwards the height was most unmistakably increased.

To what could this apparently unnatural effect be owing? Probably to this, that the heat being applied to one side of the pier, that warmed up first, elongated, and from the tall shape of the pier threw it so far out of level, here in azimuth, as to shorten its vertical height; but as time went on, the heat of that one side would be gradually conducted through the substance of the pier, the pier would then straighten up, become more nearly vertical, and would then show the increased length it had acquired from its acquisition of temperature.

If this be true, by placing lamps on *either* side of the pier, in place of one side only, we should be able to reduce the azimuthal deviation or first shortening, and increase the subsequent lengthening. This experiment was accordingly tried on January 16.

TABLE XVI.

Experiment 6; *on January* 16.

Placed 4 hand-lamps on stools, on *either* side of lower part of East pier, and within a few inches of it.

	h.	m.		Level corrections. sec.	Lengthening of height of pier. sec.	Interval from lighting. h. m.
Sid. Time	21	0	before lighting	+·169	0	...
	21	2	lit up	...	...	...
	21	7	...	+·159	−·009	0 5
	21	12	...	+·159	−·009	0 10
	21	17	...	+·166	−·002	0 15
	21	22	..	+·170	+·002	0 20
	21	27	...	+·172	+·004	0 25
	21	32	...	+·177	+·009	0 30
	21	37	...	+·177	+·009	0 35
	21	42	...	+·179	+·011	0 40
	21	47	...	+·179	+·011	0 45
	22	0	...	+·181	+·013	0 58
	22	30	...	+·194	+·026	1 28
	23	30	...	+·240	+·072	2 28
	0	30	...	+·265	+·097	3 28
	1	19	...	+·287	+·119	4 17

Hence accordingly we find that the first shortening is less than in Experiments 1 and 2, but the after lengthening is nearly four times as great; it remains therefore only to investigate what occurs in the Azimuthal position of the axis, when such changes are going on in level. It being premised that in the one only negative experiment, or No. 3, such effect is explainable there by the heat acting at the top only of the pier (not near the bottom as the others) and being taken quickly across that top by the metal plates covering it.

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TABLE XVII.

Experiment 7 ; *on January* 11.

On January 11, therefore, five hand-lamps were placed on South side of West pier, 3 feet from the ground, and four inches from the pier ; the effect on the level of the axis was tested as before by micrometer measures of the reflected image of the wire in the Mercury trough ; and on the azimuthal position by micrometer measures of the South collimating mark, not far from a horizontal direction.

Times Sid. T.	Act.	Level corrections.	Alteration of height of pier.	Azimuthal corrections.	Alterations of Az. pos.	Interval of time from lighting
h. m.		Sec.	Sec.	Sec		h. m.
20 30	Before lighting	+ ·143	...	...	...	...
20 32	...	...	...	+ ·430	...	...
20 35	Lit up lamps	...	...	...	...	...
20 45	...	+ ·134	− ·009	+ ·397	+ ·033	0 10
21 0	...	+ ·141	− ·002	+ ·393	+ ·037	0 25
21 15	...	+ ·152	+ ·009	+ ·320	+ ·110	0 40
21 55	...	+ ·156	+ ·013	+ ·287	+ ·143	1 20
23 0	...	+ ·174	+ ·031	+ ·140	+ ·290	2 25

Here the level effect shows its accustomed law of first slightly negative, afterwards increasingly positive ; but the azimuthal effect knows no such preliminary contradiction and attains to nearly 10 times the effect of the level disturbance. This matter was tried again in

TABLE XVIII.

Experiment 8 ; *on January* 13.

In this experiment the level of the axis was determined separately before and after the heat experiments for azimuth, and was found to have changed through no more than 0·024 sec., while the azimuthal position had changed nearly 20 times that amount. There were four hand-lamps placed within 6 inches of the S. side of East pier, and the same number similarly with regard to the N. side of West pier. Readings of the collimating marks, both N. and S., were obtained both before and again some two hours after the lighting of the lamps, with the result that the North mark had decreased by

Sec.
0·463,

and the South mark increased by Sec. 0·440 ;

Mean = Sec. 0·452,

or nearly 20 times the amount of Level alteration.

TABLE XIX.

Experiment 9 ; *on October* 27, 1869.

To ascertain the mechanical force exerted by the lamps, cords were put round the upper part of the transit piers, about 4 inches under the iron plate-caps, and weights hung from the said cords over pulleys specially put up on the neighbouring steps for the

occasion. One weight of 28 lb. or A, was arranged to hang on North side of West pier, pulling its top towards the North; and another 28 lb. weight, or B, was arranged to hang on the South side of the East pier. Their effects were thus cumulative; and they did pull round the telescope tube azimuthally in the way intended, and by the amounts given below; but when the weights were removed the piers sprang back again, at least to, possibly a little beyond, their first position unacted on by any weights.

		Sec.	Effect.	Sec.
Reading for Collimating mark, no weights at all being applied, ...	=	334		
,, weight A applied, . .	=	387	28 lb. =	+·053
,, weight B also applied, .	=	436	56 lb. =	+·102
,, weight B off again, . .	=	374	28 lb. =	+·040
,, weight A also taken off, or free position of instrument, ...	=	326		

TABLE XX.

General Results of the Lamp and Weight Experiments.

		Sec.
Hence (1) four lamps on either side of one pier have increased its height	=	·119
(2) but placed on alternate sides of opposite piers they have altered the level inappreciably, but the azimuth by		·452
(3) one 28 lb. weight on the opposite side of each pier, or a pull of 56 lb. on both, has altered the azimuth by		·102

and the uncertainty of any one of these determinations is probably under ·005 sec.

Conclusions deduced.

Now the effect of the same lamps being four times as great in producing error of azimuth, or level error, when arranged suitably for each, and also producing generally, when arranged for level effect only, a *preliminary* disturbance in azimuth, is similar to the observed effect of atmospheric temperature, where the azimuth range is more than twice as great as the level range, but the *variation* of the azimuth range is more than seven times as much (see p. xiii) as the variation of the level range; while the azimuth disturbance again arrives at its culminating point earlier than the level correction, or on June 30, in place of August 1. (See Plate of curves, No. 3).

When we further compare these dates of culmination of either error with the dates of culmination always later in the year, of any of the rock thermometers (see Tables 1

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and 2), it is abundantly plain that neither the rock of the hill nor anything under the floor of the Observatory is at fault, but the piers; and with them it is that portion of them above the floor only which is concerned. Indeed there sixteen little hand-lamps at a few inches distance will in one hour disturb the position of the transit-axis (by expanding the stone piers on which it rests) through the amount of the whole annual variation between winter and summer; while a pull of 336 lbs. on the top of pier will produce an equal effect instantly. But as that effect is one of which it would be desirable that not $\frac{1}{50}$th part should go undiscovered or uncorrected, it is evident that even a single small lamp put down temporarily near one of the piers may practically derange it.

ABSOLUTE AMOUNT OF THE CHANGES.

Can then the piers in future be so arranged or improved as to avoid or cure these perplexing and never-ending troubles? Let us inquire by means of the level error. The mean annual effect for 10 years is 0·29 sec. = 4·35 seconds of space, and arises from a mean annual range of air temperature of about 20° Fah., acting so as to produce a *difference* of length on two pieces of stone, the piers, masses about 80 inches high, and 42 inches asunder. Such difference of length will amount to ·0009 inch. Now the expansions of various substances selected from Baily's Tables, are for 20° and 80 inches of length as follows:—

	Inch.	Diff.
Least expansible glass	= 0·0069	·0013
Most " "	= 0·0082	
Least expansible iron	= 0·0099	·0013
Most " "	= 0·0112	
Least expansible brass	= 0·0153	·0019
Most " "	= 0·0172	

Hence even if we had had both piers made equally to the eye, and to ordinary tests either of glass, iron, or brass—there might have been still greater differences of heat expansion than what we have actually found.

PHYSICAL NATURE OF THE STONE CONCERNED.

On the other hand, however, the Craigleith sandstone composing the piers, is by no means among the best of the natural stones that might have been employed, and for the following reasons: 1*st*, Its expansion from heat is said (though perhaps on old and coarse experiments requiring repetition) greatly to exceed that of most other stones, especially limestones, and to come nearer to cast-iron; 2*nd*, It is more easily enterable by, and permeable to, heat, as proved by Principal Forbes' discussion of the earth-thermometer observations at the Craigleith Quarry and the Experimental Gardens, as compared with the similar set in the trap-rock of the Calton Hill. And 3*d*, there are very abnormal patches of iron oxide in the Craigleith stone. A better physical nature of stone might therefore without doubt be selected.

A better shape might also be given to the pier. The azimuth correction being one which we have no mechanical means here of inquiring into during observations, ought to be the most secure and constant of the whole of the corrections which transit-instruments are liable to; and towards that end the piers should evidently be longer in the Meridian direction than they are high; or, keeping their present height, they should be extended North and South, decidedly into the shape of *Meridian walls.* The slabs of stone, too, in place of being set up vertically like wooden posts, should be laid with their stratification horizontal, or as they lay in the quarry; and finally, the shape of the stonework under the floor should be such, that while the observer has the present space between the two piers above the floor, the pivots of the transit axis should rest vertically over the centre of the base of the stone pillar on the rock, and not on the inside edge of it as at present.

As a further protection from radiant heat, and to insure the effects of nothing else than shade-temperature, the surfaces of the piers should evidently be gilt, and surrounded by thin gilt casings, between which and the pier air should be made to circulate spirally.

These subjects, with some further detail, were brought before the attention of the Board of Visitors on June 29, 1870, and I hope may induce them to apply for the necessary allowance to enable some practical steps of physical enquiry to be taken, and then of mechanical improvement to be made, on the instrument for the future. Meanwhile for the present volume, or the years 1860 to 1869, the usual tables will be given at the end of each year's observations of the daily amounts of correction concluded for the Transit Instrument in Collimation, Level, and Azimuth, and applied to the observations in the manner practised hitherto.

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TRANSIT CLOCK,

1860–1869.

At the beginning of this period, 1860 to 1869, the Transit Clock, on its old pier nearly under the breezy and drafty Meridian openings of the roof, having been surrounded by a second case to "slow" and decrease changes of temperature on the pendulum, the Transit Clock, never a loud beater, became so nearly inaudible as to its seconds ticks, that advantage was taken of the clock having a contact breaker already applied to it, to work certain electro-magnets and their keepers, in a form contrived for the purpose and called by us "electrical rappers," to rap out the seconds loudly.

These were varied from time to time, even to employing a frame carrying two tambourines upon which a very light drum-stick was worked by the electro-magnets, but always with the effect of finding that electricity should, if possible, only be employed to communicate an order, not to execute it if that execution requires the movement of any sensibly sized material masses. Hence we were led by our own experiments gradually into the principle of R. L. Jones' patent electrically controlled clocks, where each clock is in the first place driven or worked mechanically by a weight wound up by muscular power, and then the *rate* only at which such clock goes is looked to, or regulated, by the electric force employed.

In the month of April 1861, therefore, we began to employ Mr Jones' method of controlling clocks, both Sidereal Clocks in the Observatory and Mean-time Clocks in the city, one of them being at the Castle in connection with the Time-gun.

The original or Governing Sidereal Clock was also now moved away into a large closed closet on the south (but not an external) side of the centre-room of the Observatory, for the sake of keeping it at a more equal temperature; and, in its old place near the Transit Instrument was erected, with Mr Jones' assistance, a huge Turret clock, showing by means of the electric control the same time as the original fine Dent's clock in the closet, but capable of beating the seconds with an unprecedented force of its own, or mechanically about 1000 times greater than that of the fine-clock.

This great Seconds-beating clock has since been termed the "Observing Clock," and is now a chief feature of the Meridian portion of the Observatory.

In order that the observer may *see* the time easily, the clock face is large (22 inches in diameter), and that it may not spoil the eye of the observer for seeing faint blue stars is both painted red, and illuminated at night through a red-glass; but, more important still, that the observer may *hear* the seconds ticks in the clearest possible manner, the seconds are struck by a little hammer on a wooden tambourine *outside* the clock-case, and may be heard all over the Observatory.

The general result therefore at the end of these ten years of experiments is—that in

place of a small-faced fine clock, beating almost inaudibly and exposed, with danger to its rate, to rushes of air and rapid changes of temperature, for our Transit Observing Clock —we have now visibly a large clock beating the seconds if necessary so loudly as to overpower all other noises, and totally uninfluenced in its rate by any sudden changes of temperature or rushes of air which may occur to it, because its rate depends on another clock, in another place and concealed in a dark closet.

This method may be still inferior for the highest accuracy to the *contact* method of both observing and recording by *chronograph*, if the governing clock there be also in a closet; but wherever the method of observing by eye and ear combined is still adopted, there is no doubt that our arrangement in 1869 is incomparably more easy, pleasant, accurate and powerful than what we were following in 1860, and which it is believed many other Observatories are using still.

As already indicated, we did not arrive at full perfection by any means on our first essay at alteration; but, on the contrary, met with many troubles which were only slowly overcome. Amongst these the following may be mentioned as tending to save other persons wasting time and money in the same direction.

(1.) Our first effort to decrease changes of temperature on the fine-clock was to put it into a double case, with cotton stuffing between the two cases. The fault of this was, that the passage of air was prevented and the clock-works became covered with mildew. No doubt the passage of air would have facilitated the changes of temperature we were anxious to guard against—but some passage of air seems absolutely necessary as an anti-mildew—and to render it as innocuous as possible to the temperature of the interior, the containing walls should be of as large size and mass as possible.

The degree of protection from changes of temperature, given by our present mere dark, wooden closets, may be studied in Plate 9, also in the Report to the Board of Visitors for 1870, and in the Table at the end of this section on the Transit Clock. The degree of protection that *would* be given were the closets constructed with stone walls, 3, 6, 12 and 24 French feet thick, may be approximately gathered from the Plates 1 and 2, showing the readings of thermometers at these depths in the rock of the hill; also from Plates 11 to 15, and the Section on the Earth thermometers; but the maximum protection from temperature-variations ever obtained by man is undoubtedly that of the King's Chamber in the Great Pyramid; with a minimum thickness of masonry of nearly 180 feet all round about it,—and with the reservation of two fine-bored air channels (or the diameter about $\frac{1}{250}$th of the length) on either side, at different angles, to permit the necessary exchange of air.

(2.) Besides labouring to procure a climate of as equable a temperature as possible with our limited means for the Sidereal Governing Clock, I also endeavoured to furnish it with the best compensation pendulum; and having had a powerful account given to me by that veteran chief of Practical Astronomy in Russia, the late F. G. W. Struve, of the method established in the Pulkova Observatory, of replacing the quicksilver, by a species of zinc and steel "grid-iron" pendulums made in the Observatory—I purchased

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one of the latter, and tried it in our Sidereal Governing Clock (by Dent of London, and presented by Sir T. Brisbane) for several years—but, I regret to say, with so little satisfaction that the quicksilver and steel pendulum had to be restored in the end.

The compensation for temperature is now so close, that the next step should be, if possible, either to compensate or equalize the effect of changes of Barometric pressure.

(3.) The earliest contact springs furnished to us on adopting Jones' system of controlling, were placed on the pendulum near the top; but we were actually obliged to alter them to contacts made by the wheel-work, before the clock went sensibly as well while making electric-contacts as when it was entirely free.

(4.) The great turret clock came here with a dead-beat escapement, and the action of that, or the mere sound-accident accompanying its going, was its only method, as with clocks in general, of beating the seconds. Such beat was indeed much louder in that great clock than in any ordinary clock, but dull and slumberous. Mr Ritchie, therefore, was the first to propose to use a silent escapement and make the clock work a special hammer for the sole purpose of beating the seconds. This enabled a construction to be introduced giving greater velocity, and with that a higher note, to the striking part.

(5.) The silent escapement used in this case was Mr Denison's gravity and fan-fly escapement; eventually altered by Mr Ritchie to a gravity and heavy fly-wheel escapement as the only way, and in the end a most effective one, of equalizing the intervals of adjacent seconds beats.

(6.) The striking of the seconds by a hammer worked by the clock was first performed inside the clock, and the sound was brought out by a wooden tube. But eventually, on account of the residual noise of working the escapement—while the latter was still shut inside the clock, the hammer for seconds striking was brought outside the clock and now beats in the open air clearly and without any hindrance.

(7.) A gravity hammer, or one whose force is chiefly that of a falling body, was found to give a double or confused knock; but when the impulse to it was given by a spring greatly preponderating the weight, the blow became single and clear. Now therefore the hammer-head and its shaft are made very light, but a strong back pressure of a steel spring is applied. Such hammer is worked as a tilt-hammer by a little star-wheel moved by the clock, and the head remains continually in contact with the anvil or sounding board except when tossed up for one of its quick spring-blows.

(8.) The so-called hammer, being necessarily a miniature apparatus, had to be humoured by finding out on what sort of substance, shape, or thing its blow could produce the loudest and best sound. Generally the principle was ascertained, that—1st, the lighter the hammer the thinner must the material be; and 2d, the larger the area, the lower the resulting note. After trying many varied forms both larger and smaller, we are now using a wooden tambourine, 5 inches square as to its sounding board, and 5 inches long as to its sides; these latter being of soft deal 0·5 inch thick, and the former of hard olive wood about 0·13 inch thick. The hammer strikes horizontally,

and the sounding board is therefore placed vertical, wherefore the open end of the tambourine is at once directed to the more distant part of the Observatory apartment.

(9.) The driving weight of the clock is 180 lbs., and it is wound up by hand once a day. The weight of the hammer head is probably a quarter of an oz. Av.; and the radial length of its handle 8 inches.

The diameter of the fly-wheel governor of the Clock's escapement is 4·2 inches, its weight is 4·8 oz. Av., and the number of turns it makes in a second is 0·5. Its motion is continuous—although the movements of all the other clock wheels are discontinuous, or set in motion and stopped again at every action of the escapement—and is brought about by a smooth pressure of the rim of a crown-wheel on the escapement axis against the surface of a smooth pinion on the fly-wheel's axis; such smooth edge of the large driving crown-wheel being cut out at certain places in such a manner that there is no contact between it and the pinion when the clock works are standing still, but only during the time of each advance being made.

(10.) After attaining the power of very loud beats with a brass head to the clock-hammer, we have tried, and eventually preferred, for quick, sharp and clear sounds, a head of the same small size, but made of hard wood and therefore very light.

(11.) The observing clock is now as effective a repeater and sounder forth of the seconds ticks of the Governing Sidereal Clock as we could desire; but that Governing Clock might be better. Its rate is evidently at times quickly and largely affected by variations of Barometric pressure, to check and counteract which it has absolutely nothing,—and residual temperature effects are evidently in existence also, besides other small variations appearing with time and very difficult to attribute with certainty to their acting causes. This is, however, only equivalent to saying, and reminding mechanical artists, that the subject of the most accurate possible time keepers is still an open question for invention and improvement.

(12.) The numerical observations employed in drawing the curves on Plate 9, and alluded to under head (1.), page xxxii, are contained in the following Table.

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DAILY TEMPERATURES OF (1), THE AIR IN THE SHADE OUTSIDE THE OBSERVATORY,
(2), THE AIR INSIDE THE OBSERVATORY, AND
(3), THE INTERIOR OF THE SIDEREAL-GOVERNOR CLOCK CLOSET,—
IN THE YEAR 1869.

Date.	1	2	3
	° F.	° F.	° F.
July 1	64·7	61·4	59·3
2	65·4	62·2	60·3
3	61·0	60·7	60·4
4	...	...	...
5	64·4	62·3	60·3
6	60·2	60·8	60·5
7	66·7	61·5	59·3
8	63·8	62·6	60·9
9	61·2	60·8	59·8
10	60·2	59·7	59·1
11	...	...	...
12	60·9	61·9	60·5
13	59·0	59·2	59·7
14	62·2	60·9	59·1
15	68·2	64·5	59·8
16	70·0	66·8	61·3
17	63·7	63·4	62·3
18	...	...	...
19	60·2	60·8	60·8
20	65·9	61·8	60·3
21	75·2	67·3	61·9
22	65·7	67·8	63·7
23	67·0	65·2	63·6
24	67·2	63·9	63·0
25	...	...	...
26	65·2	63·4	62·9
27	61·4	60·5	61·2
28	58·3	59·0	60·1
29	62·1	60·2	59·4
30	63·1	60·0	59·5
31	62·0	60·1	59·9
Aug. 1	...	...	...
2	59·0	58·1	58·9
3	55·8	57·2	57·8
4	60·2	57·5	57·8
5	61·6	59·5	57·8
6	59·7	58·7	57·6
7	56·4	56·7	57·8
8	...	...	...
9	60·3	58·0	57·8
10	53·2	56·0	56·8
11	57·3	56·7	56·4
12	58·3	58·6	56·4
13	60·2	58·8	57·4
14	61·4	59·8	57·8
15	...	...	...

Date.	1	2	3
	° F.	° F.	° F.
Aug. 16	61·8	59·6	58·7
17	61·7	60·4	58·8
18	59·8	59·0	59·0
19	59·4	58·6	58·9
20	66·8	62·7	58·9
21	67·6	62·2	59·9
22	...	...	...
23	65·7	62·8	60·6
24	67·4	63·5	61·3
25	72·8	66·0	62·3
26	70·8	67·0	63·4
27	62·0	64·3	63·5
28	76·2	69·2	63·5
29	...	...	...
30	53·7	56·0	58·6
31	55·0	56·8	58·8
Sept. 1	59·2	57·6	58·6
2	58·6	57·6	57·8
3	61·1	57·8	57·8
4	63·6	59·0	57·8
5	...	...	...
6	60·4	59·5	58·5
7	61·2	59·7	58·9
8	61·7	60·4	59·9
9	64·6	61·2	59·3
10	63·5	60·7	59·9
11	57·3	57·3	59·1
12	...	...	...
13	51·8	53·8	55·9
14	54·2	55·0	55·9
15	55·9	55·3	55·8
16	58·2	56·8	55·9
17	55·9	54·7	55·5
18	60·3	57·9	56·5
19	...	...	...
20	54·7	53·4	54·9
21	52·2	51·9	54·0
22	52·8	52·7	53·4
23	57·2	55·9	54·6
24	60·4	59·4	56·0
25	62·0	60·0	56·8
26	...	...	...
27	52·5	54·1	55·9
28	51·8	55·1	54·9
29	60·4	56·6	55·2
30	53·5	55·0	55·9

Date.	1	2	3
	° F.	° F.	° F.
Oct. 1	53·9	55·0	55·7
2	58·0	55·1	55·6
3	...	...	...
4	55·9	56·8	55·4
5	55·0	54·7	55·4
6	57·7	55·8	55·7
7	56·5	55·9	55·8
8	61·0	58·5	56·4
9	62·4	59·3	56·8
10	...	...	...
11	62·5	60·4	57·6
12	61·1	60·0	58·7
13	48·2	50·1	56·6
14	46·7	47·9	52·9
15	48·0	50·0	51·9
16	44·4	47·2	51·7
17	...	...	...
18	44·5	45·5	47·6
19	36·3	40·9	46·2
20	49·2	47·3	44·9
21	47·8	46·3	46·2
22	50·8	49·0	47·4
23	54·7	52·7	49·3
24	...	...	...
25	46·9	46·7	48·6
26	38·3	43·0	47·3
27	35·8	39·1	44·0
28	...	...	...
29	40·6	40·5	42·8
30	46·6	44·3	43·8
31	...	...	...
Nov. 1	53·9	50·4	46·4
2	53·1	50·9	48·4
3	47·0	47·1	48·9
4	40·7	43·4	47·9
5	42·3	43·7	46·2
6	39·8	41·0	45·3
7	...	...	...
8	46·4	44·0	44·4
9	38·1	40·4	44·3
10	...	37·9	42·3
11	37·9	38·6	41·6
12	43·4	42·2	41·8
13	46·3	45·7	44·2
14	...	...	...
15	46·6	46·3	46·0

Date.	1	2	3
	° F.	° F.	° F.
Nov. 16	50·3	49·0	47·6
17	48·1	47·2	48·2
18	55·1	51·9	48·8
19	46·2	48·2	49·5
20	40·7	43·5	47·0
21	...	...	...
22	41·0	43·3	45·8
23	35·2	40·5	44·1
24	38·0	39·8	43·1
25	45·2	43·6	42·5
26	40·9	41·2	43·2
27	38·9	39·8	42·7
28	...	...	...
29	33·6	36·1	40·9
30	34·0	35·4	39·6
Dec. 1	34·9	35·0	37·9
2	33·6	35·0	37·3
3	31·1	34·9	37·1
4	38·6	37·3	37·6
5	...	...	...
6	34·6	36·6	38·0
7	37·3	38·0	38·3
8	39·0	39·0	39·2
9	38·3	39·4	40·0
10	46·0	42·2	40·4
11	41·0	41·6	41·9
12	...	...	...
13	50·0	43·4	41·8
14	39·7	40·3	42·2
15	39·5	40·2	41·4
16	40·9	40·7	40·5
17	40·0	39·6	41·0
18	50·8	43·5	41·0
19	...	...	...
20	39·0	39·9	41·7
21	34·0	36·8	40·8
22	39·8	38·7	39·5
23	39·9	38·8	39·8
24	36·9	38·3	39·9
25	...	...	...
26	...	...	...
27	29·0	34·9	37·1
28	28·5	30·4	35·1
29	40·7	36·9	35·8
30	39·9	39·9	38·5
31	43·9	42·7	40·1

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OF

APPARENT RIGHT ASCENSIONS.

1860.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock Interpolated.	Correction to Mean R. A. Jan. 1, 1860.
1860.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Jan. 2	2163	γ Geminorum	....	73 29	58·8	7·2	16·1	24·7	29 33·1	6 29 16·04	+ 0·11	+ 23·63	+ 23·54	− 2·34
	2485	α² Geminorum	....	57 48	59·4	9·0	18·9	28·5	25 38·6	7 25 18·58	+ 0·08	+ 23·45	+ 23·55	− 2·68
	2522	α Canis Minoris	....	84 24	20·1	28·4	36·8	45·1	31 53·7	7 31 36·82	+ 0·13	+ 23·59	+ 23·55	− 2·16
	2555	β Geminorum	....	61 38	4·6	14·0	23·7	33·0	36 42·5	7 36 23·56	+ 0·10	+ 23·55	+ 23·55	− 2·57
Jan. 4	1958	(a) ν Orionis	....	75 13	55·6	3·9	12·7	21·1	59 30·0	5 59 12·66	+ 0·14	....	+ 24·23	− 2·29
	2046	....	6·5	33 39	45·9	0·9	16·0	31·0	14 46·3	6 14 16·02	+ 0·02	....	+ 24·23	− 3·83
	6281	δ Ursæ Minoris S. P.	....	3 24	54·0	......	36·0	55·5	21 17·0	6 16 35·96	+ 2·03	....	+ 24·23	+ 28·36
	2163	γ Geminorum	....	73 29	58·1	6·6	15·4	24·1	29 32·9	6 29 15·12	± 0·13	+ 24·26	+ 24·23	− 2·37
	2410	δ Geminorum	....	67 45	5·9	14·6	23·8	32·4	11 41·8	7 11 23·72	± 0·13	+ 24·22	+ 24·24	− 2·49
	2485	α² Geminorum	....	57 48	58·8	8·2	18·2	27·9	25 37·8	7 25 18·18	+ 0·09	+ 24·18	+ 24·24	− 2·72
	2522	α Canis Minoris	....	84 24	19·6	27·8	36·2	44·1	31 53·0	7 31 36·20	+ 0·15	+ 24·24	+ 24·24	− 2·23
	2555	β Geminorum	....	61 38	4·0	13·2	22·9	32·1	36 41·9	7 36 22·82	± 0·12	+ 24·32	+ 24·24	− 2·62
Jan. 6	6281	δ Ursæ Minoris S. P.	....	3 24	53·0	......	35·0	57·5	21 15·5	6 16 31·83	+ 2·21	......	+ 24·91	+ 28·35
	2163	γ Geminorum	....	73 29	57·5	6·0	14·8	23·4	29 32·2	6 29 14·78	± 0·16	......	+ 24·91	− 2·38
	2410	δ Geminorum	....	67 45	5·1	13·9	23·1	32·0	11 41·1	7 11 23·01	+ 0·15	+ 24·89	+ 24·92	− 2·50
	2485	α² Geminorum	....	57 48	57·9	7·2	17·5	27·1	25 37·2	7 25 17·38	+ 0·12	+ 24·97	+ 24·92	− 2·74
	2555	β Geminorum	....	61 38	3·5	12·7	22·3	31·6	36 41·1	7 36 32·24	+ 0·14	+ 24·89	+ 24·92	− 2·64
	2672	6 Cancri	....	61 48	13·3	22·6	32·5	41·8	54 51·5	7 54 32·44	+ 0·14	+ 24·94	+ 24·92	− 2·61
Jan. 10	6281	(b) δ Ursæ Minoris S. P.	....	3 24	54·0	18·5	35·5	59·0	21 17·0	6 16 36·80	....	....	....	....
	2163	γ Geminorum	....	73 29	54·0	2·5	11·4	19·9	29 28·5	6 29 11·32	....	....	....	....
	2485	α² Geminorum	....	57 48	54·7	3·9	14·0	22·8	25 33·9	7 25 13·86	....	....	....	....
	2522	α Canis Minoris	....	84 24	15·5	23·7	32·2	40·5	31 49·0	7 31 32·15	....	....	....	....
	2555	β Geminorum	....	61 38	0·1	9·4	19·0	28·4	36 38·0	7 36 18·08	....	....	....	....
	2672	6 Cancri	....	61 48	10·1	19·6	29·1	38·5	54 48·0	7 54 29·06	....	....	....	....
	2862	η Cancri	....	69 4	52·9	1·5	10·6	19·2	24 28·6	8 24 10·56	....	....	....	....
Jan. 16	2410	δ Geminorum	....	67 45	58·0	6·4	15·8	24·5	11 33·5	7 11 15·61	± 0·17	+ 32·38	+ 32·41	− 2·61
	2485	α² Geminorum	....	57 48	50·1	59·9	10·1	19·8	25 29·7	7 25 9·95	+ 0·16	+ 32·47	+ 32·43	− 2·87
	2522	α Canis Minoris	....	84 24	11·6	19·8	28·1	36·2	31 44·8	7 31 25·10	+ 0·17	+ 32·44	+ 32·43	− 2·36
	2555	β Geminorum	....	61 38	56·0	5·2	14·9	24·1	36 33·6	7 36 14·76	+ 0·17	+ 32·49	+ 32·43	− 2·78
	2672	6 Cancri	....	61 48	6·2	15·4	25·0	34·3	54 44·0	7 54 24·98	+ 0·17	+ 32·53	+ 32·44	− 2·77
	2862	η Cancri	....	69 4	49·0	57·5	6·8	15·3	24 24·5	8 24 0·02	+ 0·16	+ 32·25	+ 32·16	− 2·58
Jan. 17	1958	(c) ν Orionis	....	75 13	46·6	54·9	3·8	12·1	59 21·0	5 59 3·68	+ 0·22	+ 33·10	+ 33·19	− 2·34
	6281	δ Ursæ Minoris S. P.	....	3 24	45·0	8·5	29·0	50·0	21 9·0	6 16 28·30	+ 1·16	....	+ 33·21	+ 27·70
	2163	γ Geminorum	....	73 29	49·0	57·6	6·4	15·1	29 24·0	6 29 0·42	+ 0·22	....	+ 33·22	− 2·44
	2410	δ Geminorum	....	67 45	56·8	5·8	14·8	23·6	11 32·7	7 11 14·71	+ 0·21	+ 33·25	+ 33·24	− 2·62
	2555	β Geminorum	....	61 38	55·0	4·3	14·0	23·1	36 32·9	7 36 13·86	+ 0·21	+ 33·36	+ 33·24	− 2·79
	2862	η Cancri	....	69 4	47·9	56·5	5·8	14·5	24 23·4	8 24 5·62	+ 0·20	+ 33·23	+ 33·27	− 2·60
Jan. 25	2410	δ Geminorum	....	67 45	53·0	1·9	11·0	19·9	11 29·1	7 11 10·98	+ 0·22	+ 37·04	+ 36·98	− 2·66
	2485	α² Geminorum	....	57 48	45·9	55·6	5·8	15·2	25 25·2	7 25 5·62	± 0·21	+ 36·95	+ 36·98	− 2·95
	2555	β Geminorum	....	61 38	51·1	0·8	10·5	19·9	36 29·2	7 36 10·30	+ 0·22	+ 36·97	+ 36·98	− 2·85
	2672	6 Cancri	....	61 48	1·8	11·0	20·8	29·8	54 39·5	7 54 20·58	± 0·22	+ 36·98	+ 36·98	− 2·87
	2862	η Cancri	....	69 4	44·2	52·9	1·9	10·8	24 20·0	8 24 1·96	+ 0·21	+ 36·98	+ 36·98	− 2·70
Jan. 27	2410	δ Geminorum	....	67 45	52·1	0·6	10·0	18·6	11 27·8	7 11 9·82	+ 0·22	+ 38·21	+ 38·21	− 2·67
	2862	η Cancri	....	69 4	43·0	51·8	0·6	9·8	24 18·8	8 24 0·80	+ 0·22	+ 38·15	+ 38·24	− 2·72

(a) Rapper missing several seconds in succession. Observations rather doubtful.
(c) Definition very bad. Stars diffused and unsteady.
(b) Illumination bad. Wires scarcely seen.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations	Correction of Clock observed.	Correction of Clock Interpolated.	Correction to Mean R. A Jan. 1, 1860.
1860.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Jan. 27	2971	ε Hydræ	....	83 3	28·7	37·0	45·5	53·9	39 2·3	8 38 45·48	+ 0·22	+ 38·36	+ 38·25	− 2·48
	3171	83 Cancri	....	71 40	16·5	25·0	33·9	42·6	10 51·9	9 10 33·98	+ 0·23	+ 38·17	+ 38·27	− 2·63
	3331	ε Leonis	....	65 34	59·1	9·0	18·2	27·3	37 36·5	9 37 18·02	+ 0·23	+ 38·37	+ 38·28	− 2·73
Feb. 1	2672	6 Cancri	....	61 48	57·5	6·6	16·3	25·5	54 35·3	7 54 16·24	+ 0·24	+ 41·34	+ 41·45	− 2·91
	2862	η Cancri	....	69 4	39·8	48·3	57·6	6·3	24 15·5	8 23 57·50	+ 0·23	+ 41·48	+ 41·48	− 2·77
	2971	ε Hydræ	....	83 3	25·6	33·9	42·2	50·6	38 59·2	8 38 42·30	+ 0·23	+ 41·58	+ 41·48	− 2·53
	3171	83 Cancri	....	71 40	13·2	21·9	30·8	39·5	10 48·4	9 10 30·76	+ 0·23	+ 41·46	+ 41·50	− 2·70
	3331	ε Leonis	....	65 34	56·8	5·6	15·0	24·0	37 33·2	9 37 14·92	+ 0·24	+ 41·54	+ 41·52	− 2·80
Feb. 6	2672	6 Cancri	....	61 48	53·1	2·3	12·1	21·4	54 31·0	7 54 11·98	+ 0·23	+ 45·62	+ 45·63	− 2·92
	2862	η Cancri	....	69 4	35·8	44·5	53·6	2·2	24 11·3	8 23 53·48	+ 0·22	+ 45·54	+ 45·66	− 2·79
	2971	ε Hydræ	....	83 3	21·5	29·7	38·2	46·5	38 55·0	8 38 38·18	+ 0·22	+ 45·74	+ 45·67	− 2·56
	3171	83 Cancri	....	71 40	9·1	17·7	26·8	35·3	10 44·1	9 10 26·66	+ 0·23	+ 45·61	+ 45·67	− 2·75
	3223	α Hydræ	....	98 2	41·9	50·2	58·9	7·1	20 15·7	9 19 58·76	+ 0·22	+ 45·84	+ 45·68	− 2·39
	3331	ε Leonis	....	65 34	52·6	1·6	10·9	19·9	37 29·4	9 37 10·88	+ 0·23	+ 45·65	+ 45·70	− 2·86
Feb. 11	2862	η Cancri	....	69 4	28·6	37·4	46·7	55·3	24 4·5	8 23 46·50	+ 0·19	+ 52·57	+ 52·65	− 2·81
	2971	ε Hydræ	....	83 3	14·5	22·9	31·2	39·5	38 48·1	8 38 31·24	+ 0·20	+ 52·72	+ 52·66	− 2·58
	3331	ε Leonis	....	65 34	15·9	54·9	4·1	13·0	37 22·4	9 37 4·06	+ 0·19	+ 52·59	+ 52·66	− 2·91
	3415	π Leonis	....	81 15	41·7	50·0	58·5	6·9	52 15·4	9 51 58·50	+ 0·19	+ 52·65	+ 52·67	− 2·62
	3459	α Leonis	....	77 20	47·5	55·9	4·5	12·9	0 21·6	10 0 4·48	+ 0·19	+ 52·77	+ 52·68	− 2·68
Feb. 15	3459	α Leonis	....	77 20	46·7	54·9	3·6	12·0	0 20·9	10 0 3·62	+ 0·19	+ 53·64	+ 53·61	− 2·69
	3523	γ¹ Leonis	....	69 25	6·2	15·0	24·0	32·9	11 41·9	10 11 21·00	+ 0·19	+ 53·59	+ 53·62	− 2·83
	3609	ρ Leonis	....	79 56	18·1	26·4	35·0	43·3	24 52·0	10 24 34·96	+ 0·20	+ 53·71	+ 53·63	− 2·63
	3708	l Leonis	....	78 41	45·5	54·0	2·6	11·0	41 19·7	10 41 2·56	+ 0·20	+ 53·56	+ 53·63	− 2·61
	3834	δ Leonis	....	68 41	30·6	39·3	48·4	57·1	6 6·3	11 5 48·34	+ 0·20	+ 53·69	+ 53·64	− 2·72
Feb. 20	3223	α Hydræ	....	98 2	30·3	38·5	47·1	55·2	20 4·0	9 19 47·02	+ 0·17	+ 57·70	+ 57·65	− 2·46
	3331	ε Leonis	....	65 34	10·9	49·9	59·1	8·1	37 17·4	9 36 59·08	+ 0·18	+ 57·62	+ 57·67	− 2·98
	3459	α Leonis	....	77 20	42·5	51·0	59·9	8·1	0 16·8	9 59 59·66	+ 0·18	+ 57·65	+ 57·68	− 2·73
	3523	γ¹ Leonis	....	69 25	2·2	11·0	20·0	28·8	11 38·0	10 11 20·00	+ 0·18	+ 57·65	+ 57·68	− 2·88
	3609	ρ Leonis	....	79 56	14·1	22·4	31·0	39·3	24 48·0	10 24 30·96	+ 0·17	+ 57·79	+ 57·70	− 2·68
Feb. 21	3171	(a) 83 Cancri	....	71 40	56·5	5·1	14·0	22·7	10 31·4	9 10 13·91	+ 0·17	+ 58·47	+ 58·49	− 2·83
	3415	π Leonis	....	81 15	36·0	44·2	52·9	1·1	52 9·6	9 51 52·76	+ 0·18	+ 58·45	+ 58·51	− 2·67
	3459	α Leonis	....	77 20	41·9	50·2	58·9	7·2	0 15·9	9 59 58·82	+ 0·18	+ 58·49	+ 58·51	− 2·73
	3708	l Leonis	....	78 41	40·8	49·1	57·8	6·2	41 14·6	10 40 57·70	+ 0·17	+ 58·53	+ 58·53	− 2·69
	3834	δ Leonis	....	68 41	25·8	34·4	43·6	52·3	6 1·5	11 5 43·52	+ 0·18	+ 58·63	+ 58·55	− 2·82
Feb. 27	3459	α Leonis	....	77 20	37·9	46·1	54·8	3·2	0 11·9	9 59 54·78	+ 0·13	+ 62·61	+ 62·74	− 2·76
	3523	γ¹ Leonis	....	69 25	57·2	6·0	15·1	23·4	11 32·9	10 11 14·92	+ 0·13	+ 62·82	+ 62·74	− 2·92
	3609	(b) ρ Leonis	....	79 56	9·2	17·5	26·1	34·6	25 43·1	10 25 26·10	+ 0·14	+ 2·73	+ 2·74	− 2·73
	3834	δ Leonis	....	68 41	21·8	30·4	39·6	48·2	6 57·6	11 6 39·52	+ 0·13	+ 2·75	+ 2·75	− 2·89
	3916	ν Leonis	....	90 1	30·0	38·2	46·5	54·6	30 3·2	11 29 46·50	+ 0·14	+ 2·75	+ 2·75	− 2·55
	3995	β Leonis	....	74 38	37·5	46·0	54·9	3·4	42 12·1	11 41 54·78	+ 0·13	+ 2·78	+ 2·76	− 2·70
Mar. 1	3331	ε Leonis	....	65 34	33·8	42·9	52·1	1·2	37 10·4	9 36 52·08	+ 0·12	+ 4·71	+ 4·82	− 3·01
	3459	α Leonis	....	77 20	35·8	44·0	52·6	1·0	1 9·9	10 0 52·66	+ 0·13	+ 4·74	+ 4·84	− 2·77
	3609	ρ Leonis	....	79 56	7·1	15·4	24·0	32·3	25 41·0	10 25 23·96	+ 0·13	+ 4·90	+ 4·84	− 2·75

(a) Definition bad. Stars very unsteady.

(b) Clock put forward one minute.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Interpolated.	Correction to Mean R.A., Jan. 1, 1860.
1860.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Mar. 1	3995	β Leonis	....	74 38	35·5	43·9	52·6	1·1	42 10·0	11 41 52·62	+ 0·13	+ 4·98	+ 4·88	− 2·74
	4145	η Virginis	....	89 51	25·4	33·6	42·1	50·3	12 58·9	12 12 42·06	+ 0·14	+ 4·89	+ 4·90	− 2·51
Mar. 2	3415	σ Leonis	....	81 15	28·9	37·1	45·7	54·0	53 2·6	9 52 45·66	+ 0·12	+ 5·65	+ 5·68	− 2·71
	3459	α Leonis	....	77 20	34·9	43·1	51·9	0·1	1 9·0	10 0 51·60	+ 0·11	+ 5·62	+ 5·69	− 2·77
	3523	γ¹ Leonis	....	69 25	54·2	3·2	12·1	20·9	12 30·0	10 12 12·08	+ 0·11	+ 5·70	+ 5·70	− 2·94
	3788	χ Leonis	....	81 52	27·8	36·0	44·5	52·9	58 1·2	10 57 44·48	+ 0·12	+ 5·73	+ 5·70	− 2·71
	3834	δ Leonis	....	68 41	18·9	27·4	36·6	45·4	5 54·5	11 6 36·56	+ 0·11	+ 5·77	+ 5·72	− 2·93
	3995	β Leonis	....	74 38	34·8	43·1	52·0	0·5	42 9·2	11 41 51·92	+ 0·12	+ 5·70	+ 5·74	− 2·75
Mar. 7	3331	ι Leonis	....	65 34	28·1	37·2	46·4	55·5	37 4·8	9 36 46·40	+ 0·09	+ 10·40	+ 10·41	− 2·99
	3415	σ Leonis	....	81 15	24·2	32·4	41·0	49·2	52 58·0	9 52 40·96	+ 0·09	+ 10·37	+ 10·42	− 2·70
	3459	α Leonis	....	77 20	30·1	38·2	47·1	55·5	1 4·1	10 0 47·00	+ 0·09	+ 10·44	+ 10·44	− 2·77
	3834	δ Leonis	....	68 41	14·1	22·9	32·0	40·8	6 49·9	11 6 31·94	+ 0·09	+ 10·44	+ 10·46	− 2·96
	3946	υ Leonis	....	90 1	22·2	30·5	39·0	47·1	29 55·9	11 29 38·94	+ 0·09	+ 10·45	+ 10·47	− 2·64
	3995	β Leonis	....	74 38	30·0	38·3	47·2	55·7	42 4·6	11 41 47·16	+ 0·09	+ 10·54	+ 10·49	− 2·80
Mar. 9	3331	ι Leonis	....	65 34	25·9	35·0	44·2	53·3	37 2·9	9 36 44·26	+ 0·09	+ 12·51	+ 12·48	− 2·98
	3415	σ Leonis	....	81 15	22·0	30·4	39·0	47·1	52 55·9	9 52 38·58	+ 0·08	+ 12·46	+ 12·49	− 2·70
	3459	α Leonis	....	77 20	27·9	36·3	45·0	53·4	1 2·1	10 0 44·94	+ 0·08	+ 12·51	+ 12·49	− 2·77
	3834	δ Leonis	....	68 41	12·0	21·0	30·0	38·8	6 47·9	11 6 29·94	+ 0·08	+ 12·46	+ 12·52	− 2·97
Mar. 12	3415	σ Leonis	....	81 15	19·0	28·2	36·9	45·1	52 53·6	9 52 36·78	+ 0·06	+ 14·57	+ 14·62	− 2·71
	3459	α Leonis	....	77 20	25·9	34·2	43·0	51·2	0 59·9	10 0 42·84	+ 0·07	+ 14·62	+ 14·63	− 2·77
	3523	γ¹ Leonis	....	69 25	45·5	54·3	3·3	12·0	12 21·1	10 12 3·24	+ 0·06	+ 14·60	+ 14·64	− 2·95
	3609	ρ Leonis	....	79 56	57·4	5·7	14·3	22·5	25 31·2	10 25 11·22	+ 0·07	+ 14·72	+ 14·65	− 2·77
	3834	δ Leonis	....	68 41	9·9	18·9	27·9	36·6	6 15·9	11 6 27·84	+ 0·06	+ 14·59	+ 14·67	− 2·98
	3946	υ Leonis	....	90 1	18·1	26·2	34·9	43·0	29 51·4	11 29 34·72	+ 0·07	+ 14·72	+ 14·68	− 2·67
	3995	β Leonis	....	74 38	25·8	34·4	43·0	51·6	42 0·5	11 41 43·06	+ 0·06	+ 14·72	+ 14·70	− 2·85
Mar. 13	3609	ρ Leonis	....	79 56	56·5	4·9	13·6	22·0	25 30·4	10 25 13·18	+ 0·06	+ 15·47	+ 15·38	− 2·77
	3708	l Leonis	....	78 41	24·2	32·1	41·2	49·5	41 58·2	10 41 41·10	+ 0·06	+ 15·36	+ 15·39	− 2·81
	3834	δ Leonis	....	68 41	9·2	18·1	27·1	35·8	6 45·0	11 6 27·04	+ 0·05	+ 15·40	+ 15·40	− 2·98
	3946	υ Leonis	....	90 1	17·5	25·6	34·1	42·3	29 51·0	11 29 34·10	+ 0·06	+ 15·36	+ 15·41	− 2·68
	3995	β Leonis	....	74 38	25·0	33·7	42·4	50·9	41 59·8	11 41 42·36	+ 0·06	+ 15·42	+ 15·42	− 2·85
Mar. 14	3331	(a) ι Leonis	....	65 34	22·3	31·4	40·9	49·9	36 59·1	9 36 40·72	+ 0·05	+ 16·09	+ 16·10	− 2·96
	3415	σ Leonis	....	81 15	18·4	26·8	35·2	43·5	52 52·2	9 52 35·22	+ 0·04	+ 16·15	+ 16·12	− 2·71
	3459	α Leonis	....	77 20	24·4	32·8	41·3	49·9	0 58·5	10 0 41·38	+ 0·05	+ 16·09	+ 16·13	− 2·76
	3946	υ Leonis	....	90 1	16·8	24·9	33·4	41·5	29 50·0	11 29 33·32	+ 0·05	+ 16·16	+ 16·17	− 2·69
	3995	β Leonis	....	74 38	24·3	32·7	41·9	50·2	41 59·0	11 41 41·62	+ 0·05	+ 16·18	+ 16·19	− 2·86
Mar. 15	3459	(b) α Leonis	....	77 20	23·5	32·0	40·9	49·2	0 57·9	10 0 40·70	+ 0·02	+ 16·79	+ 16·87	− 2·75
	3609	ρ Leonis	....	79 56	55·1	3·5	12·1	20·4	25 29·0	10 25 12·02	+ 0·02	+ 16·96	+ 16·89	− 2·76
	3708	l Leonis	....	78 41	22·8	31·0	39·8	48·0	41 56·9	10 41 39·70	+ 0·02	+ 16·80	+ 16·90	− 2·81
	3788	χ Leonis	....	81 52	16·8	24·9	33·5	41·9	57 50·3	10 57 33·48	+ 0·02	+ 16·89	+ 16·91	− 2·77
	3834	δ Leonis	....	68 41	7·8	16·3	25·5	34·2	6 43·5	11 6 25·46	+ 0·02	+ 17·02	+ 16·93	− 2·99
	3995	β Leonis	....	74 38	23·5	32·1	40·9	49·4	41 58·2	11 41 40·82	+ 0·02	+ 17·01	+ 16·95	− 2·86
Mar. 20	3708	(c) l Leonis	....	78 41	18·9	27·2	36·0	44·2	41 53·0	10 41 35·86	0·00	+ 20·65	+ 20·64	− 2·80
	3788	χ Leonis	....	81 52	12·9	21·2	29·8	38·0	57 46·6	10 57 29·70	+ 0·01	+ 20·69	+ 20·65	− 2·78

(a) The rapper acting so ill that it is scarcely possible to observe by it.
(b) The rapper taken away to be repaired, and observations made by means of the clock itself.
(c) The rapper missing beats frequently. Wind very boisterous.

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Date.	No. in British Association Catalogue.	Object Observed	Magnitude observed	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviation.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1860.
1860.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Mar. 20	3834	δ Leonis	....	68 41	4·0	12·8	22·0	30·5	6 39·8	11 6 21·82	+ 0·01	+20·68	+20·66	− 3·00
	3995	β Leonis	....	74 38	20·0	28·4	37·2	45·9	41 54·5	11 41 37·20	0·00	+20·68	+20·68	− 2·89
	4145	η Virginis	....	69 51	10·1	18·3	26·7	35·0	12 43·4	12 12 26·70	+ 0·01	+20·59	+20·69	− 2·72
Mar. 27	3995	β Leonis	....	74 38	15·5	24·0	32·6	41·1	41 50·0	11 41 32·64	− 0·07	+25·33	+25·30	− 2·91
	4145	η Virginis	....	69 51	5·5	13·9	22·2	30·4	12 38·9	12 12 22·18	− 0·08	+25·24	+25·32	− 2·76
	4401	θ Virginis	....	94 45	3·0	11·2	19·8	28·0	2 36·6	13 2 19·72	− 0·09	....	+25·34	− 2·75
	360	α Ursæ Minoris S. P.	....	1 26	31·0	11·5	12·0	17·0	17 46·0	13 6 41·50	− 0·75	....	+25·34	+55·90
	4532	ζ Virginis	....	89 30	54·5	2·7	11·1	19·3	27 27·9	13 27 11·10	− 0·08	+25·42	+25·35	− 2·74
	4648	η Bootis	....	70 53	21·0	29·8	38·8	47·4	47 56·2	13 47 38·64	− 0·06	+25·36	+25·36	− 2·80
Mar. 28	3995	β Leonis	....	74 38	14·5	23·1	31·9	40·4	41 49·2	11 41 31·82	− 0·07	+26·15	+26·04	− 2·91
	4145	η Virginis	....	69 51	4·9	13·1	21·5	29·6	12 38·2	12 12 21·46	− 0·08	+25·96	+26·05	− 2·76
	4532	ζ Virginis	....	89 50	54·0	2·1	10·5	18·8	27 27·2	13 27 10·52	− 0·08	+26·01	+26·08	− 2·75
	4648	η Bootis	....	70 53	20·2	29·0	38·0	46·8	47 55·5	13 47 37·90	− 0·06	+26·11	+26·09	− 2·81
Mar. 29	3788	(a) χ Leonis	....	81 52	6·9	15·2	23·9	32·0	57 40·6	10 57 23·72	− 0·07	+26·73	+26·71	− 2·76
	3834	δ Leonis	....	68 41	58·0	6·8	15·9	24·6	6 33·9	11 6 15·84	− 0·06	+26·72	+26·72	− 2·99
	3946	υ Leonis	....	90 1	6·3	14·4	23·0	31·1	29 39·7	11 29 22·90	− 0·08	+26·75	+26·73	− 2·73
	4401	θ Virginis	....	94 45	1·5	9·9	18·4	26·6	2 35·1	13 2 18·30	− 0·09	....	+26·77	− 2·77
	360	α Ursæ Minoris S. P.	....	1 26	......	......	37·5	17·5	17 46·0	13 6 40·04	− 0·75	....	+26·77	+56·15
		(b)												
May 9	4729	α Bootis	....	70 4	58·5	7·0	16·2	24·9	9 33·9	14 9 16·10	− 0·27	+ 3·69	+ 3·87	− 3·10
	4808	ρ Bootis	....	58 59	28·1	37·5	47·4	57·0	26 6·9	14 25 47·38	− 0·25	+ 3·84	+ 3·87	− 3·22
	4876	ι Bootis	....	62 19	33·2	42·4	52·0	1·1	39 10·9	14 38 51·92	− 0·25	+ 3·88	+ 3·87	− 3·17
	5143	α Coronæ Borealis	....	62 48	26·4	35·6	45·3	54·4	29 4·1	15 28 45·16	− 0·25	+ 3·91	+ 3·87	− 3·13
	5196	α Serpentis	....	83 7	5·2	13·5	22·1	30·3	37 38·9	15 37 22·00	− 0·29	+ 3·56	+ 3·87	− 3·13
May 15	4648	(c) η Bootis	....	70 53	44·5	53·1	2·1	10·9	48 19·9	13 48 2·10	− 0·31	+ 2·44	+ 2·44	− 3·09
	4808	ρ Bootis	....	58 59	29·3	39·0	46·9	58·3	26 8·4	14 25 48·78	− 0·29	+ 2·48	+ 2·45	− 3·22
	4876	ι Bootis	....	62 19	34·8	43·9	53·5	2·8	39 12·2	14 38 53·44	− 0·29	+ 2·40	+ 2·45	− 3·19
	4969	ψ Bootis	....	62 29	9·1	18·3	27·9	37·2	58 46·8	14 58 27·86	− 0·29	+ 2·49	+ 2·46	− 3·19
	5143	α Coronæ Borealis	....	62 48	28·0	37·2	46·9	56·0	29 5·4	15 28 46·70	− 0·29	+ 2·45	+ 2·46	− 3·17
	5414	(d) δ Ophiuchi	....	93 19	45·2	53·4	1·9	10·0	7 18·6	16 7 1·82	− 0·36	+ 2·49	+ 2·47	− 3·27
	5604	ζ Herculis	....	58 7	41·9	51·3	1·4	11·1	36 21·2	16 36 1·38	− 0·29	+ 2·47	+ 2·48	− 3·02
May 16	4672	ε Virginis	....	87 44	16·1	24·3	32·8	41·0	54 49·4	13 54 32·72	− 0·36	+ 2·10	+ 2·10	− 3·08
	4729	α Bootis	....	70 4	0·1	8·9	18·0	26·9	9 35·9	14 9 17·96	− 0·32	+ 2·09	+ 2·10	− 3·11
	4808	ρ Bootis	....	58 59	29·9	39·2	49·2	58·9	26 8·6	14 25 49·16	− 0·29	+ 2·10	+ 2·10	− 3·22
	5143	α Coronæ Borealis	....	62 48	28·4	37·7	47·1	56·2	29 5·8	15 28 47·04	− 0·30	+ 2·13	+ 2·10	− 3·18
	5196	α Serpentis	....	83 7	7·0	15·4	24·0	32·2	37 40·9	15 37 23·90	− 0·35	+ 2·09	+ 2·10	− 3·20
May 17	4808	ρ Bootis	....	58 59	30·0	39·6	49·4	59·0	26 9·0	14 25 49·40	− 0·29	+ 1·86	+ 1·80	− 3·22
	4876	ι Bootis	....	62 19	35·2	44·4	54·0	3·2	39 13·0	14 38 53·96	− 0·30	+ 1·92	+ 1·80	− 3·20
	5196	(e) α Serpentis	....	83 7	7·6	15·8	24·4	32·7	37 41·2	15 37 24·34	− 0·35	+ 1·66	+ 1·80	− 3·21
	5414	δ Ophiuchi	....	93 19	46·0	54·0	2·6	10·9	7 19·2	16 7 2·54	− 0·37	+ 1·80	+ 1·80	− 3·29
	5604	(e) ζ Herculis	....	58 7	42·5	52·1	2·2	11·9	36 22·0	16 36 2·14	− 0·30	+ 1·75	+ 1·80	− 3·05
May 19	4969	ψ Bootis	....	62 29	9·9	19·2	28·7	38·0	58 47·6	14 58 28·68	− 0·31	+ 1·71	+ 1·68	− 3·21
	5034	β Libræ	....	98 51	13·9	22·1	30·7	39·0	9 47·6	15 9 30·66	− 0·41	+ 1·67	+ 1·68	− 3·32
	5143	α Coronæ Borealis	....	62 48	28·9	38·1	47·6	56·8	29 6·3	15 28 47·54	− 0·31	+ 1·66	+ 1·68	− 3·20
	5196	α Serpentis	....	83 7	7·6	15·9	24·4	32·6	37 41·2	15 37 24·34	− 0·37	+ 1·70	+ 1·68	− 3·23

(a) The rapper cleaned and adjusted for better contact.
(b) On 2d April the mercurial pendulum was removed, and on 5th April a gridiron pendulum was attached.
(c) Rapper acting very badly. (d) Definition bad. (e) Faint.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	Wires. II.	Wires. III.	Wires. IV.	Wires. V.	Reduction to Mean of Wires.	Correction for Instrumental Deviation.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1860.
1860.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
May 20	4532	ζ Virginis	....	89 50	18·6	26·7	35·3	43·4	27 51·9	13 27 35·18	− 0·40	+ 1·90	+ 1·83	− 2·98
	4648	η Bootis	....	70 53	45·2	53·8	2·9	11·4	48 20·4	13 48 2·71	− 0·35	+ 1·84	+ 1·83	− 3·09
	4729	α Bootis	....	70 4	0·7	9·3	18·3	27·0	[illegible] 36·1	14 9 18·28	− 0·34	+ 1·79	+ 1·83	− 3·11
	4808	(a) ε Bootis	....	58 59	30·1	39·6	49·[illegible]	59·1	26 9·0	14 25 49·48	− 0·31	+ 1·80	+ 1·83	− 3·22
May 21	5414	δ Ophiuchi	....	93 19	45·8	53·9	2·5	10·8	7 19·1	16 7 2·42	− 0·41	+ 2·01	+ 1·94	− 3·34
	5604	ζ Herculis	....	58 7	42·5	52·1	2·1	11·[illegible]	36 21·9	16 36 2·01	− 0·31	+ 1·91	+ 1·94	− 3·10
	5821	α Herculis	....	75 27	0·1	8·9	17·4	25·9	8 34·8	17 8 17·42	− 0·36	+ 1·94	+ 1·94	− 3·12
	5941	α Ophiuchi	....	77 20	10·8	19·0	27·9	36·1	28 44·8	17 28 27·72	− 0·37	+ 1·92	+ 1·94	− 3·10
	6021	μ Herculis	....	62 11	41·4	50·7	0·2	9·5	41 19·1	17 41 0·18	− 0·32	+ 1·91	+ 1·94	− 2·93
May 25	5604	ζ Herculis	....	58 7	42·2	51·9	1·9	11·6	36 21·6	16 36 1·84	− 0·33	+ 2·18	+ 2·20	− 3·14
	5708	κ Ophiuchi	....	80 24	47·2	55·5	4·1	12·3	51 21·0	16 51 4·02	− 0·40	+ 2·19	+ 2·20	− 3·24
	5821	α Herculis	....	75 27	0·0	8·3	17·2	25·7	8 34·2	17 8 17·06	− 0·38	+ 2·36	+ 2·20	− 3·18
	5941	α Ophiuchi	....	77 20	10·6	19·0	27·7	36·0	28 44·8	17 28 27·62	− 0·39	+ 2·10	+ 2·20	− 3·16
	6021	μ Herculis	....	62 11	41·1	50·6	0·0	9·2	41 19·0	17 40 59·98	− 0·33	+ 2·19	+ 2·20	− 3·00
May 30	4969	(b) ψ Bootis	....	62 29	12·0	21·2	30·9	40·[illegible]	58 49·6	14 58 30·74	− 0·33	− 0·32	− 0·20	− 3·22
	5143	α Coronæ Borealis	....	62 48	30·9	40·1	49·5	58·8	29 8·4	15 28 49·51	− 0·33	− 0·27	− 0·20	− 3·25
	5196	α Serpentis	....	83 7	9·6	17·8	26·3	34·6	37 43·1	15 37 26·25	− 0·41	− 0·12	− 0·20	− 3·31
	5414	δ Ophiuchi	....	93 19	48·0	56·2	4·8	12·9	7 21·5	16 7 4·68	− 0·44	− 0·12	− 0·20	− 3·44
	5604	ζ Herculis	....	58 7	44·9	54·4	4·4	14·0	36 24·0	16 36 4·34	− 0·32	− 0·28	− 0·20	− 3·20
	5708	κ Ophiuchi	....	80 24	49·7	58·0	6·4	14·9	51 23·2	16 51 6·44	− 0·40	− 0·17	− 0·20	− 3·30
	5821	α Herculis	....	75 27	2·5	11·0	19·9	28·1	8 37·0	17 8 19·70	− 0·38	− 0·19	− 0·20	− 3·25
	5941	α Ophiuchi	....	77 20	13·0	21·2	30·1	38·4	28 47·1	17 28 29·96	− 0·39	− 0·16	− 0·20	− 3·24
May 31	5604	ζ Herculis	....	58 7	45·3	54·9	5·0	14·5	36 24·2	16 36 4·78	− 0·34	− 0·69	− 0·73	− 3·21
	5708	κ Ophiuchi	....	80 24	50·2	58·4	7·0	15·4	51 24·0	16 51 7·00	− 0·42	− 0·70	− 0·74	− 3·31
	5821	α Herculis	....	75 27	3·2	11·7	20·3	28·9	8 37·5	17 8 20·32	− 0·40	− 0·78	− 0·76	− 3·26
	5941	α Ophiuchi	....	77 20	13·5	22·0	30·8	39·1	28 47·9	17 28 30·66	− 0·41	− 0·83	− 0·77	− 3·25
	6021	μ Herculis	....	62 11	44·4	53·6	3·2	12·4	41 21·9	17 41 3·10	− 0·35	− 0·82	− 0·78	− 3·09
June 18	4876	ι Bootis	....	62 19	44·3	53·6	3·2	12·5	39 22·0	14 39 3·12	− 0·39	− 7·25	− 7·23	− 3·10
	5821	α Herculis	....	75 27	9·9	18·2	27·1	35·4	8 44·2	17 8 26·96	− 0·45	− 7·20	− 7·23	− 3·43
	5941	α Ophiuchi	....	77 20	20·3	28·8	37·4	45·8	28 54·5	17 28 37·36	− 0·46	....	− 7·23	− 3·47
	6021	μ Herculis	....	62 11	51·0	0·1	9·8	19·0	41 28·8	17 41 9·74	− 0·39	− 7·22	− 7·23	− 3·29
	6281	δ Ursæ Minoris	....	3 24	2·5	20·5	43·5	2·0	22 24·0	18 17 42·50	+ 3·27	....	− 7·23	− 8·05
	6429	β Lyræ	....	56 48	45·6	55·4	5·6	15·3	45 25·4	18 45 5·46	− 0·37	− 7·23	− 7·23	− 3·19
June 20	5414	(c) δ Ophiuchi	....	93 19	55·4	3·5	12·0	20·2	7 26·[illegible]	16 7 12·00	− 0·46	....	− 7·34	− 3·55
	5821	α Herculis	....	75 27	9·9	18·2	27·1	35·4	8 44·2	17 8 26·96	− 0·40	− 7·24	− 7·34	− 3·44
	6021	μ Herculis	....	62 11	51·0	0·4	9·9	19·1	41 28·9	17 41 9·86	− 0·35	− 7·36	− 7·34	− 3·31
	6281	δ Ursæ Minoris	....	3 24	2·0	22·0	45·0	2·0	22 25·0	18 17 43·20	+ 2·58	....	− 7·34	− 7·98
	6429	β Lyræ	....	56 48	45·6	55·5	5·8	15·3	45 25·5	18 45 5·54	− 0·33	− 7·32	− 7·34	− 3·22
	6528	ζ Aquilæ	....	76 21	52·6	1·0	9·8	18·2	59 27·0	18 59 9·72	− 0·40	− 7·43	− 7·34	− 3·40
June 24	5414	δ Ophiuchi	....	93 19	55·2	3·5	12·0	20·1	7 28·7	16 7 11·90	− 0·43	− 7·24	− 7·24	− 3·55
	5604	ζ Herculis	....	58 7	51·9	1·5	11·4	21·0	36 31·1	16 36 11·38	− 0·32	− 7·25	− 7·24	− 3·27
	5708	κ Ophiuchi	....	80 24	56·9	5·2	13·8	22·0	51 30·6	16 51 13·70	− 0·39	− 7·26	− 7·24	− 3·48
	5821	α Herculis	....	75 27	9·9	18·2	27·0	35·4	8 44·1	17 8 26·92	− 0·37	− 7·21	− 7·24	− 3·46

(a) Cloudy. (b) Faint. (c) Definition bad. Stars diffused.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviation.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1860.
				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
1860. June 25	5604	ζ Herculis	....	58 7	51·9	1·3	11·5	21·1	36 31·1	16 36 11·38	− 0·29	− 7·28	− 7·33	− 3·27
	5708	κ Ophiuchi	....	80 24	56·9	5·2	13·9	22·1	51 30·7	16 51 13·76	− 0·36	− 7·34	− 7·33	− 3·49
	5821	α Herculis	....	75 27	9·9	18·2	27·1	35·6	8 44·3	17 8 27·02	− 0·35	− 7·33	− 7·33	− 3·46
	5941	α Ophiuchi	....	77 20	20·3	28·8	37·5	46·0	28 54·5	17 28 37·42	− 0·36	− 7·38	− 7·33	− 3·51
July 1	5414	δ Ophiuchi	....	93 19	55·5	3·6	12·2	20·3	7 28·9	16 7 12·10	− 0·36	− 7·51	− 7·58	− 3·55
	5604	ζ Herculis	....	58 7	52·0	1·9	11·7	21·4	36 31·3	16 36 11·66	− 0·29	− 7·58	− 7·58	− 3·25
	5708	κ Ophiuchi	....	80 24	57·1	5·5	14·1	22·3	51 31·0	16 51 14·00	− 0·34	− 7·59	− 7·58	− 3·50
	5821	α Herculis	....	75 27	10·0	18·5	27·4	35·8	8 44·6	17 8 27·26	− 0·33	− 7·57	− 7·58	− 3·48
	5941	α Ophiuchi	....	77 20	20·8	29·0	37·8	46·0	28 54·9	17 28 37·70	− 0·33	− 7·67	− 7·58	− 3·53
July 7	6281	δ Ursæ Minoris	....	3 24	2·0	22·0	44·0	2·5	22 25·0	18 17 43·10	+ 0·70	....	− 6·98	− 6·33
	6355	α Lyræ	....	51 21	0·9	11·8	22·5	33·0	32 43·9	18 32 22·42	− 0·23	− 6·95	− 6·97	− 3·33
	6429	β Lyræ	....	56 48	45·5	55·2	5·4	15·0	45 25·3	18 45 5·28	− 0·25	− 6·98	− 6·97	− 3·38
	6528	ζ Aquilæ	....	76 21	52·2	0·8	9·3	17·9	59 26·5	18 59 9·34	− 0·28	....	− 6·97	− 3·62
July 8	1613	(a) α Aurigæ	....	44 9	6·1	17·8	30·2	41·9	6 54·0	5 6 30·00	− 0·23	....	− 6·60	− 1·86
	1681	β Tauri	....	61 31	16·5	25·7	35·5	44·6	17 54·3	5 17 35·32	− 0·27	− 6·67	− 6·60	− 1·70
	1883	α Orionis	....	82 37	27·0	35·4	43·9	52·1	48 0·5	5 47 43·78	− 0·31	− 6·51	− 6·60	− 1·37
	2485	α Geminorum	....	57 48	28·5	38·4	48·3	56·0	26 8·0	7 25 48·21	− 0·26	− 6·63	− 6·60	− 1·62
July 11	5941	(b) α Ophiuchi	....	77 20	19·9	28·1	36·9	45·1	28 54·0	17 28 36·80	− 0·30	− 6·78	− 6·63	− 3·55
	6021	μ Herculis	....	62 11	50·2	59·6	9·2	18·5	41 28·1	17 41 9·12	− 0·28	− 6·64	− 6·63	− 3·36
	6772	γ Aquilæ	....	79 44	29·8	38·2	46·9	55·2	40 4·0	19 39 46·82	− 0·31	− 6·62	− 6·63	− 3·70
	6802	α Aquilæ	....	81 31	51·0	59·2	7·8	16·1	44 21·5	19 44 7·72	− 0·31	− 6·51	− 6·63	− 3·75
	6833	β Aquilæ	....	83 57	20·1	28·3	36·9	45·1	48 53·6	19 48 36·80	− 0·31	− 6·57	− 6·63	− 3·77
July 15	6021	μ Herculis	....	62 11	50·9	0·1	9·9	19·0	41 28·5	17 41 9·68	− 0·28	....	− 7·06	− 3·35
	6281	δ Ursæ Minoris	....	3 21	0·5	20·5	42·0	1·0	22 25·0	18 17 41·80	+ 0·82	....	− 7·07	− 4·94
	6355	α Lyræ	....	51 21	1·1	11·8	22·7	33·2	32 43·9	18 32 22·54	− 0·26	− 7·03	− 7·07	− 3·34
	6429	β Lyræ	....	56 48	45·7	55·3	5·5	15·2	45 25·6	18 45 5·46	− 0·27	− 7·12	− 7·08	− 3·40
July 17	6429	(c) β Lyræ	....	56 48	45·9	55·8	5·9	15·7	45 25·9	18 45 5·84	− 0·29	− 7·47	− 7·41	− 3·41
	6528	ζ Aquilæ	....	76 21	53·0	1·2	10·1	18·4	59 27·2	18 59 9·98	− 0·34	− 7·46	− 7·41	− 3·69
	6595	ω Aquilæ	....	78 40	9·2	17·5	26·2	34·5	11 43·1	19 11 26·10	− 0·34	− 7·38	− 7·41	− 3·74
	6646	δ Aquilæ	....	87 10	21·2	29·6	38·1	46·3	18 54·6	19 18 37·96	− 0·35	− 7·39	− 7·41	− 3·90
	6772	γ Aquilæ	....	79 44	30·8	39·0	47·9	56·0	40 4·5	19 39 47·64	− 0·35	− 7·34	− 7·41	− 3·76
July 20	6281	(d) δ Ursæ Minoris	....	3 24	1·0	19·5	42·5	1·0	22 24·0	18 17 41·60	+ 1·19	....	− 8·48	− 3·69
	6355	α Lyræ	....	51 21	3·6	13·0	24·0	34·5	32 45·2	18 32 24·06	− 0·29	− 8·53	− 8·48	− 3·33
	6429	β Lyræ	....	56 48	47·0	56·8	7·0	16·6	45 27·0	18 45 6·88	− 0·30	− 8·50	− 8·48	− 3·41
	6528	ζ Aquilæ	....	76 21	53·9	2·2	11·1	19·4	59 28·2	18 59 10·96	− 0·34	− 8·43	− 8·48	− 3·70
	6595	ω Aquilæ	....	78 40	10·2	18·6	27·2	35·7	11 44·4	19 11 27·22	− 0·35	− 8·48	− 8·48	− 3·75
	6646	δ Aquilæ	....	87 10	22·4	30·6	39·0	47·2	18 55·8	19 18 39·00	− 0·36	....	− 8·48	− 3·92
	6772	γ Aquilæ	....	79 44	31·9	40·1	48·9	57·1	40 5·9	19 39 48·78	− 0·35	− 8·45	− 8·48	− 3·79
Aug. 4	6772	(e) γ Aquilæ	....	79 44	36·9	45·1	53·8	2·1	40 10·8	19 39 53·74	....	....	....	....
	6802	α Aquilæ	....	81 31	57·8	6·1	14·6	23·0	44 31·5	19 44 14·60	....	....	....	....
	6833	β Aquilæ	....	83 57	26·9	35·2	43·9	52·0	49 0·6	19 48 43·72	....	....	....	....
	7256	32 Vulpeculæ	....	62 30	34·3	43·5	53·0	2·2	49 12·0	20 48 53·00	....	....	....	....

(a) Foggy. Stars tremulous. Observations indifferent. (b) Night cloudy.
(c) Rapper acting so badly, the observations were taken by the beats of the clock itself.
(d) Observations made by means of the clock. (e) Stars diffused and unsteady.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviation.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1860.
				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
1860. Aug. 27	7256	32 Vulpeculæ	....	62 30	14·8	24·0	33·5	42·7	48 52·1	20 48 33·42	− 0·32	+ 6·21	+ 6·23	− 3·69
	7368	ζ Cygni	....	60 22	37·4	46·9	56·6	6·0	7 15·9	21 6 56·56	− 0·32	+ 6·22	+ 6·22	− 3·73
	7478	β Aquarii	....	96 12	53·0	1·1	9·6	18·[illegible]	24 26·3	21 24 9·60	− 0·36	+ 6·26	+ 6·22	− 4·34
	7561	ι Pegasi	....	80 47	0·0	8·2	16·9	25·1	37 33·9	21 37 16·82	− 0·34	+ 6·17	+ 6·21	− 4·08
Aug. 28	7256	32 Vulpeculæ	....	62 30	15·4	24·7	34·2	43·4	48 53·0	20 48 34·14	− 0·32	+ 5·49	+ 5·42	− 3·69
	7368	ζ Cygni	....	60 22	38·2	47·7	57·3	6·9	7 16·6	21 6 57·34	− 0·32	+ 5·44	+ 5·41	− 3·73
	7561	ι Pegasi	....	80 47	0·9	9·1	17·5	25·9	37 34·6	21 37 17·60	− 0·34	+ 5·39	+ 5·40	− 4·08
	7908	ζ Pegasi	....	79 55	11·0	19·3	27·9	36·2	34 44·9	22 34 27·86	− 0·33	+ 5·38	+ 5·38	− 4·13
	8233	ι Piscium	....	85 10	27·5	35·9	44·1	52·5	33 1·0	23 32 44·20	− 0·34	+ 5·34	+ 5·34	− 4·16
Sept. 6	7368	(a) ζ Cygni	....	60 22	43·1	52·5	2·3	11·8	7 21·6	21 7 2·26	− 0·58	+ 0·73	+ 0·71	− 3·69
	7478	β Aquarii	....	96 12	58·6	6·9	15·5	23·8	24 32·1	21 24 15·38	− 0·59	+ 0·70	+ 0·71	− 4·33
	7627	16 Pegasi	....	64 46	27·0	36·2	45·5	54·7	47 4·0	21 46 45·48	− 0·56	+ 0·59	+ 0·71	− 3·90
	7688	α Aquarii	....	91 1	23·0	31·2	39·8	48·0	58 56·4	21 58 39·68	− 0·58	+ 0·67	+ 0·71	− 4·26
	7773	θ Aquarii	....	98 31	14·1	22·3	30·8	39·2	9 47·8	22 9 30·84	− 0·59	+ 0·77	+ 0·71	− 4·43
	7908	ζ Pegasi	....	79 55	16·0	24·2	32·8	41·1	34 49·8	22 34 32·78	− 0·57	+ 0·74	+ 0·71	− 4·17
	8034	α Pegasi	....	75 35	34·2	42·5	51·4	0·0	58 8·6	22 57 51·34	− 0·58	+ 0·75	+ 0·71	− 4·17
	8233	ι Piscium	....	85 10	32·5	40·8	49·2	57·5	33 5·9	23 32 49·18	− 0·57	+ 0·70	+ 0·71	− 4·47
	4	(b) α Andromedæ	....	61 43	54·6	3·9	13·7	23·0	1 32·5	0 1 13·54	− 0·57	+ 0·72	+ 0·71	− 4·25
Sept. 7	8034	(c) α Pegasi	....	75 35	34·3	42·6	51·6	59·9	58 8·5	22 57 51·36	− 0·58	+ 0·74	+ 0·73	− 4·18
	8105	γ Piscium	....	87 32	42·0	50·2	58·7	6·9	10 15·3	23 9 58·62	− 0·57	+ 0·74	+ 0·73	− 4·32
	8169	κ Piscium	....	89 34	32·8	41·0	49·8	57·9	20 6·3	23 19 49·56	− 0·58	+ 0·65	+ 0·73	− 4·30
	8233	ι Piscium	....	85 10	32·5	40·7	49·2	57·4	33 5·9	23 33 49·14	− 0·58	+ 0·76	+ 0·73	− 4·28
	4	α Andromedæ	....	61 43	54·6	4·0	13·6	22·9	1 32·6	0 1 13·54	− 0·57	+ 0·73	+ 0·73	− 4·26
	26	γ Pegasi	....	75 37	48·8	57·1	5·9	14·2	6 23·1	0 6 5·62	− 0·58	+ 0·77	+ 0·73	− 4·22
Sept. 10	7688	(c) α Aquarii	....	91 1	24·5	32·8	41·2	49·3	58 57·9	21 58 41·14	− 0·61	− 0·77	− 0·75	− 4·27
	7868	η Aquarii	....	90 53	58·8	7·[illegible]	15·4	23·7	28 32·0	22 28 15·38	− 0·61	− 0·81	− 0·75	− 4·32
	7908	ζ Pegasi	....	79 55	17·4	25·7	34·2	42·7	34 51·2	22 34 34·24	− 0·59	− 0·69	− 0·75	− 4·18
	8034	α Pegasi	....	75 35	35·6	44·2	52·[illegible]	1·2	58 10·1	22 57 52·80	− 0·59	− 0·68	− 0·75	− 4·19
	8065	....	....	88 38	2·4	10·5	19·1	27·2	2 35·7	23 2 18·98	− 0·60	....	− 0·75	− 4·31
	8083	....	....	33 38	9·2	24·1	39·5	54·3	7 9·9	23 6 39·40	− 0·62	....	− 0·75	− 4·37
	8105	γ Piscium	....	87 32	43·5	51·7	0·1	8·3	10 16·9	23 10 0·10	− 0·61	− 0·66	− 0·75	− 4·34
	8204	....	7·5	18 48	49·5	15·0	41·5	6·9	27 33·5	23 26 41·28	− 0·76	....	− 0·75	− 5·39
	8233	ι Piscium	....	85 10	34·0	42·2	50·8	59·0	33 7·5	23 32 50·70	− 0·60	− 0·76	− 0·75	− 4·30
	8272	....	7·0	82 33	52·2	0·3	9·0	17·3	41 26·0	23 41 6·96	− 0·60	....	− 0·75	− 4·27
	8315	....	7·0	82 35	17·0	25·3	33·8	42·2	48 50·7	23 48 33·80	− 0·60	....	− 0·75	− 4·26
	8338	....	7·0	28 38	8·6	25·5	43·3	0·5	54 18·3	23 53 43·24	− 0·66	....	− 0·75	− 4·95
	8372	....	6·0	32 22	32·8	48·4	4·0	19·3	59 35·2	23 59 3·94	− 0·61	....	− 0·75	− 4·81
	18	....	7·0	31 8	49·0	5·0	21·4	37·3	3 53·6	0 3 21·26	− 0·64	....	− 0·75	− 4·90
	28	....	5·5	49 46	59·2	10·0	21·0	31·7	6 43·0	0 6 20·96	− 0·59	....	− 0·75	− 4·41
	42	....	....	86 33	35·2	43·4	52·0	0·2	9 5·6	0 8 51·68	− 0·61	....	− 0·75	− 4·27
	57	....	6·5	89 7	25·3	33·5	42·0	50·1	10 58·6	0 10 41·94	− 0·60	....	− 0·75	− 4·28
	68	....	7·0	22 59	22·1	43·5	5·0	26·2	14 48·[illegible]	0 14 4·96	− 0·70	....	− 0·76	− 5·55
	83	....	6·0	37 45	12·3	25·5	39·4	52·8	18 7·0	0 17 39·40	− 0·61	....	− 0·76	− 4·72
	98	....	7·0	74 47	3·0	11·5	20·2	28·9	20 37·6	0 20 20·24	− 0·59	....	− 0·76	− 4·25
	113	....	7·0	85 56	45·9	54·1	2·6	10·9	23 19·2	0 23 2·54	− 0·60	....	− 0·76	− 4·25
	133	....	8·0	70 22	8·5	17·2	26·1	34·9	26 43·9	0 26 26·12	− 0·58	....	− 0·76	− 4·26
	149	....	6·0	77 35	28·4	37·0	45·6	54·0	29 2·7	0 28 45·54	− 0·59	....	− 0·77	− 4·24

(a) Some water having got between the lenses of the object glass, it was taken out and cleaned twice betwixt 31st August and 6th September.

(b) All the observations of this night were taken on the beats of a very loud and peculiar electrical rapper formed of two tambourines, worked of course by the Transit Clock, but placed in the Dome as a central situation to the whole Observatory.

(c) Observations by Transit Clock without rapper.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviation.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1860.
1860.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Sept. 10	177	....	7·0	81 2	46·8	55·0	3·5	11·9	31 20·5	0 31 3·54	− 0·59	....	− 0·77	− 4·24
	197	....	6·0	42 56	22·3	34·2	46·6	58·9	37 11·3	0 37 46·66	− 0·60	....	− 0·77	− 4·65
	218	η Cassiopeæ..................	4·0	32 57	15·3	30·5	45·9	1·3	41 16·9	0 40 45·38	− 0·63	....	− 0·77	− 5·04
	237	....	7·0	87 24	54·8	3·1	11·5	19·8	41 28·2	0 44 11·48	− 0·61	....	− 0·78	− 4·22
	263	....	8·0	63 47	30·3	39·4	49·0	58·0	50 7·4	0 49 48·82	− 0·57	....	− 0·78	− 4·32
	360	α Ursæ Minoris..........	....	1 26	51·5	21·0	1·0	28·0	20 7·0	1 8 57·70	− 5·07	....	− 0·80	−49·54
	420	θ¹ Ceti..........................	....	98 56	50·1	58·4	7·2	15·4	17 21·0	1 17 7·02	− 0·63	....	− 0·81	− 4·13
	453	η Piscium.....................	....	75 25	48·3	56·6	5·5	13·9	24 22·6	1 24 5·36	− 0·59	− 0·87	− 0·82	− 4·19
Sept. 11	7773	θ Aquarii.......................	....	98 31	16·5	24·8	33·2	41·4	9 49·9	22 9 33·16	− 0·55	− 1·59	− 1·58	− 4·43
	7868	η Aquarii.......................	....	90 53	19·5	7·7	16·1	24·2	28 32·8	22 28 16·06	− 0·53	− 1·57	− 1·58	− 4·32
	7908	ζ Pegasi........................	....	79 55	18·3	26·5	35·2	13·3	34 52·0	22 34 35·06	− 0·52	− 1·58	− 1·59	− 4·18
	8034	α Pegasi........................	....	75 35	36·7	45·0	53·9	2·1	58 11·0	22 57 53·74	− 0·53	− 1·68	− 1·61	− 4·19
	8065	....	8·0	88 38	3·2	11·5	20·0	28·1	2 36·7	23 2 19·90	− 0·54	....	− 1·61	− 4·31
	8083	....	6·0	33 38	10·3	25·1	40·5	55·3	7 10·6	23 6 40·36	− 0·62	....	− 1·62	− 4·38
	8233	ι Piscium......................	....	85 10	34·9	43·0	51·6	59·8	33 8·2	23 32 51·50	− 0·53	− 1·62	− 1·62	− 4·31
	8247	....	8·0	72 8	15·8	24·2	33·1	41·8	35 50·6	23 35 33·10	− 0·53	....	− 1·63	− 4·23
	8270	....	8·0	86 38	29·5	37·8	46·4	54·4	41 3·0	23 40 46·22	− 0·53	....	− 1·63	− 4·30
	8298	....	....	13 12	14·0	49·8	27·1	2·9	46 40·2	23 45 26·80	− 1·04	....	− 1·64	− 6·70
	8338	....	8·0	28 38	9·2	27·1	44·6	1·7	54 19·5	23 53 44·12	− 0·68	....	− 1·64	− 4·96
	8364	....	7·0	32 16	19·2	34·5	50·5	5·6	58 21·6	23 57 50·32	− 0·63	....	− 1·65	− 4·82
	18	....	7·5	31 8	49·9	6·2	22·5	38·4	3 54·9	0 3 22·38	− 0·65	....	− 1·65	− 4·91
	28	....	....	49 46	6·3	11·0	22·1	32·6	6 43·9	0 6 22·18	− 0·55	....	− 1·65	− 4·12
	68	....	7·0	22 59	23·2	44·2	6·0	27·0	14 49·0	0 14 5·88	− 0·75	....	− 1·66	− 5·57
	83	....	5·5	37 45	13·2	26·8	40·3	54·0	18 7·9	0 17 40·41	− 0·60	....	− 1·66	− 4·71
	98	....	7·0	71 47	4·0	12·5	21·1	29·8	20 38·6	0 20 21·20	− 0·53	....	− 1·67	− 4·20
	133	....	8·5	70 22	9·5	18·2	27·0	35·8	26 44·8	0 26 27·06	− 0·52	....	− 1·67	− 4·28
	149	....	6·0	77 35	29·2	37·8	46·5	51·9	29 3·4	0 28 46·36	− 0·53	....	− 1·67	− 4·26
	259	μ Andromedæ.............	4·0	52 18	45·1	55·9	6·1	16·9	49 27·6	0 49 6·41	− 0·55	....	− 1·69	− 4·49
	288	ε Piscium......................	....	82 54	30·5	38·8	47·3	55·7	56 4·2	0 55 47·30	− 0·53	− 1·74	− 1·70	− 4·21
	360	(a) α Ursæ Minoris........	....	1 26	57·5	25·0	4·5	28·5	20 10·0	1 9 1·10	− 7·05	....	− 1·71	−50·00
	420	θ¹ Ceti..........................	....	98 56	51·2	59·6	8·2	16·4	17 25·0	1 17 8·08	− 0·55	....	− 1·72	− 4·15
Sept. 13	8233	(b) ι Piscium...................	....	85 10	36·9	45·1	53·5	1·7	33 10·2	23 32 53·48	− 0·53	− 3·59	− 3·53	− 4·32
	4	α Andromedæ..............	....	61 43	59·0	8·3	18·0	27·1	1 36·7	0 1 17·82	− 0·54	− 3·52	− 3·55	− 4·32
	26	γ Pegasi........................	....	75 37	53·0	1·4	10·2	18·7	6 27·4	0 6 10·14	− 0·54	− 3·53	− 3·56	− 4·28
	288	ε Piscium......................	....	82 54	32·4	40·5	49·2	57·5	56 6·0	0 55 49·12	− 0·54	− 3·51	− 3·59	− 4·25
	420	θ¹ Ceti..........................	....	98 56	53·2	1·5	9·9	18·2	17 26·5	1 17 9·86	− 0·56	....	− 3·61	− 4·19
	453	η Piscium.....................	....	75 25	51·0	59·4	8·3	16·6	24 25·5	1 24 8·16	− 0·53	− 3·66	− 3·62	− 4·24
Sept. 17	112	(c) 12 Ceti......................	....	94 46	48·9	57·1	5·5	13·8	23 22·3	0 23 5·52	− 0·61	− 6·89	− 6·94	− 4·36
	360	α Ursæ Minoris..........	....	1 26	0·5	29·5	9·0	39·0	20 14·5	1 9 6·50	− 4·72	....	− 6·98	−52·54
	420	θ¹ Ceti..........................	....	98 56	56·5	4·8	13·2	21·6	17 30·1	1 17 13·24	− 0·62	....	− 6·99	− 4·26
	453	η Piscium.....................	....	75 25	54·5	3·0	11·8	20·1	24 29·0	1 24 11·68	− 0·58	− 7·05	− 7·00	− 4·32
	518	ν Piscium......................	....	85 15	4·0	12·2	20·8	29·0	34 37·5	1 34 20·70	− 0·60	− 7·00	− 7·01	− 4·24
Sept. 18	8233	(c) ι Piscium...................	....	85 10	41·0	49·2	57·9	6·1	33 14·6	23 32 57·76	− 0·61	− 7·76	− 7·79	− 4·35
	8270	(d)	8·0	86 38	35·8	44·0	52·5	0·6	41 9·2	23 40 52·42	− 0·61	....	− 7·80	− 4·35
	8298	....	7·0	13 12	19·8	56·0	32·9	9·0	46 46·2	23 45 32·78	− 0·83	....	− 7·80	− 6·78
	8315	....	8·5	82 35	24·1	32·4	41·0	49·2	48 57·7	23 48 40·88	− 0·61	....	− 7·80	− 4·33

(a) Definition bad. (b) Observed by rapper in dome. (c) Observed by Transit Clock.
(d) Observed second of two stars in field of nearly the same magnitude.

Date.	No. in British Association Catalogue.	OBJECT OBSERVED.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R. A. Jan. 1, 1860.
1860				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Sept. 18	8331	ω Piscium	....	83 56	3·4	11·5	20·0	28·3	52 36·9	23 52 20·02	− 0·61	− 7·64	− 7·80	− 4·35
	8350	65 Pegasi	6·5	63 41	46·0	55·2	4·8	13·9	55 23·2	23 55 4·62	− 0·59	....	− 7·80	− 4·33
	8364	....	6·0	32 16	25·1	40·9	56·8	12·0	58 27·9	23 57 56·54	− 0·62	....	− 7·81	− 4·90
	8372	....	....	32 22	39·6	55·1	11·1	26·6	59 42·5	23 59 10·98	− 0·62	....	− 7·81	− 4·91
	4	α Andromedæ	....	61 43	3·4	12·5	22·2	31·5	1 41·1	0 1 22·14	− 0·58	− 7·75	− 7·81	− 4·37
	18	....	7·0	31 8	56·2	12·2	28·8	44·6	4 1·0	0 3 28·56	− 0·61	....	− 7·82	− 5·00
	26	γ Pegasi	....	75 37	57·4	5·9	14·6	23·1	6 31·9	0 6 14·58	− 0·60	− 7·86	− 7·82	− 4·33
	48	....	8·5	76 53	28·2	36·5	45·4	53·9	10 2·6	0 9 45·32	− 0·60	....	− 7·83	− 4·33
	68	....	6·5	22 59	29·5	50·8	12·6	33·6	14 55·2	0 14 12·34	− 0·66	....	− 7·83	− 5·69
	83	....	6·0	37 45	19·3	33·1	46·6	0·0	18 14·0	0 17 46·60	− 0·60	....	− 7·83	− 4·84
	105	....	6·5	13 47	6·6	41·7	17·0	52·0	23 27·2	0 22 16·90	− 0·81	....	− 7·84	− 7·41
	133	....	9·0	70 22	15·6	24·2	33·3	42·0	26 50·9	0 26 33·20	− 0·58	....	− 7·84	− 4·36
	149	....	7·5	77 35	35·6	44·0	52·8	1·1	29 9·8	0 28 52·68	− 0·60	....	− 7·84	− 4·34
	164	ι Andromedæ	6·0	61 29	3·9	13·2	22·8	32·2	31 41·9	0 31 22·80	− 0·57	....	− 7·84	− 4·43
	182	....	6·5	32 3	12·2	27·5	43·5	59·1	35 15·0	0 34 43·46	− 0·61	....	− 7·85	− 5·21
	360	α Ursæ Minoris	....	1 26	2·0	31·0	11·0	39·0	20 14·5	1 9 7·50	− 4·28	....	− 7·87	− 52·92
	420	θ Ceti	....	98 56	57·4	5·7	14·5	22·7	17 31·2	1 17 14·30	− 0·63	....	− 7·88	− 4·27
	453	η Piscium	....	75 25	55·5	3·8	12·8	21·1	21 29·9	1 21 12·62	− 0·59	− 7·97	− 7·89	− 4·33
	518	ο Piscium	....	85 15	5·0	13·2	21·7	30·0	34 38·1	1 34 21·66	− 0·61	− 7·94	− 7·90	− 4·25
Sept. 20	360	α Ursæ Minoris	....	1 26	6·5	37·0	13·0	41·0	20 23·0	1 9 12·10	− 6·58	....	− 9·66	− 53·65
	420	θ Ceti	....	98 56	59·0	7·3	15·9	24·2	17 32·9	1 17 15·86	− 0·53	....	− 9·67	− 4·30
	453	η Piscium	....	75 25	57·1	5·5	14·2	22·9	24 31·6	1 24 14·26	− 0·51	− 9·66	− 9·68	− 4·37
	518	ο Piscium	....	85 15	6·6	14·9	23·4	31·6	34 40·1	1 34 23·32	− 0·51	− 9·67	− 9·69	− 4·29
	577	β Arietis	....	69 54	51·9	0·4	9·2	18·0	47 27·2	1 47 9·34	− 0·51	− 9·70	− 9·70	− 4·41
Sept. 24	68	....	7·0	22 59	35·2	56·2	18·0	39·2	15 0·9	0 14 17·90	− 0·65	....	− 13·52	− 5·76
	98	....	6·5	74 47	15·8	24·1	33·0	41·5	20 50·3	0 20 32·94	− 0·53	....	− 13·53	− 4·40
	112	12 Ceti	....	94 46	55·5	3·6	12·0	20·4	23 29·0	0 23 12·10	− 0·55	− 13·47	− 13·54	− 4·42
	360	α Ursæ Minoris	....	1 26	10·5	41·0	19·0	45·0	20 25·0	1 9 16·10	− 5·36	....	− 13·57	− 54·95
	420	θ Ceti	....	98 56	3·1	11·3	20·0	28·3	17 37·0	1 17 19·94	− 0·55	....	− 13·58	− 4·35
	453	η Piscium	....	75 25	1·1	9·6	18·3	26·8	24 35·5	1 21 18·26	− 0·53	− 13·57	− 13·59	− 4·43
	518	ο Piscium	....	85 15	10·6	19·0	27·5	35·8	34 44·0	1 34 27·34	− 0·53	− 13·61	− 13·60	− 4·35
	648	α Arietis	....	67 14	18·1	26·5	36·1	44·8	59 54·7	1 59 36·04	− 0·52	− 13·69	− 13·61	− 4·54
Sept. 25	7795	γ Aquarii	3·0	92 8	28·4	36·5	45·0	53·1	15 1·9	22 14 44·98	− 0·35	....	− 14·97	− 4·26
	7868	η Aquarii	....	90 53	12·8	20·9	29·3	37·4	28 46·0	22 28 29·28	− 0·36	− 14·98	− 14·98	− 4·30
	7908	ζ Pegasi	....	79 55	31·5	39·9	48·3	56·5	35 5·2	22 34 48·28	− 0·36	− 14·97	− 14·99	− 4·17
	7958	μ Pegasi	3·0	66 11	16·1	25·1	34·4	43·3	43 52·9	22 43 34·36	− 0·38	....	− 15·00	− 4·09
	7970	λ Aquarii	4·0	98 22	21·4	29·6	38·2	46·5	45 55·2	22 45 38·18	− 0·34	....	− 15·00	− 4·45
	7977	....	7·0	88 56	46·2	54·4	3·0	11·1	47 19·5	22 47 2·84	− 0·35	....	− 15·00	− 4·31
	7996	....	6·5	86 58	28·1	36·3	44·9	53·0	51 1·6	22 50 44·78	− 0·35	....	− 15·01	− 4·30
	8024	(a)	6·0	33 40	25·8	40·8	56·0	10·7	56 26·0	22 55 55·86	− 0·57	....	− 15·01	− 4·23
	8034	α Pegasi	....	75 35	49·9	58·1	7·0	15·2	58 24·1	22 58 6·86	− 0·37	− 14·94	− 15·01	− 4·21
	8065	....	7·0	88 38	16·4	24·7	33·2	41·8	2 49·9	23 2 33·06	− 0·35	....	− 15·02	− 4·34
	8083	....	5·0	33 38	23·5	38·2	53·5	8·5	7 24·1	23 6 53·56	− 0·57	....	− 15·03	− 4·36
	8135	....	6·0	46 41	3·9	15·2	27·0	38·2	14 49·9	23 14 26·84	− 0·46	....	− 15·04	− 4·26
	8147	....	6·0	70 14	49·3	58·0	7·1	16·0	16 25·0	23 16 7·08	− 0·38	....	− 15·04	− 4·24
	8204	....	7·0	18 48	3·9	29·5	55·8	21·0	27 47·8	23 26 55·60	− 0·91	....	− 15·05	− 5·39
	8233	ι Piscium	....	85 10	48·1	56·4	4·9	13·1	33 21·6	23 33 4·82	− 0·35	− 15·05	− 15·05	− 4·38
	8247	....	7·5	72 8	28·9	37·4	46·4	55·0	36 3·9	23 35 46·32	− 0·37	....	− 15·05	− 4·30

(a) Double.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R. A. Jan. 1, 1860.
1860.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Sept. 25	8269	....	8·0	86 35	38·8	46·9	55·4	3·8	41 12·1	23 40 55·40	– 0·35	....	– 15·06	– 4·38
	8298	....	7·5	13 12	27·0	3·0	40·0	16·4	46 53·7	23 45 40·02	– 1·23	....	– 15·06	– 6·78
	8364	....	6·5	32 16	32·5	47·8	3·6	18·9	58 35·4	23 58 3·64	– 0·59	....	– 15·07	– 4·94
	4	α Andromedæ............	....	61 43	10·5	19·9	29·2	38·5	1 48·2	0 1 29·26	– 0·40	– 15·00	– 15·07	– 4·42
	42	....	7·0	86 33	49·4	57·5	6·0	14·2	9 22·8	0 9 5·98	– 0·35	....	– 15·08	– 4·40
	57	....	6·5	89 7	39·5	48·0	56·2	4·4	11 13·0	0 10 56·22	– 0·35	....	– 15·08	– 4·41
	105	....	6·5	13 47	14·0	48·9	23·8	59·0	23 34·9	0 22 24·12	– 1·17	....	– 15·10	– 7·57
	360	α Ursæ Minoris.........	....	1 26	......	......	25·0	54·0	20 32·0	1 9 23·14	– 10·41	....	– 15·15	– 55·25
	420	θ Ceti.....................	....	98 56	4·8	12·9	21·5	29·8	17 38·2	1 17 21·44	– 0·34	....	– 15·15	– 4·36
	453	η Piscium.................	....	75 25	2·5	11·0	19·9	28·2	24 37·0	1 24 19·72	– 0·37	– 15·18	– 15·16	– 4·44
	562	....	6·5	39 15	49·8	2·8	16·3	29·1	44 42·6	1 44 16·12	– 0·52	....	– 15·18	– 5·36
	577	β Arietis..................	....	69 54	57·2	5·8	14·9	23·6	47 32·6	1 47 14·82	– 0·38	– 15·22	– 15·18	– 4·60
	620	....	6·5	25 36	55·0	14·2	33·9	52·9	55 12·8	1 54 33·76	– 0·71	....	– 15·19	– 6·54
	648	α Arietis..................	....	67 14	19·6	28·2	37·5	46·2	59 55·6	1 59 37·42	– 0·38	– 15·19	– 15·20	– 4·56
Sept. 26	7958	β Pegasi..................	3·0	66 11	17·8	26·5	35·9	44·9	43 54·2	22 43 35·86	– 0·42	....	– 16·41	– 4·08
	7970	λ Aquarii..................	....	98 22	22·9	31·2	39·8	48·0	45 56·7	22 45 39·72	– 0·40	....	– 16·41	– 4·35
	7977	(a)	....	88 56	47·8	56·0	4·4	12·7	47 21·0	22 47 4·38	– 0·40	....	– 16·42	– 4·31
	7996	....	....	86 58	29·6	38·0	46·2	54·4	51 3·0	22 50 46·24	– 0·40	....	– 16·42	– 4·29
	8091	....	8·0	62 43	10·5	19·7	29·2	38·4	8 48·0	23 8 29·16	– 0·43	....	– 16·43	– 4·18
	8105	γ Piscium.................	....	87 32	59·1	7·2	15·7	24·0	10 32·4	23 10 15·68	– 0·40	– 16·43	– 16·43	– 4·38
	8169	κ Piscium.................	6·0	89 34	50·0	58·2	6·4	14·7	20 23·3	23 20 6·52	– 0·40	– 16·41	– 16·44	– 4·38
	8201	....	7·0	18 48	5·2	30·6	56·8	22·4	27 49·0	23 26 56·80	– 0·86	....	– 16·44	– 5·39
	8233	ι Piscium..................	....	85 10	49·6	57·8	6·3	14·3	33 23·0	23 33 6·20	– 0·40	– 16·37	– 16·45	– 4·39
	8269	....	8·0	86 35	40·1	48·3	56·5	5·0	41 13·4	23 40 56·72	– 0·40	....	– 16·45	– 4·38
	8315	....	7·0	82 35	32·9	41·1	49·5	57·9	49 6·3	23 48 49·51	– 0·40	....	– 16·46	– 4·37
	8331	ω Piscium.................	....	83 56	12·0	20·2	28·8	37·1	52 45·5	23 52 28·72	– 0·40	– 16·51	– 16·47	– 4·39
	8364	....	7·0	32 16	33·9	49·2	5·0	20·6	58 36·5	23 58 5·04	– 0·59	....	– 16·47	– 4·95
	4	α Andromedæ............	....	61 43	12·0	21·2	30·8	40·1	1 49·8	0 1 30·78	– 0·43	– 16·49	– 16·48	– 4·42
Oct. 3	8331	ω Piscium.................	....	83 56	22·9	31·0	39·8	47·9	52 56·4	23 52 39·60	– 0·44	– 27·33	– 27·30	– 4·41
	4	α Andromedæ............	....	61 43	22·[illegible]	32·0	41·6	51·0	2 0·5	0 1 41·58	– 0·45	– 27·24	– 27·31	– 4·45
	26	γ Pegasi..................	....	75 37	16·9	25·2	33·9	42·3	6 51·2	0 6 33·90	– 0·44	– 27·25	– 27·32	– 4·42
	48	....	7·5	76 53	47·8	56·1	4·9	13·1	10 21·9	0 10 4·76	– 0·45	....	– 27·32	– 4·42
	68	....	6·0	22 59	48·8	10·0	31·8	52·9	15 14·6	0 14 31·62	– 0·69	....	– 27·33	– 5·81
	83	....	5·5	37 45	38·9	52·3	6·0	19·4	18 33·9	0 18 6·10	– 0·53	....	– 27·34	– 4·96
	105	....	6·0	13 47	26·0	1·2	36·6	11·0	23 46·8	0 22 36·32	– 0·96	....	– 27·35	– 7·64
	288	ε Piscium..................	....	82 54	56·2	4·4	13·0	21·2	56 29·9	0 56 12·94	– 0·44	....	– 27·38	– 4·47
	360	α Ursæ Minoris.........	....	1 26	27·0	58·0	36·5	3·5	20 45·0	1 9 34·00	– 7·44	....	– 27·39	– 57·18
	453	η Piscium.................	....	75 25	15·0	23·6	32·2	40·8	24 49·5	1 24 32·22	– 0·44	– 27·51	– 27·41	– 4·54
	518	ν Piscium.................	....	85 15	24·6	32·8	41·2	49·4	34 58·0	1 34 41·20	– 0·44	– 27·44	– 27·42	– 4·46
	577	β Arietis..................	....	69 54	9·4	18·1	27·1	36·0	47 45·1	1 47 27·14	– 0·44	– 27·35	– 27·43	– 4·63
	648	α Arietis..................	....	67 14	31·9	40·9	50·0	58·9	0 6·0	1 59 49·04	– 0·44	– 27·51	– 27·44	– 4·70
Oct. 8	112	12 Ceti....................	....	94 46	20·0	28·2	36·6	44·9	23 53·4	0 23 36·62	– 0·41	– 38·06	– 38·14	– 4·49
	360	α Ursæ Minoris.........	....	1 26	42·0	7·0	48·5	17·5	20 56·5	1 9 46·30	– 7·98	....	– 38·21	– 57·96
	420	θ¹ Ceti....................	....	98 56	28·0	36·2	44·6	52·9	18 1·4	1 17 44·62	– 0·41	....	– 38·22	– 4·50
	453	η Piscium.................	....	75 25	25·9	34·2	43·1	51·5	25 0·2	1 24 42·98	– 0·41	– 38·24	– 38·23	– 4·60
	518	ν Piscium.................	....	85 15	35·3	43·6	52·0	0·2	35 8·8	1 34 51·98	– 0·40	– 38·20	– 38·24	– 4·52
	577	β Arietis..................	....	69 54	20·5	29·0	38·2	46·8	47 55·9	1 47 38·08	– 0·41	– 38·25	– 38·25	– 4·70
	648	α Arietis..................	....	67 14	42·8	51·7	0·6	9·8	0 18·9	2 0 0·76	– 0·41	– 38·29	– 38·27	– 4·77

(a) Faint.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations	Correction of Clock observed.	Interpolated.	Correction to Mean R.A. Jan. 1, 1860.
1860.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Oct. 11	8331	(a) ω Piscium	....	83 56	42·0	50·1	58·7	7·0	53 15·4	23 52 58·64	− 0·46	− 46·34	− 46·37	− 4·42
	4	α Andromedæ	....	61 43	41·9	51·1	0·6	10·0	2 19·6	0 2 0·64	− 0·45	− 46·29	− 46·40	− 4·46
	112	12 Ceti	....	94 46	28·4	36·5	45·0	53·2	21 1·9	0 23 45·00	− 0·47	− 46 37	− 46·43	− 4·50
	288	ε Piscium	....	82 54	15·6	24·0	32·2	40·6	56 49·1	0 56 32·30	− 0·46	− 46·19	− 46·46	− 4·53
	360	α Ursæ Minoris	....	1 26	45·5	17·5	55·0	22·5	21 4·0	1 9 52·90	− 5·86	....	− 46·49	− 58·27
	420	θ^1 Ceti	....	98 56	36·3	44·5	53·0	1·3	18 10·0	1 17 53·02	− 0·48	....	− 46·52	− 4·52
	453	η Piscium	....	75 25	34·3	42·6	51·6	0·0	25 8·6	1 24 51·46	− 0·46	− 46·65	− 46·54	− 4·62
Oct. 16	453	(b) η Piscium	....	75 25	49·1	57·2	6·4	14·8	25 23·5	1 25 6·20	− 0·41	− 61·40	− 61·42	− 4·66
	518	ν Piscium	....	85 15	58·8	6·9	15·4	23·5	35 32·0	1 35 15·32	− 0·41	− 61·46	− 61·44	− 4·59
	577	β Arietis	....	69 54	43·8	52·3	1·5	10·1	48 19·2	1 48 1·38	− 0·40	− 61·47	− 61·46	− 4·79
	648	α Arietis	....	67 14	5·9	14·5	21·2	32·9	0 42·2	2 0 23·94	− 0·41	− 61·36	− 61·47	− 4·88
	704	67 Ceti	....	97 6	49·8	58·0	6·7	15·0	11 23·4	2 11 6·58	− 0·42	− 61·59	− 61·49	− 4·52
Oct. 19	288	(c) ε Piscium	....	82 54	37·2	45·6	54·2	2·5	57 11·0	0 56 54·10	− 0·36	....	− 68·57	− 4·56
	360	α Ursæ Minoris	....	1 26	9·0	39·5	19·0	47·0	....	1 10 16·48	− 7·25	....	− 68·60	− 58·52
	577	β Arietis	....	69 54	51·0	59·6	8·6	17·2	48 26·2	1 48 8·52	− 0·35	− 68·63	− 68·63	− 4·82
	837	γ Ceti	....	87 23	0·0	8·1	16·4	24·8	37 33·2	2 37 16·50	− 0·35	− 68·60	− 68·64	− 4·60
	949	α Ceti	....	86 29	54·9	3·0	11·5	19·9	56 58·2	2 56 11·50	− 0·35	− 68·69	− 68·65	− 4·61
	1166	ε Tauri	....	66 21	6·0	14·9	24·1	33·1	40 12·2	3 40 24·06	− 0·36	− 68·63	− 68·70	− 5·02
Oct. 20	420	θ^1 Ceti	....	98 56	0·3	8·6	17·2	25·5	18 34·1	1 18 17·14	− 0·37	− 70·64	− 70·73	− 4·57
	453	η Piscium	....	75 25	58·4	6·8	15·6	24·0	25 32·8	1 25 15·52	− 0·35	− 70·75	− 70·76	− 4·69
	518	ν Piscium	....	85 15	7·9	16·2	24·8	33·0	35 41·5	1 35 24·68	− 0·36	− 70·84	− 70·78	− 4·62
	577	β Arietis	....	69 54	53·0	1·8	10·9	19·4	48 28·4	1 48 10·70	− 0·35	− 70·81	− 70·80	− 4·82
Oct. 24	704	67 Ceti	....	97 6	8·1	16·2	24·8	33·0	11 41·7	2 11 24·76	− 0·37	− 79·75	− 79·73	− 4·59
	760	ξ^2 Ceti	....	82 12	51·2	59·4	8·1	16·2	22 24·9	2 22 7·96	− 0·35	....	− 79·75	− 4·74
	837	γ Ceti	....	87 23	11·1	19·4	27·9	36·1	37 44·5	2 37 27·80	− 0·36	− 79·83	− 79·77	− 4·66
	949	α Ceti	....	86 29	6·1	14·1	22·8	31·0	56 39·4	2 56 22·68	− 0·36	− 79·79	− 79·79	− 4·68
	986	δ Arietis	....	70 50	45·2	53·8	3·0	11·5	5 20·5	3 5 2·80	− 0·35	− 79·73	− 79·80	− 5·00
Nov. 1	288	ε Piscium	....	82 54	6·0	14·2	22·6	31·0	57 39·5	0 57 22·66	− 0·34	− 96·92	− 96·94	− 4·58
	360	α Ursæ Minoris	....	1 26	36·0	4·0	44·0	12·0	21 53·0	1 10 41·80	− 5·44	....	− 96·96	− 57·07
	420	θ^1 Ceti	....	98 56	26·6	34·9	43·5	51·9	19 0·3	1 18 43·41	− 0·37	....	− 96·97	− 4·60
	453	η Piscium	....	75 25	24·7	33·1	42·0	50·4	25 59·0	1 25 41·84	− 0·34	− 97·03	− 96·98	− 4·74
	577	β Arietis	....	69 54	19·2	29·0	37·0	45·9	48 54·8	1 48 36·98	− 0·33	− 97·02	− 97·00	− 4·91
	837	γ Ceti	....	87 23	28·4	36·5	45·0	53·2	38 1·9	2 37 45·00	− 0·35	− 96·96	− 97·06	− 4·74
Nov. 2	288	(d) ε Piscium	....	82 54	8·4	16·8	25·2	33·3	57 42·0	0 57 25·14	− 0·40	− 99·34	− 99·33	− 4·58
	360	α Ursæ Minoris	....	1 26	34·5	4·0	42·5	13·5	21 54·0	1 10 41·70	− 3·12	....	− 99·35	− 56·86
	420	θ^1 Ceti	....	98 56	29·2	37·5	45·9	54·2	19 2·8	1 18 45·92	− 0·45	....	− 99·37	− 4·60
	453	η Piscium	....	75 25	27·1	35·5	44·2	52·8	26 1·6	1 25 44·24	− 0·39	− 99·38	− 99·39	− 4·74
	648	α Arietis	....	67 14	44·0	53·0	2·2	11·0	1 20·2	2 1 2·08	− 0·38	− 99·38	− 99·43	− 5·03
	949	α Ceti	....	86 29	26·0	34·2	42·5	50·8	56 59·3	2 56 42·56	− 0·41	− 99·51	− 99·49	− 4·79
	1420	α Tauri	....	73 48	21·0	29·7	38·5	47·1	29 55·9	4 29 38·44	− 0·39	− 99·56	− 99·58	− 5·05

(a) Definition very bad. Stars unsteady.   (b) Cloudy.   (c) Night stormy, with frequent showers.   (d) Stars diffused and tremulous.

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ROYAL OBSERVATORY, EDINBURGH.

Individual Observations of Mean Right Ascensions of Stars observed at the Royal Observatory, Edinburgh, in the Year 1860, reduced to January 1, 1860.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
B.A.C. 4, α Andromedæ.				
			° ′	h. m. s.
Sept. 6	0·68		61 41	0 1 9·43
7	0·68			9·44
13	0·70			9·41
18	0·71			9·38
25	0·73			9·37
26	0·74	(a)		9·45
Oct. 3	0·76			9·37
11	0·78	(1.)		9·33
B.A.C. 18.				
Sept. 10	0·69	7·0	31 6	0 3 14·97
11	0·70	7·5		15·17
18	0·71	7·0		15·13
B.A.C. 26, γ Pegasi.				
Sept. 7	0·68		75 35	0 6 1·75
13	0·70			1·76
18	0·71			1·83
Oct. 3	0·76	(2.)		1·72
B.A.C. 28.				
Sept. 10	0·69	5·5	49 41	0 6 15·23
11	0·70			15·56
B.A.C. 42.				
Sept. 10	0·69		86 32	0 8 46·25
25	0·73	7·0		46·15
B.A.C. 48.				
Sept. 18	0·71	8·5	76 51	0 9 32·56
Oct. 3	0·76	7·5		32·57
B.A.C. 57.				
Sept. 10	0·69	6·5	89 5	0 10 36·31
25	0·73	6·5		36·38

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
B.A.C. 68.				
			° ′	h. m. s.
Sept. 10	0·69	7·0	22 57	0 13 57·95
11	0·70	7·0		57·90
18	0·71	6·5		58·16
24	0·73	7·0		57·97
Oct. 3	0·76	6·0		57·79
B.A.C. 83.				
Sept. 10	0·69	6·0	37 43	0 17 33·31
11	0·70	5·5		33·44
18	0·70	6·0		33·33
Oct. 3	0·76	5·5		33·27
B.A.C. 98.				
Sept. 10	0·69	7·0	74 45	0 20 14·64
11	0·70	7·0		14·74
24	0·73	6·5		14·48
B.A.C. 105.				
Sept. 18	0·71	6·5	13 45	0 22 0·81
25	0·73	6·5		0·28
Oct. 3	0·76			0·37
B.A.C. 112, 12 Ceti.				
Sept. 17	0·71		94 44	0 22 53·61
24	0·73			53·59
Oct. 8	0·77			53·58
11	0·78	(6.)		53·60
B.A.C. 113.				
Sept. 10	0·69	7·0	85 55	0 22 56·93
B.A.C. 133.				
Sept. 10	0·69	8·0	70 20	0 26 20·52
11	0·70	8·5		20·59
18	0·71	9·0		20·42

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
B.A.C. 149.				
			° ′	h. m. s.
Sept. 10	0·69	6·0	77 33	0 28 39·94
11	0·70	6·0		39·90
18	0·71	7·5		39·90
B.A.C. 164, ε Andromedæ.				
Sept. 18	0·71	6·0	61 27	0 31 9·96
B.A.C. 177.				
Sept. 10	0·69	7·0	81 24	0 33 57·94
B.A.C. 182.				
Sept. 18	0·71	6·5	32 1	0 34 29·79
B.A.C. 197.				
Sept. 10	0·69	6·0	42 54	0 37 40·64
B.A.C. 218, η Cassiopeæ.				
Sept. 10	0·69	4·0	32 56	0 40 39·54
B.A.C. 237.				
Sept. 10	0·69	7·0	67 22	0 44 5·87
B.A.C. 263.				
Sept. 10	0·69	8·0	63 46	0 49 43·15
B.A.C. 288, ε Piscium.				
Sept. 11	0·70		82 52	0 55 40·86
13	0·70			40·74
Oct. 3	0·76			40·65
11	0·78			40·85
19	0·80			40·61
Nov. 1	0·84			40·80
2	0·84	(4.)		40·83

(a) Numbers for the magnitude of a star when in a parenthesis, are the tabular magnitudes from the British Association Catalogue.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
B.A.C. 420, θ Ceti.				
			° '	h. m. s.
Sept. 10	0·69		98 54	1 17 1·45
11	0·70			1·66
13	0·70			1·50
17	0·71			1·37
18	0·71			1·52
20	0·72			1·36
24	0·73			1·46
25	0·73			1·59
Oct. 8	0·77			1·49
11	0·78			1·50
20	0·80			1·47
Nov. 1	0·84			1·50
2	0·84	(3·0)		1·50
B.A.C. 453 η Piscium.				
Sept. 10	0·69		75 22	1 23 59·78
13	0·70			59·77
17	0·71			59·78
18	0·71			59·81
20	0·72			59·70
24	0·73			59·71
25	0·73			59·75
Oct. 3	0·76			59·83
8	0·77			59·74
11	0·78			59·84
16	0·79			59·71
20	0·80			59·72
Nov. 1	0·84			59·78
2	9·84	(4·0)		59·72
B.A.C. 518, ν Piscium.				
Sept. 17	0·71		85 13	1 34 8·85
18	0·71			8·90
20	0·72			8·83
24	0·73			8·86
Oct. 3	0·76			8·88
8	0·77			8·82
16	0·79			8·88
20	0·80	(5·0)		8·92
B.A.C. 562.				
Sept. 25	0·73	6·5	39 13	1 43 55·06
B.A.C. 577. β Arietis.				
			° '	h. m. s.
Sept. 20	0·72		69 53	1 46 54·72
25	0·73			54·76
Oct. 3	0·76			54·64
8	0·77			54·72
16	0·79			54·73
19	0·80			54·72
20	0·80			54·73
Nov. 1	0·84	(3·0)		54·74
B.A.C. 620.				
Sept. 25	0·73	6·5	25 34	1 54 11·32
B.A.C. 648, α Arietis.				
Sept. 24	0·73		67 12	1 59 17·37
25	0·73			17·28
Oct. 3	0·76			17·36
8	0·77			17·31
16	0·79			17·18
Nov. 2	0·84	(2·0)		17·24
B.A.C. 701, 67 Ceti.				
Oct. 16	0·79		97 4	2 10 0·15
24	0·81	(6·0)		0·07
B.A.C. 760, ξ² Ceti.				
Oct. 24	0·81	([illegible]·0)	82 10	2 20 43·12
B.A.C. 837, γ Ceti.				
Oct. 19	0·80		87 21	2 36 2·91
24	0·81			3·01
Nov. 1	0·84	(3·0)		2·85
B.A.C. 949, α Ceti.				
Oct. 19	0·80		86 28	2 54 57·89
24	0·81			57·85
Nov. 2	0·84	(2·5)		57·87
B.A.C. 986, δ Arietis.				
Oct. 24	0·81	(4·0)	70 48	3 3 37·65
B.A.C. 1166, η Tauri.				
			° '	h. m. s.
Oct. 19	0·80	(3·0)	66 20	3 39 9·98
B.A.C. 1420 α Tauri.				
Nov. 2	0·84	(1·0)	73 46	4 27 53·42
B.A.C. 1613, α Aurigæ.				
July 8	0·52	(1·0)	44 9	5 6 21·31
B.A.C. 1681, β Tauri.				
July 8	0·52	(2·0)	61 31	5 17 26·75
B.A.C. 1883, α Orionis.				
July 8	0·52	(1·0	82 37	5 47 35·50
B.A.C. 1958, ν Orionis.				
Jan. 5	0·01		75 13	5 59 34·74
17	0·04	(4·5)		34·75
B.A.C. 2046.				
Jan. 5	0·01	(7·0)	33 39	6 14 36·44
B.A.C. 2163, γ Geminorum.				
Jan. 2	0·00		73 29	6 29 37·35
5	0·01			37·41
6	0·01			37·47
17	0·04	(2·5)		37·42
B.A.C. 2410, δ Geminorum.				
Jan. 5	0·01		67 46	7 11 45·60
6	0·01			45·61
16	0·04			45·61
17	0·04			45·57
25	0·07			45·52
27	0·07	(3·0)		45·58

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension. January 1, 1860.
B.A.C. 2485, α² Geminorum.				
Jan. 2	0·00		57° 48′	7h 25m 39s·83
5	0·01			39·79
6	0·01			39·68
16	0·04			39·70
25	0·07			39·76
July 8	0·52	(1·5)		39·76
B.A.C. 2522, α Canis Minoris.				
Jan. 2	0·00		84 26	7 31 58·32
5	0·01			58·36
16	0·04	(1·0)		58·34
B.A.C. 2555, β Geminorum.				
Jan. 2	0·00		61 38	7 36 44·64
5	0·01			44·56
6	0·01			44·66
16	0·04			44·58
17	0·04			44·52
25	0·07	(2·0)		44·65
B.A.C. 2672, 6 Cancri.				
Jan. 6	0·01		61 49	7 54 54·89
16	0·04			54·82
25	0·07			54·91
Feb. 1	0·08			55·02
6	0·10	(5·5)		54·92
B.A.C. 2862, η Cancri.				
Jan. 16	0·04		60 5	8 24 36·66
17	0·04			36·49
25	0·07			36·45
27	0·07			36·54
Feb. 1	0·08			36·44
6	0·10			36·57
14	0·12	6·0)		36·53
B.A.C. 2971, ι Hydræ.				
Jan. 27	0·07		83 4	8 39 21·47
Feb. 1	0·08			21·48
6	0·10			21·51
14	0·12	4·0)		21·52
B.A.C. 3171, 83 Cancri.				
Jan. 27	0·07		71° 42′	9h 11m 9s·85
Feb. 1	0·08			9·79
6	0·10			9·81
21	0·14	(6·0)		9·77
B.A.C. 3223, α Hydræ.				
Feb. 6	0·10		98 3	9 20 42·27
20	0·14	(2·0)		42·38
B.A.C. 3331, ι Leonis.				
Jan. 27	0·07		65 35	9 37 53·80
Feb. 1	0·08			53·68
6	0·10			53·95
14	0·12			53·97
20	0·14			53·95
Mar. 1	0·16			54·01
7	0·18			53·91
9	0·19			53·85
14	0·20	(3·0)		53·91
B.A.C. 3415, ν Leonis.				
Feb. 14	0·12		81 17	9 52 48·74
21	0·14			48·78
Mar. 2	0·17			48·75
7	0·18			48·77
9	0·19			48·75
12	0·19			48·75
14	0·20	(4·5)		48·67
B.A.C. 3459, α Leonis.				
Feb. 14	0·12		77 21	10 0 54·67
15	0·12			54·73
20	0·14			54·79
21	0·14			54·78
27	0·16			54·89
Mar. 1	0·16			54·86
2	0·17			54·83
7	0·18			54·76
9	0·19			54·74
12	0·19			54·77
14	0·20			54·80
15	0·20	(1·0)		54·84
B.A.C. 3523, γ¹ Leonis.				
Feb. 15	0·12		69° 27′	10h 12m 14s·98
20	0·14			14·98
27	0·16			14·87
Mar. 2	0·17			14·95
12	0·19	(2·0)		14·99
B.A.C. 3609, ρ Leonis.				
Feb. 15	0·12		79 58	10 25 26·16
20	0·14			26·15
27	0·16			26·25
Mar. 1	0·16			26·18
12	0·19			26·17
13	0·20			26·15
15	0·20	(4·0)		26·17
B.A.C. 3708, l Leonis.				
Feb. 15	0·12		78 43	10 41 53·78
21	0·14			53·71
Mar. 13	0·20			53·74
15	0·20			53·81
20	0·22	(6·0)		53·70
B.A.C. 3788, χ Leonis.				
Mar. 2	0·17		81 54	10 57 47·59
15	0·20			47·64
20	0·22			47·58
29	0·24	(4·5)		47·60
B.A.C. 3834, δ Leonis.				
Feb. 15	0·12		68 43	11 6 39·46
21	0·14			39·43
27	0·16			39·51
Mar. 2	0·17			39·46
7	0·18			39·53
9	0·19			39·57
12	0·19			39·59
13	0·20			39·51
15	0·20			39·42
20	0·22			39·49
29	0·24	(2·5)		39·51

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
B.A.C. 3946, υ Leonis.				
			° ′	h. m. s.
Feb. 27	0·16		90 3	11 29 46·84
Mar. 7	0·18			46·66
12	0·19			46·80
13	0·20			46·89
14	0·20			46·85
29	0·24	(4·5)		46·82
B.A.C. 3995, β Leonis.				
Feb. 27	0·16		74 39	11 41 54·97
Mar. 1	0·16			54·89
2	0·17			55·03
7	0·18			54·94
12	0·19			54·97
13	0·20			54·99
14	0·20			55·00
15	0·20			54·93
20	0·22			54·99
27	0·24			54·96
28	0·24	(2·5)		54·88
B.A.C. 4145, γ Virginius.				
Mar. 1	0·16		89 53	12 12 44·59
20	0·22			44·68
27	0·24			44·66
28	0·24	(3·5)		44·67
B.A.C. 4401, θ Virginius.				
Mar. 27	0·24		94 47	13 2 42·22
29	0·24	(4·5)		42·21
B.A.C. 4532, ζ Virginius.				
Mar. 27	0·24		89 53	13 27 33·63
28	0·24			33·77
May 20	0·38	(4·0)		33·63
B.A.C. 4648, η Bootis.				
Mar. 27	0·24		70 54	13 48 1·14
28	0·24			1·12
May 15	0·37			1·14
20	0·38	(3·0)		1·13
B.A.C. 4672, τ Virginius.				
			° ′	h. m. s.
May 16	0·37	(4·5)	87 46	13 54 31·38
B.A.C. 4729, α Bootis.				
May 9	0·35		70 5	14 9 16·60
16	0·37			16·63
20	0·38	(1·0)		16·66
B.A.C. 4808, ρ Bootis.				
May 3	0·34		59 1	14 25 47·79
9	0·35			47·78
15	0·37			47·72
16	0·37			47·75
17	0·38			47·69
20	0·38	(4·0)		47·78
B.A.C. 4876, ε Bootis.				
May 3	0·34		62 20	14 38 52·30
9	0·35			52·37
15	0·37			52·41
17	0·38			52·26
June 18	0·46	(3·0)		52·40
B.A.C. 4969, ψ Bootis.				
May 15	0·37		62 30	14 58 26·84
19	0·38			26·84
30	0·41	(5·0)		26·99
B.A.C. 5034, β Libræ.				
May 19	0·38	(2·5)	98 52	15 9 28·61
B.A.C. 5143, α Coronæ Borealis.				
May 3	0·34		62 49	15 28 45·75
9	0·35			45·65
15	0·37			45·70
16	0·37			45·66
19	0·38			45·71
30	0·41	(2·5)		45·76
B.A.C. 5196, α Serpentis.				
May 3	0·34		83 8	15 37 22·39
9	0·35			22·45
16	0·37			22·45
B.A.C. 5916, α Serpentis.				
			° ′	h. m. s.
May 17	0·38		83 8	15 37 22·58
19	0·38			22·42
30	0·41	(2·5)		22·36
B.A.C. 5414, δ Ophiuchi.				
May 3	0·34		93 20	16 7 0·66
15	0·37			0·66
17	0·38			0·68
21	0·39			0·61
30	0·41			0·60
June 20	0·47			0·65
24	0·48			0·68
July 1	0·50	(3·0)		0·61
B.A.C. 5604, ζ Herculis.				
May 15	0·37		58 8	16 36 0·55
17	0·38			0·59
21	0·39			0·57
25	0·40			0·57
30	0·41			0·62
31	0·41			0·50
June 24	0·48			0·55
25	0·48			0·49
July 1	0·50	(3·0)		0·54
B.A.C. 5708, κ Ophiuchi.				
May 25	0·40		80 24	16 51 2·58
30	0·41			2·54
31	0·41			2·53
June 24	0·48			2·59
25	0·48			2·58
July 1	0·50	(4·0)		2·58
B.A.C. 5821, α Herculis.				
May 21	0·39		75 27	17 8 15·88
25	0·40			15·72
30	0·41			15·87
31	0·41			15·90
June 18	0·46			15·85
20	0·47			15·78
24	0·48			15·85
25	0·48			15·88
July 1	0·50	(3·5)		15·87

B.A.C. 5941, α Ophiuchi.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
May 21	0·39		77° 20′	17h 28m 26s·19
25	0·40			26·27
30	0·41			26·13
31	0·41			26·23
June 18	0·46			26·20
25	0·48			26·22
July 1	0·50			26·26
11	0·53	(2·0)		26·32

B.A.C. 6021, μ Herculis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
May 21	0·39		62 11	17 40 58·87
25	0·40			58·85
31	0·41			58·88
June 18	0·46			58·83
20	0·47			58·86
July 11	0·53			58·85
15	0·54	(4·0)		58·99

B.A.C. 6355, α Lyræ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
July 7	0·51		51 21	18 32 11·89
15	0·54			11·87
20	0·55	(1·0)		11·96

B.A.C. 6429, β Lyræ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
June 18	0·46		56 48	18 44 54·67
20	0·47			54·65
July 7	0·51			54·68
15	0·54			54·71
17	0·54			54·73
20	0·55	(3·0)		54·69

B.A.C. 6528, ζ Aquilæ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
June 20	0·47		76 22	18 58 58·58
July 7	0·51			58·47
17	0·54			58·54
20	0·55	(3·0)		58·44

B.A.C. 6595, ω Aquilæ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
July 17	0·54		78 41	19 11 14·61
20	0·55	(5·0)		14·64

B.A.C. 6646, δ Aquilæ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
July 17	0·54		87° 10′	19h 18m 26s·30
20	0·55	(3·5)		26·24

B.A.C. 6772, γ Aquilæ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
July 11	0·53		79 44	19 39 36·18
17	0·54			36·12
20	0·55	(3·0)		36·16

B.A.C. 6802, α Aquilæ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
July 11	0·53	(1·5)	81 31	19 43 57·03

B.A.C. 6833, β Aquilæ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
July 11	0·53	(3·5)	83 56	19 48 26·09

B.A.C. 7256, 32 Vulpeculæ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Aug. 27	0·65		62 28	20 48 35·64
28	0·66	(4·5)		35·55

B.A.C. 7368, ζ Cygni.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Aug. 27	0·65		60 21	21 6 58·73
28	0·66			58·70
Sept. 6	0·68	(3·0)		58·70

B.A.C. 7478, β Aquarii.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Aug. 27	0·65		96 11	21 24 11·12
Sept. 6	0·68	(3·0)		11·17

B.A.C. 7561, ε Pegasi.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Aug. 27	0·65		80 46	21 37 18·61
28	0·66	(2·5)		18·58

B.A.C. 7627, 16 Pegasi

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 6	0·66	(5·5)	64 44	21 46 41·73

B.A.C. 7688, α Aquarii.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 6	0·68		91 0	21 58 35·53
10	0·69	(3·0)		35·51

B.A.C. 7773, θ Aquarii.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 6	0·68		98° 29′	22h 9m 26s·53
11	0·70	(4·5)		26·60

B.A.C. 7795, γ Aquarii.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 25	0·73	(3·0)	92 6	22 14 25·40

B.A.C. 7868, η Aquarii.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 10	0·69		90 51	22 28 9·70
11	0·70			9·63
25	0·73	(4·0)		9·64

B.A.C. 7908, ζ Pegasi.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Aug. 28	0·66		79 54	22 34 28·78
Sept. 6	0·68			28·75
10	0·69			28·72
11	0·70			28·77
25	0·73	(3·0)		28·76

B.A.C. 7958, μ Pegasi.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 25	0·73		66 8	22 43 14·89
26	0·74	(4·0)		14·95

B.A.C. 7970, λ Aquarii.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 25	0·73		98 20	22 45 18·39
26	0·74	(4·0)		18·56

B.A.C. 7977.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 25	0·73		88 54	22 46 43·18
26	0·74	(7·5)		43·25

B.A.C. 7996.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 25	0·73		86 56	22 50 25·12
26	0·74	(6·0)		25·13

B.A.C. 8024.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 25	0·73	(6·5)	33 39	22 55 36·05

B.A.C. 8034, α Pegasi.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
			° ′	h. m. s.
Sept. 6	0·68		75 33	22 57 47·30
7	0·68			47·33
10	0·69			47·27
11	0·70			47·41
25	0·73	(2·0)		47·27

B.A.C. 8065.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 10	0·69		88 37	23 2 13·32
11	0·70			13·44
25	0·73	(7·5)		13·37

B.A.C. 8083.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 10	0·69		33 36	23 6 33·66
11	0·70			33·74
25	0·73	(6·0)		33·60

B.A.C. 8091.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 26	0·74	(7·0)	62 41	23 8 8·12

B.A.C. 8105, γ Piscium.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 7	0·68		87 29	23 9 54·46
10	0·69			54·40
26	0·74	(4·5)		54·47

B.A.C. 8135.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 25	0·73	(6·0)	46 39	23 14 7·08

B.A.C. 8147.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 25	0·73	(6·5)	70 12	23 15 47·42

B.A.C. 8169, κ Piscium.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
			° ′	h. m. s.
Sept. 7	0·68		89 31	23 19 45·41
26	0·74	(5·5)		45·30

B.A.C. 8204.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 10	0·69		18 46	23 26 34·38
25	0·73			34·25
26	0·74	(7·0)		34·11

B.A.C. 8233, ι Piscium.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Aug. 28	0·66		85 10	23 32 45·04
Sept. 6	0·68			45·05
7	0·68			45·01
10	0·69			45·05
11	0·70			45·04
13	0·70			45·10
18	0·71			45·01
25	0·73		85 8	45·04
26	0·74	(4·5)		44·96

B.A.C. 8247.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 11	0·70		72 7	23 35 26·71
25	0·73	(7·5)		26·60

B.A.C. 8269.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 25	0·73		86 33	23 40 35·61
26	0·74	(8·0)		35·49

B.A.C. 8270.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 11	0·70		86 36	23 40 39·76
18	0·71	(8·5)		39·66

B.A.C. 8272.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 10	0·69	(7·0)	82 32	23 41 3·34

B.A.C. 8298.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
			° ′	h. m. s.
Sept. 11	0·70		13 10	23 45 17·42
18	0·71			17·37
25	0·73	(7·0)		16·95

B.A.C. 8315.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 10	0·69		82 33	23 48 28·19
18	0·71			28·14
26	0·74	(7·0)		28·31

B.A.C. 8331, ω Piscium.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 18	0·71		83 55	23 52 7·26
26	0·74			7·46
Oct. 3	0·76			7·45
11	0·78	(4·5)		7·39

B.A.C. 8338.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 10	0·69		28 36	23 53 36·88
11	0·70	(7·0)		37·14

B.A.C. 8350.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 18	0·71	(6·0)	63 39	23 54 51·90

B.A.C. 8364.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 11	0·70		32 15	23 57 43·22
18	0·71			43·21
25	0·73			43·04
26	0·74	(7·0)		43·03

B.A.C. 8372.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1860.
Sept. 10	0·69		32 21	23 58 57·74
18	0·71	(6·5)		57·64

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EXPLANATION OF THE EDINBURGH TRANSIT OBSERVATIONS FOR 1860; AND THEIR METHODS OF REDUCTION.

Pages 1 to 12 contain the Transit Observations of stars for 1860, similarly with those for 1849, where the methods of reduction are more fully described; the variable data for the present year being as below.

The star observations were taken almost wholly by Mr Alexander Wallace, M.A., the First Assistant Astronomer. They were actually more numerous than here recorded, because, with a view chiefly to economy in printing, all days of observation with less than four standard stars have been struck out; also parts of a day far removed from the chief observing hours of the night; also those periods of the year when either the Instrumental corrections were uncertain, or the Clock going very badly. The said observations, however, had been already computed in our MS. books, and have often served useful temporary purposes, as for approximate clock-corrections and instrumental errors.

The Micrometer observations for instrumental corrections have, on the other hand, always been taken by the Astronomer, and he has also decided on the quantities for computation to be adopted for each day of star observation.

Intervals of the Wires.

From 15 observations of α Ursæ Minoris, above and below the Pole, in the year 1860, the intervals of the wires and their Equatorial distances from their mean or middle point were found to be, the star being above the Pole,—

		s.	
Wire	I.	+ 16·624	Equatorial
...	II.	+ 8·400	
...	III.	− 0·034	
...	IV.	− 8·246	
...	V.	− 16·745	

These values, immaterially different from those of 1859, have been employed in the reductions throughout the year; using for Polaris (whose Declination varied between 88° 33′ 44″ and 88° 34′ 34″) the following quantities or those adopted to a declination of 88° 34′, with the amount of alteration due to each additional second of Declination added under the term n'',—

		m.	s.			Declination 88° 34′
Wire	I.	+ 11	4·82	+ n'' ×	·131	
...	II.	+ 5	35·86	+ n ×	·066	
...	III.	− 0	1·33			
...	IV.	− 5	29·70	− n ×	·065	
...	V.	− 11	9·69	− n ×	·131	

and for δ Ursæ Minoris (whose Declination varied between 86° 35′ 42″ and 86° 36′ 23″) the following quantities, or those adapted to a declination of 86° 36′,

with the amount of alterations due to each additional second of Declination added under the term n'',—

			m.	s.		s.		s.	
Wire	I.	+	4	40·32	+	n	×	·023	Declination 86° 36′
...	II.	+	2	21·66	+	n	×	·012	
...	III.	−	0	0·62					
...	IV.	−	2	19·06	−	n	×	·012	
...	V.	−	4	42·36	−	n	×	·023	

The correction generally for the imperfect transit of a star, whose North Polar Distance is not very small, being

$$= \frac{\text{Sum of Equatorial intervals for the Wires observed}}{\text{Number of Wires}} \times \text{cosecant of Stars N.P.D.},$$

this quantity being applied to the mean of whatever wires were observed.

With close Polar stars, the *Sine* is used in place of the *Arc*.

The signs and order of the Wires are to be changed when the star is below the Pole.

In the column entitled "Reduction to the Mean of the Wires," either the simple arithmetical mean of the Wires—if 5 were observed—is entered; or, if a less number, the reduced mean according to the method already explained and the quantities above given.

CORRECTIONS FOR INSTRUMENTAL DEVIATIONS.

These deviations are three in number, and are severally termed, Collimation error, Level error, and Azimuth error.

The Collimation error is the deviation of the line joining the optical centre of the object-glass and the Mean of the Wires, from the plane perpendicular to the axis of rotation; and is *mechanically* positive, or is positive as a correction for all objects at all altitudes both above and below the horizon, when the object-glass deviates to the east of the said plane:—0s·012, the diurnal aberration, is included, for practical convenience, in the sum representing the collimation.

The Level error is the angle of inclination of the axis of rotation to the horizon, measured in a vertical plane; and is mechanically positive, as a correction, for all objects above the horizon, negative for those below, when the Western end is higher than the other.

The Azimuthal error is the angle of deviation of the axis of rotation (presumed approximately horizontal) from the East and West line, measured in a horizontal plane; and is mechanically positive as a correction for all objects South of the Zenith, or Nadir, and negative for those North of the same, when the Western end of said axis deviates towards the South.

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COLLIMATION AND LEVEL ERRORS.

These are determined, as explained in former years, by special observations made from time to time with the collimating eye-piece, and by measuring micrometrically the distance between the Middle wire and its reflected image in reversed positions of the transit-instrument's axis.

For dates between the epochs of observation, the errors have been assumed to vary as the time, except where the readings of the earth-thermometers, as noticed in the Introduction, have indicated a modification thereof to be probably desirable.

AZIMUTHAL ERROR.

Of the three usual methods for determining the azimuthal position of a transit-instrument; viz. by a Polar star combined with an Equatorial star, by two successive transits of a Polar star above and below the Pole, or by three consecutive transits of a Polar star, the first plan has alone been adopted; for although the two latter have the advantage of being independent of the Right Ascension assumed for the stars, yet they can only be employed with safety when the stability of the instrument can be depended on through the twelve or twenty-four hours during which the observations extend.

Now grave doubts had long existed on this head, and, as set forth both in the Introduction to this volume and the Report to the Board of Visitors for 1870, towards the end of the volume, see pp. R 50 to R 57, have since been proved to be only too well founded. The following therefore is the formula which has always been adopted, enabling, for each transit of a Polar star observed, a comparatively instantaneous determination of the Azimuthal error then to be made:

$$\text{Azimuthal error} = \frac{\text{R.A. 1st} \ast - \text{R.A. 2d} \ast - (\text{obs. tr. 1st} \ast - \text{obs. tr. 2d} \ast) - \text{clock's loss in the interval}}{\left(\dfrac{\sin \text{Z.D. South}}{\sin \text{N.P.D.}} \text{1st} \ast\right) - \left(\dfrac{\sin \text{Z.D. South}}{\sin \text{N.P.D.}} \text{2d} \ast\right)}$$

In the course of the year 29 combinations of either α, or δ, Ursæ Minoris and a Clock star were obtained, from which the Azimuth error at these epochs was computed, and for dates between them the error was made to vary nearly as the time, modified in some cases by the temperature and the annual curve shown in Plate III.

TABLE I.

ADOPTED INSTRUMENTAL CORRECTIONS, EXPRESSED IN SECONDS OF TIME FOR CONVENIENCE OF APPLICATION TO TIME OBSERVATIONS.

Date.	Collimation.	Level.	Azimuth.
1860.	s.	s.	s.
Jan. 2	−0·[illegible]	+0·03	+0·18
5	−0·03	+0·04	+0·20
6	−0·03	+0·05	+0·23
10	−0·03	+0·08	+0·20
16	−0·03	+0·12	+0·15
17	−0·03	+0·12	+0·22
25	−0·02	+0·13	+0·20
27	−0·02	+0·14	+0·20
Feb. 1	−0·[illegible]	+0·15	+0·20
6	−0·02	+0·14	+0·20
13	−0·02	+0·12	+0·20
14	−0·02	+0·12	+0·18
15	−0·02	+0·12	+0·18
20	−0·02	+0·10	+0·17
21	−0·02	+0·10	+0·17
24	−0·02	+0·09	+0·16
27	−0·03	+0·08	+0·15
28	−0·03	+0·08	+0·15
March 1	−0·03	+0·08	+0·14
2	−0·03	+0·07	+0·13
5	−0·03	+0·07	+0·12
7	−0·03	+0·06	+0·11
9	−0·03	+0·06	+0·10
10	−0·03	+0·06	+0·09
12	−0·03	+0·05	+0·08
13	−0·03	+0·05	+0·07
14	−0·03	+0·05	+0·06
15	−0·03	+0·04	+0·03
20	−0·03	+0·03	+0·02
22	−0·03	+0·02	+0·01
25	−0·03	+0·02	−0·01
26	−0·03	+0·01	−0·06
27	−0·03	+0·01	−0·07
28	−0·03	+0·01	−0·07
29	−0·[illegible]	+0·01	−0·07
30	−0·[illegible]	+0·01	−0·08
April 6	−0·04	+0·01	−0·09
8	−0·04	+0·01	−0·10
9	−0·04	+0·01	−0·11
10	−0·04	+0·01	−0·12
11	−0·04	0·00	−0·13
16	−0·03	−0·01	−0·15
19	−0·03	−0·01	−0·17
21	−0·03	−0·02	−0·18
24	−0·03	−0·02	−0·20

Date.	Collimation.	Level.	Azimuth.
1860.	s.	s.	s.
April 25	−0·03	−0·02	−0·22
27	−0·03	−0·02	−0·23
May 1	−0·03	−0·03	−0·24
3	−0·03	−0·03	−0·25
6	−0·03	−0·05	−0·26
8	−0·03	−0·06	−0·27
9	−0·03	−0·07	−0·28
11	−0·03	−0·08	−0·30
14	−0·03	−0·08	−0·31
15	−0·03	−0·08	−0·33
16	−0·03	−0·08	−0·35
17	−0·03	−0·08	−0·36
19	−0·03	−0·08	−0·38
20	−0·03	−0·08	−0·39
21	−0·03	−0·08	−0·40
25	−0·03	−0·08	−0·42
30	−0·02	−0·08	−0·44
31	−0·02	−0·08	−0·47
June 7	−0·02	−0·08	−0·48
8	−0·02	−0·08	−0·50
12	−0·02	−0·09	−0·52
[illegible]	−0·01	−0·09	−0·55
19	−0·01	−0·09	−0·50
20	−0·01	−0·09	−0·47
24	−0·01	−0·09	−0·43
25	−0·01	−0·09	−0·40
28	−0·01	−0·10	−0·37
July 1	−0·01	−0·10	−0·35
2	−0·01	−0·10	−0·32
5	−0·01	−0·10	−0·30
7	−0·01	−0·10	−0·27
8	−0·01	−0·10	−0·30
11	−0·01	−0·11	−0·30
15	−0·01	−0·11	−0·30
17	−0·01	−0·12	−0·33
20	−0·01	−0·12	−0·36
29	−0·01	−0·13	−0·35
31	−0·01	−0·13	−0·33
Aug. 2	−0·01	−0·13	−0·33
4	−0·01	−0·14	−0·30
6	−0·01	−0·14	−0·30
25	−0·01	−0·13	−0·30
26	−0·01	−0·14	−0·30

Date.	Collimation.	Level.	Azimuth.
1860.	s.	s.	s.
Aug. 27	−0·01	−0·14	−0·31
28	−0·01	−0·14	−0·31
29	−0·01	−0·14	−0·31
Sept. 6	−0·22	−0·14	−0·33
7	−0·22	−0·14	−0·34
10	−0·22	−0·13	−0·38
11	−0·22	−0·13	−0·29
13	−0·22	−0·13	−0·30
17	−0·22	−0·12	−0·38
18	−0·22	−0·12	−0·40
20	−0·22	−0·11	−0·28
22	−0·22	−0·11	−0·30
24	−0·22	−0·10	−0·32
25	−0·22	−0·10	−0·09
26	−0·22	−0·10	−0·15
27	−0·22	−0·10	−0·17
Oct. 2	−0·22	−0·09	−0·20
3	−0·22	−0·09	−0·21
5	−0·22	−0·08	−0·20
8	−0·22	−0·08	−0·17
11	−0·22	−0·07	−0·25
16	−0·22	−0·05	−0·20
18	−0·22	−0·05	−0·16
19	−0·22	−0·04	−0·14
20	−0·22	−0·03	−0·15
22	−0·22	−0·03	−0·16
24	−0·22	−0·02	−0·16
Nov. 1	−0·22	0·00	−0·16
2	−0·22	+0·01	−0·25
5	−0·22	+0·01	−0·23
8	−0·22	+0·02	−0·21
13	−0·22	+0·03	−0·19
16	−0·22	+0·03	−0·17
19	−0·22	+0·03	−0·15
27	−0·22	+0·07	−0·13
28	−0·22	+0·07	−0·11
Dec. 5	−0·22	+0·08	−0·10
11	−0·22	+0·09	−0·08
13	−0·22	+0·09	−0·08
15	−0·22	+0·09	−0·08
17	−0·22	+0·09	−0·08
25	−0·22	+0·10	−0·05
26	−0·22	+0·10	−0·05

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The correction to the star observations of times of Transit, for each of the above three instrumental deviations successively, is,

$$\text{Collimation correction} \times \frac{1}{\text{sin Star's North Polar Distance}},$$

the sign being positive for a star above the Pole, and negative when it crosses the Meridian below the Pole.

$$\text{Level correction} \times \frac{\text{cos Star's Zenith Distance South}}{\text{sin Star's North Polar Distance}},$$

the sign being positive for a star above the Pole, and negative when it crosses the Meridian below the Pole. And

$$\text{Azimuthal correction} = \frac{\text{sin Star's Zenith Distance South}}{\text{sin Star's North Polar Distance}},$$

the sign being positive for a star above the Pole *and* to the South of the Zenith, also for a star below the Pole and North of the Zenith; but negative when above the Pole and to the North of the Zenith.

CORRECTION OF THE CLOCK.

For computing the errors of the Clock and the Azimuthal errors of the Transit Instrument, the following Table of the Mean Right Ascensions of the principal stars for January 1, 1859, has been employed, and was kindly communicated at the time by G. B. Airy, Esq., Astronomer Royal, as being the same employed by him for reducing the Greenwich Observations of 1860.

TABLE II.

MEAN RIGHT ASCENSIONS ADOPTED OF STANDARD STARS.

Star's Name.	Assumed Mean Right Ascension, January 1, 1860	Correction to Nautical Almanac.	Approximate North Polar Distance.	Star's Name.	Assumed Mean Right Ascension, January 1, 1860.	Correction to Nautical Almanac.	Approximate North Polar Distance.
	h. m. s.	s.	° ′		h. m. s.	s.	° ′
α Andromedæ	0 1 9·44	+0·06	61 42	β Arietis	1 46 54·72	+0·01	69 53
γ Pegasi	0 6 1·70	+0·05	75 36	α Arietis	1 59 17·29	+0·03	67 13
12 Ceti	0 22 53·66	−0·02	94 45	67 Ceti	2 10 0·05	−0·01	97 5
ε Andromedæ	0 31 9·83	....	61 28	ξ 2 Ceti	2 20 43·13	0·00	82 11
β Ceti	0 36 33·61	+0·08	108 46	γ Ceti	2 36 2·95	+0·05	87 22
μ Andromedæ	0 48 59·54	....	52 16	ε Arietis	2 43 45·98	....	75 30
ε Piscium	0 55 40·82	+0·01	82 53	α Ceti	2 54 57·85	+0·08	86 28
β Andromedæ	1 1 54·19	....	55 8	δ Arietis	3 3 37·73	0·00	70 49
Polaris	1 8 2·19	−0·42	1 27	ε Tauri	3 17 17·03	....	81 28
θ Ceti	1 17 1·56	+0·06	98 55	f Tauri	3 23 8·89	....	77 33
η Piscium	1 23 59·73	0·00	75 23	11 Tauri	3 32 24·93	....	65 8
ν Piscium	1 34 8·86	−0·01	85 14	η Tauri	3 39 10·05	+0·02	66 20

Star's Name.	Assumed Mean Right Ascension, January 1, 1860.	Correction to Nautical Almanac.	Approximate North Polar Distance.	Star's Name.	Assumed Mean Right Ascension, January 1, 1860.	Correction to Nautical Almanac.	Approximate North Polar Distance.
	h. m. s.	s.	° ′		h. m. s.	s.	° ′
γ Eridani	3 51 29·91	+0·06	103 55	ν Leonis	11 29 46·84	−0·03	90 2
ω¹ Tauri	4 1 0·89	....	70 46	β Leonis	11 41 54·99	+0·06	74 38
o² Eridani	4 5 2·00	+0·01	97 13	π Virginis	11 53 41·67	....	82 36
γ Tauri	4 11 49·79	....	74 43	ε Corvi	12 2 55·75	0·00	111 50
ε Tauri	4 20 26·70	0·00	71 8	η Virginis	12 12 41·58	−0·02	89 53
Aldebaran	4 27 53·44	+0·01	73 47	δ Corvi	12 22 37·52	....	105 43
μ¹ Eridani	4 38 30·24	....	93 31	β Corvi	12 27 2·31	+0·11	112 37
ι Aurigæ	4 47 52·84	−0·03	57 4	δ Virginis	12 48 33·15	....	85 50
ε Leporis	4 59 32·10	+[illegible]·05	112 34	θ Virginis	13 2 42·21	+0·01	94 47
Rigel	5 7 48·66	+0·04	98 22	Spica	13 17 49·28	+0·04	100 25
β Tauri	5 17 26·68	+0·06	61 31	ζ Virginis	13 27 33·70	−0·01	89 52
δ Orionis	5 24 51·34	0·00	90 24	τ Bootis	13 40 36·57	....	71 50
α Leporis	5 26 33·40	0·00	107 56	η Bootis	13 48 1·14	+0·05	70 53
ε Orionis	5 29 6·63	+0·03	91 18	τ Virginis	13 54 31·38	+0·01	87 46
α Columbæ	5 34 34·88	−0·06	124 9	κ Virginis	14 5 25·89	....	99 37
α Orionis	5 47 35·59	+0·02	82 37	Arcturus	14 9 16·62	+0·06	70 5
ε Geminorum	5 55 36·58	....	60 44	ρ Bootis	14 25 47·75	−0·03	59 0
ν Orionis	5 59 34·66	−0·07	75 13	ε Bootis	14 38 52·38	+0·07	62 20
η Geminorum	6 6 25·66	....	67 27	α Libræ	14 43 8·35	+0·06	105 27
μ Geminorum	6 14 29·46	+0·01	67 25	ψ Bootis	14 58 26·67	0·00	62 30
β Canis Majoris	6 16 32·[illegible]	....	107 [illegible]	β Libræ	15 9 28·60	+0·02	98 51
γ Geminorum	6 29 37·44	0·00	73 29	σ² Libræ	15 15 13·50	....	104 37
Cephei 51	6 33 39·37	+2·13	2 45	α Coronæ	15 28 45·69	+0·08	62 48
Sirius	6 38 58·64	−0·19	106 31	α Serpentis	15 37 22·44	+0·07	83 7
θ Canis Majoris	6 47 41·13	....	101 52	ε Serpentis	15 43 50·39	....	85 6
ε Canis Majoris	6 53 7·48	+0·03	118 47	γ Serpentis	15 49 59·34	....	73 52
γ Canis Majoris	6 57 25·50	0·00	105 26	β¹ Scorpii	15 57 18·06	+0·02	109 25
δ Geminorum	7 11 45·58	+0·02	67 46	δ Ophiuchi	16 7 0·68	+0·05	93 20
β Canis Majoris	7 19 33·42	....	81 26	γ Herculis	16 15 44·75	....	70 31
Castor	7 25 39·73	0·00	57 48	Antares	16 20 49·67	−0·01	116 7
Procyon	7 31 58·36	+0·12	84 25	ζ Ophiuchi	16 29 27·17	....	100 16
Pollux	7 36 44·65	0·00	61 38	ζ Herculis	16 36 0·54	0·00	58 8
ξ Navis	7 43 24·34	....	114 30	κ Ophiuchi	16 51 2·57	−0·03	80 24
6 Cancri	7 54 54·91	−0·[illegible]	61 49	η Ophiuchi	17 2 21·03	....	105 33
15 Argûs	8 1 34·94	+0·01	113 54	α Herculis	17 8 15·88	+0·06	75 27
β Cancri	8 8 55·21	....	80 23	θ Ophiuchi	17 13 24·82	+0·02	114 51
η Cancri	8 24 36·45	0·00	69 5	σ Ophiuchi	17 19 34·18	....	85 44
γ Cancri	8 35 10·70	....	68 1	α Ophiuchi	17 28 26·17	+0·03	77 20
ι Hydræ	8 39 21·58	−0·01	83 4	β Ophiuchi	17 36 33·43	....	85 22
α Cancri	8 50 49·59	....	77 35	μ Herculis	17 40 58·84	+0·04	62 12
κ Cancri	9 [illegible] 9·67	....	78 45	72 Ophiuchi	18 0 42·75	....	80 27
83 Cancri	9 11 9·75	+0·08	71 42	μ Sagittarii	18 5 23·41	+0·03	111 6
α Hydræ	9 20 42·43	+0·03	98 3	η Serpentis	18 14 3·93	....	92 56
o Leonis	9 33 40·49	....	79 28	δ Ursæ Minoris	18 17 30·50	+0·09	3 24
ε Leonis	9 37 53·90	+0·02	65 34	λ Sagittarii	18 19 19·78	....	115 30
μ Leonis	9 44 47·76	....	63 19	α Lyræ	18 32 11·91	+0·06	51 21
π Leonis	9 52 48·72	−0·03	81 17	β Lyræ	18 44 54·67	+0·08	56 48
Regulus	10 0 54·76	+0·01	77 20	ε Aquilæ	18 53 16·10	....	75 7
γ¹ Leonis	10 12 14·95	0·00	69 27	ζ Aquilæ	18 58 58·49	+0·10	76 21
ρ Leonis	10 25 26·24	+0·02	79 58	ω Aquilæ	19 11 14·64	−0·01	78 39
34 Sextantis	10 35 23·63	....	85 40	δ Aquilæ	19 18 26·32	+0·04	87 10
l Leonis	10 41 53·71	0·00	78 42	α Vulpeculæ	19 22 52·81	....	65 57
d Leonis	10 53 19·74	....	85 37	μ Aquilæ	19 27 14·97	....	82 55
χ Leonis	10 57 47·62	+0·01	81 52	κ² Sagittarii	19 28 10·95	+0·05	115 12
δ Leonis	11 6 39·51	+0·03	68 42	γ Aquilæ	19 39 30·19	+0·05	79 44
δ Crateris	11 12 20·63	+0·07	104 1	α Aquilæ	19 43 57·12	+0·05	81 30
τ Leonis	11 20 44·19	....	86 22	β Aquilæ	19 48 26·16	+0·07	83 57

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Star's Name.	Assumed Mean Right Ascension, January 1, 1860.	Correction to Nautical Almanac.	Approximate North Polar Distance.	Star's Name.	Assumed Mean Right Ascension, January 1, 1860.	Correction to Nautical Almanac.	Approximate North Polar Distance.
	h. m. s.	s.	° ′		h. m. s.	s.	° ′
c Sagittarii	19 54 2·60	....	118 6	δ Capricorni	21 39 18·55	....	106 46
θ Aquilæ	20 4 4·78	....	91 14	16 Pegasi	21 46 41·62	0·00	64 44
λ Ursæ Minoris	20 3 54·76	+0·28	1 7	α Aquarii	21 58 35·49	+0·04	91 0
α¹ Capricorni	20 10 16·99	+0·02	102 59	ι Pegasi	22 0 29·70	....	65 21
β Capricorni	20 13 8·50	....	105 14	θ Aquarii	22 9 26·59	−0·01	98 29
ρ Capricorni	20 20 52·20	+0·03	108 17	γ Aquarii	22 14 25·43	....	92 6
ε Delphini	20 26 31·42	....	79 11	η Aquarii	22 28 9·64	0·00	90 51
α Delphini	20 33 8·12	....	74 35	ζ Pegasi	22 34 28·78	+0·05	79 55
ε Aquarii	20 40 5·62	....	100 1	μ Pegasi	22 43 14·90	....	66 9
32 Vulpeculæ	20 48 35·62	0·00	62 29	λ Aquarii	22 45 18·42	....	98 20
θ Capricorni	20 58 4·33	....	107 48	Fomalhaut	22 49 54·38	+0·01	120 22
ζ Cygni	21 6 58·73	+0·05	60 21	α Pegasi	22 57 47·34	+0·03	75 33
α Equulei	21 8 49·44	....	85 20	γ Piscium	23 9 54·47	+0·01	87 30
ι Capricorni	21 14 26·76	....	107 26	κ Piscium	23 19 45·33	−0·01	89 31
β Aquarii	21 24 11·16	+0·04	96 12	ι Piscium	23 32 45·04	+0·02	85 9
ξ Aquarii	21 30 17·74	....	98 29	δ Sculptoris	23 41 37·71	+0·03	118 55
ι Pegasi	21 37 18·57	0·00	80 46	ω Piscium	23 52 7·42	0·00	83 55

The Mean Right Ascensions are converted into Apparent for any day of observation, by the application of the reductions of mean to apparent places taken from the Nautical Almanac. The Correction of the Clock is determined from the observed transits of the stars in the foregoing Table (excepting the close Polar stars), the correction of the instrument being previously applied, compared with the Apparent Right Ascensions computed.

The Corrections of the Clock thus determined are contained in the column entitled "Correction of Clock observed."

The sign + prefixed to the Correction of the Clock denotes that the clock is slow; the sign − that it is fast.

On account partly of the variability at times of the Clock-rate, and still more frequently of swerving in the azimuthal position of the Instrument as produced by changes of temperature acting on its supporting stone piers during the observations, the "Adopted Clock Corrections" have been generally obtained by graphical projection, and the stars of each night have been used as much by themselves as with reference to those of preceding and following nights.

At the same time, to afford a tabular view, in the usual manner, of the march of the Clock, its daily errors at 0^h Sidereal Time, as given more or less approximately by the curves, are contained in the following Table.

TABLE III.

CORRECTION OF TRANSIT CLOCK AT 0^h SIDEREAL TIME.

Date.	Clock's Correction.
1860.	s.
Jan. 2	+ 23·48
5	+ 24·17
6	+ 24·70
10	+ 28·00
16	+ 32·21
17	+ 33·01
25	+ 36·80
27	+ 38·00
Feb. 1	+ 41·22
6	+ 45·39
13	+ 51·33
14	+ 52·33
15	+ 53·41
20	+ 57·31
21	+ 58·18
27	+ 62·53
(a)	....
28	+ 2·93
March 1	+ 4·50

Date.	Clock's Correction.
1860.	s.
March 2	+ 5·35
5	+ 7·92
7	+ 10·00
9	+ 12·09
12	+ 14·33
13	+ 15·07
14	+ 15·84
15	+ 16·59
(b)	....
20	+ 21·05
22	+ 22·33
25	+ 23·94
26	+ 25·00
27	+ 25·61
28	+ 26·41
29	+ 27·06
30	+ 27·59
April (c)	....
May 3	+ 23·10

Date.	Clock's Correction.
1860.	s.
(d)	....
May 9	+ 3·74
11	+ 3·02
15	+ 2·38
16	+ 1·98
17	+ 1·76
19	+ 1·75
20	+ 1·85
21	+ 2·00
25	+ 2·00
30	− 0·34
31	− 0·90
June 18	− 7·23
19	− 7·23
20	− 7·34
24	− 7·26
25	− 7·33
28	− 7·35
July 1	− 7·54

Date.	Clock's Correction.
1860.	s.
July 2	− 7·40
7	− 6·85
8	− 6·60
11	− 6·70
15	− 7·13
17	− 7·47
20	− 8·60
Aug. 4	− 13·38
5	− 13·70
(e)	....
27	+ 6·15
28	+ 5·32
Sept. 6	+ 0·71
7	+ 0·73
10	− 0·75
11	− 1·65
13	− 3·55
17	− 6·93

Date.	Clock's Correction.
1860.	s.
Sept. 18	− 7·81
20	− 9·62
22	− 11·24
24	− 13·51
25	− 15·07
26	− 16·48
Oct. 3	− 27·31
8	− 38·10
11	− 46·40
16	− 61·28
18	− 66·27
19	− 68·50
20	− 70·60
22	− 75·62
24	− 79·50
Nov. 1	− 96·85
2	− 99·23
(f)	....

(a) Put the Clock's minute hand forward 1 minute.
(b) The electrical "rapper" for sounding the seconds of the clock loudly not acting well.
(c) A Pulkova-pendulum, or grid-iron pendulum of zinc and steel, made by M. Brauer, instrumental artist in the Imperial Russian Observatory at Pulkova, and highly approved of there for its compensating action during large and rapid variations of temperature, was applied to the Brisbane-Clock during this month in place of the steel and mercurial pendulum by Dent. Experiments with the electrical rapper still going on.
(d) Adjusted Pendulum for rate.
(e) A new contact maker applied to the Transit Clock.
(f) The value of all the subsequent observations of this year destroyed by the violently bad rates of the Clock; caused apparently by want of temperature compensation. Altered the amount of such compensation frequently by shifting the pins in the rods of steel and zinc.

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ROYAL OBSERVATORY, EDINBURGH.

OBSERVATIONS

MADE WITH

THE MURAL CIRCLE,

AND

CALCULATION

OF

APPARENT NORTH POLAR DISTANCES.

1860.

ROYAL OBSERVATORY, EDINBURGH.

OBSERVATIONS WITH THE MURAL CIRCLE AT THE ROYAL OBSERVATORY, EDINBURGH, IN THE YEAR 1860.

Date.	Star or other Object Observed. No. in British Association Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. (Max. = 10.)	Est. Value of Observations. (Max. = 10.)	Apparent Zenith Distance South.	Correction to Mean N. Polar Distance, Jan. 1, 1860.
1860.				h. m. s.	° '	' "	"	revols.	inches.	°	°				° ' "	"
Jan. 6	......	Nadir ‖	......	6 10 0	214 0	2 32·9	42·9	10·000	29·62	38·1	34·7	......	......	......	......	......
	......	Nadir ‖	......	......	214 0	2 39·2	48·8	10·000	......	......	......	......	......	......	......	......
	2238	......	6·0	6 43 24	66 10	3 26·7	28·3	10·231	29·62	......	34·0	3, N.W.	10	6	+32 10 54·0	+ 3·2
	2292	......	6·0	6 53 7	79 5	4 51·0	55·1	10·000	29·62	......	33·8	......	......	5	+45 7 13·9	+ 2·3
	2334	......	6·5	7 1 10	39 55	3 55·0	57·5	10·231	29·62	......	33·6	......	......	4	+ 5 56 21·9	+ 2·6
	2463	......	6·0	7 19 52	62 5	4 13·7	15·9	10·651	29·62	......	33·2	3, N.W.	......	6	+28 6 52·6	+ 0·7
	2488	......	7·0	7 26 17	43 25	5 44·0	45·0	10·190	29·62	......	32·9	......	......	5	+ 9 28 9·2	+ 0·1
	2586	......	6·5	7 41 10	61 25	1 47·4	47·1	10·000	29·62	......	32·7	......	......	4	+27 24 7·0	− 0·9
	2683	......	6·0	7 56 33	70 40	5 0·0	0·0	10·550	29·62	......	32·5	......	......	6	+36 42 35·5	− 1·4
	2748	(a)	7·0	8 4 25	75 30	3 57·2	60·0	10·111	29·62	......	32·5	......	......	6	+41 31 22·3	− 1·5
	2867	......	6·5	8 24 56	79 25	1 45·7	48·6	10·000	29·62	......	32·6	6, N.W.	9	6	+45 24 8·3	− 2·2
	......	Nadir ‖	......	8 29 0	214 0	2 33·8	42·3	10·000	......	35·7	32·8	......	......	......	......	......
	......	Nadir ‖	......	......	214 0	2 39·8	48·1	10·000	......	......	......	......	......	......	......	......
Jan. 10	......	Nadir ‖	......	5 44 0	214 0	2 32·1	42·1	10·000	......	37·9	31·0	......	......	......	......	......
	......	Nadir ‖	......	......	214 0	2 37·9	47·7	10·000	......	......	......	......	......	......	......	......
	2060	(b)	7·0	6 15 49	85 15	4 2·6	6·0	10·000	29·98	......	30·8	......	......	4	+51 16 26·0	+ 3·0
	2184	......	7·0	6 32 46	73 25	2 40·0	43·9	10·000	29·98	......	30·4	......	......	6	+39 25 3·1	+ 3·3
	2292	......	6·0	6 52 43	79 5	4 51·7	54·7	10·000	29·98	......	30·3	1, N.W.	10	5	+45 7 14·0	+ 1·9
	2363	(c)	7·0	7 5 23	65 0	2 31·1	35·7	10·000	29·98	......	30·2	......	......	4	+30 59 54·1	+ 1·7
	2463	......	7·0	7 19 28	62 5	4 30·4	33·4	10·000	29·97	......	30·9	......	......	5	+28 6 52·1	+ 0·8
	2737	......	7·0	8 2 36	74 55	1 35·7	39·3	10·224	29·97	......	31·0	......	......	4	+40 54 5·1	− 1·8
	......	Nadir ‖	......	8 30 0	214 0	2 33·6	42·1	10·000	......	33·3	31·1	......	......	......	......	......
	......	Nadir ‖	......	......	214 0	2 37·7	46·9	10·000	......	......	......	......	......	......	......	......
Jan. 13	......	Nadir ‖	......	5 45 0	214 0	2 32·2	42·2	10·000	......	38·8	37·4	......	......	......	......	......
	......	Nadir ‖	......	......	214 0	2 38·1	47·9	10·000	......	......	......	......	......	......	......	......
	2184	(d)	7·0	6 32 28	73 25	2 38·5	43·7	10·000	29·81	......	36·4	5, W.	5	4	+39 25 2·2	+ 1·7
	2292	(e)	......	6 52 26	79 5	4 49·6	54·0	10·000	29·81	......	36·2	......	......	3	+45 7 13·2	+ 3·1
Jan. 16	......	Nadir ‖	......	7 11 0	214 0	2 32·0	41·9	10·000	......	40·1	37·1	......	......	......	......	......
	......	Nadir ‖	......	......	214 0	2 38·2	47·7	10·000	......	......	......	......	......	......	......	......
	2488	......	6·0	7 25 16	43 25	5 46·8	50·4	10·000	29·67	......	37·0	......	......	5	+ 9 28 8·5	+ 1·4
	2586	(f)	......	7 41 9	61 25	1 38·5	40·2	10·334	29·68	......	37·0	3, W.N.W.	7	3	+27 24 9·1	− 0·7
	2688	(g)	7·5	7 56 55	62 0	4 3·8	5·8	10·000	29·68	......	37·0	......	......	3	+28 1 25·0	− 1·9
	2761	......	6·5	8 6 26	76 30	5 58·2	62·0	10·000	29·68	......	37·0	6, W.N.W.	......	4	+42 28 21·5	− 2·4
	2867	......	6·0	8 24 55	79 25	1 33·7	37·4	10·423	29·68	......	36·9	......	......	5	+45 24 9·0	− 3·3
	2988	......	7·5	8 42 34	34 30	1 44·7	47·4	10·000	29·68	......	36·7	......	......	4	+ 0 29 5·8	− 6·3
	3083	......	......	8 55 22	38 35	2 21·4	24·8	10·059	29·68	......	36·6	......	......	5	+ 4 34 44·7	− 7·6
	3133	......	6·0	9 4 46	85 30	2 18·4	22·3	10·437	29·68	......	36·6	......	......	6	+51 29 54·4	− 4·6
	......	Nadir ‖	......	9 9 0	214 0	2 33·1	41·9	10·000	......	......	......	......	......	......	......	......
	......	Nadir ‖	......	......	214 0	2 38·9	49·0	10·000	......	37·2	36·6	......	......	......	......	......

(a) Wind increasing rapidly. (b) Definition bad. Larger star observed. (c) Thin clouds floating about near the surface of the earth, rendering definition imperfect. (d) Definition bad (e) Sky cloudy. (f) Stars scarcely visible at time of transit. (g) Definition very bad.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1860.
				h m s	° '	' "	"	revols.	inches.	°	°				° ' "	"
1860. Jan. 17	......	Nadir	......	6 0 0	214 0	2 32.2	42.8	10.000	......	36.0	33.0	....	......	......	....	......
	......	Nadir	......	....	214 0	2 37.8	49.0	10.000	......	......	......	....	......	......	....	......
	2184	....	7.0	6 33 5	73 25	2 35.1	40.2	10.159	29.65	......	33.0	....	10	5	+39 25 3.1	+ 3.0
	2238	(a)	......	6 43 17	66 10	3 20.2	24.0	10.341	29.65	......	33.0	....	......	4	+32 10 52.2	+ 3.2
	2306	....	6.0	6 55 39	78 45	4 47.0	50.4	10.000	29.65	......	33.0	....	......	5	+44 47 10.1	+ 1.3
	2410	δ Geminorum	3.5	7 11 32	67 45	0 3.3	5.4	10.222	29.65	......	33.0	....	......	6	+33 42 31.6	+ 1.1
	2522	α Canis Minoris	......	7 31 45	84 20	3 49.3	53.4	10.318	29.63	......	33.0	....	......	6	+50 21 22.0	− 0.7
	2586	....	10.0	7 41 4	61 25	1 45.3	47.7	10.000	29.63	......	33.0	....	......	4	+27 24 6.8	− 0.7
	2683	....	6.0	7 56 26	70 45	0 9.7	13.4	10.103	29.61	......	32.5	....	......	......	+36 42 35.6	− 1.9
	2761	....	9.0	8 6 21	76 30	0 51.7	58.3	10.067	29.61	......	32.5	....	......	5	+12 28 19.9	− 2.5
	2867	....	7.0	8 24 49	79 25	1 37.2	41.8	10.259	29.61	......	32.9	....	......	6	+45 24 8.3	− 3.4
	2971	ι Hydræ	......	8 39 6	83 0	3 7.1	9.9	10.000	29.61	......	33.3	....	......	......	+49 0 30.2	− 3.9
	3053	....	8.0	8 49 55	80 0	3 33.9	38.7	10.000	29.61	......	33.2	....	......	5	+46 0 57.8	− 4.7
	3133	....	6.5	9 4 40	85 30	2 29.0	33.9	10.000	29.61	......	33.7	....	......	6	+51 29 53.3	− 4.8
	......	Nadir	......	9 10 0	214 0	2 32.4	42.1	10.000	......	36.8	32.8	....	......	......	....	......
	......	Nadir	......	....	214 0	2 37.9	47.5	10.000	......	......	......	....	......	......	....	......
Jan. 20	......	Nadir	......	6 7 0	214 0	2 32.9	42.5	10.000	......	37.8	37.1	....	......	......	....	......
	......	Nadir	......	....	214 0	2 37.6	47.4	10.000	......	......	......	....	......	......	....	......
	2083	....	6.0	6 19 55	16 10	2 24.7	29.0	10.000	29.01	......	37.0	3, W.	10	4	−17 50 13.2	+11.8
	2184	....	7.0	6 32 46	73 25	2 34.9	39.0	10.241	29.01	......	36.9	....	......	7	+39 25 4.8	+ 2.9
	2238	....	6.5	6 42 59	66 10	3 27.5	30.9	10.173	29.01	......	36.8	....	......	6	+32 10 54.6	+ 3.2
	2463	(b)	9.5	7 19 27	62 5	4 30.0	33.9	10.050	29.00	......	36.9	....	......	3	+28 6 53.6	+ 1.0
	2488	....	6.0	7 25 53	43 25	5 48.0	51.4	10.000	29.00	......	36.9	....	......	4	+ 9 28 9.6	+ 2.0
	2737	....	6.5	8 2 35	74 55	1 38.7	42.2	10.233	29.00	......	36.9	7, W.	10	6	+40 54 8.2	− 2.5
Jan. 31	......	Nadir	......	6 40 0	214 0	2 32.7	42.5	10.000	......	36.8	30.9	....	......	......	....	......
	......	Nadir	......	....	214 0	2 37.8	48.0	10.000	......	......	......	....	......	......	....	......
	2363	....	7.5	7 4 20	65 0	2 34.5	38.1	10.000	29.42	......	31.0	....	......	4	+30 59 57.1	+ 2.0
	2522	α Canis Minoris	1.0	7 31 23	84 20	3 46.8	49.6	10.463	29.43	......	29.4	....	......	6	+50 21 23.1	− 2.2
	2688	....	7.0	7 56 28	62 0	3 56.7	59.4	10.197	29.43	......	29.4	....	......	5	+28 1 24.1	− 1.5
	2748	(c)	8.0	8 3 56	75 30	3 57.6	62.1	10.129	29.43	......	28.8	....	......	4	+41 31 24.8	− 3.1
Feb. 1	......	Nadir	......	7 0 0	214 0	2 32.0	41.9	10.000	......	34.7	31.8	....	......	......	....	......
	......	Nadir	......	....	214 0	2 38.1	47.3	10.000	......	......	......	....	......	......	....	......
	2410	δ Geminorum	3.0	7 11 6	67 40	5 2.2	5.6	10.200	29.78	......	32.0	2, N.W.	8	7	+33 42 30.2	+ 1.2
	2463	....	8.0	7 19 18	62 5	4 21.3	24.3	10.350	29.78	......	32.0	....	......	6	+28 6 53.0	+ 1.5
	2488	....	6.0	7 25 43	43 30	0 45.4	48.4	10.000	29.78	......	32.0	....	......	5	+ 9 28 6.7	+ 3.7
	2688	....	7.5	7 56 23	62 0	3 51.7	54.8	10.422	29.78	......	32.0	....	......	5	+28 1 25.4	− 1.4
	2748	....	7.0	8 3 52	75 30	3 57.1	60.9	10.146	29.78	......	32.0	7.5, N.W.	9	6	+41 31 24.5	− 3.2
	2867	....	6.0	8 24 22	79 25	1 44.6	48.1	10.077	29.78	......	32.0	....	......	6	+45 24 10.2	− 4.6
	2988	....	8.0	8 42 1	34 30	1 36.3	38.9	10.199	29.78	......	32.0	10	......	5	+ 0 29 3.0	− 3.4
	3083	....	6.0	8 54 49	38 35	2 12.0	14.7	10.269	29.77	......	31.6	12	......	5	+ 4 34 40.8	− 5.1
	3133	....	6.0	9 4 12	85 30	2 24.7	27.6	10.253	29.77	......	31.4	....	......	5	+51 29 55.1	− 6.8
	3242	θ Ursæ Majoris	......	9 22 51	37 40	1 13.4	14.9	10.311	29.77	......	31.4	....	......	7	+ 3 38 42.7	− 8.1
	3336	....	5.0	9 38 6	82 35	2 42.8	45.0	10.262	29.77	......	31.4	....	......	6	+48 35 13.0	− 8.6
	......	Nadir	......	9 46 0	214 0	2 33.3	42.6	10.000	......	32.4	31.4	11, N.W.	10	......	....	......
	......	Nadir	......	....	214 0	2 37.9	48.0	10.000	......	......	......	....	......	......	....	......

(a) Definition very bad. Stars much blurred.

(b) Almost invisible at time of transit.

(c) Not well seen. Definition imperfect.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1860.
1860.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Feb. 6	......	Nadir ‖	......	7 37 0	214 0	2 33·0	42·9	10·000	......	36·0	31·0	......	......	......	......	
	......	Nadir ‖	......	......	214 0	2 37·7	47·8	10·000	......	......	......	......	......	......	......	......
	2683	......	7·0	7 55 30	70 40	4 57·8	59·1	10·552	29·75	......	30·9	3. W.	......	6	......	− 1·2
	2958	......	7·5	8 41 31	34 30	1 42·4	45·2	10·000	29·75	......	30·8	......	......	4	+ 0 29 3·5	− 2·4
	3053	......	6·0	8 49 58	80 0	3 24·8	27·8	10·367	29·75	......	30·8	......	......	5	+46 0 58·1	− 6·1
	3223	α Hydræ	2·0	9 20 31	98 0	1 10·9	13·7	10·311	29·75	......	30·9	......	......	7	+63 58 43·3	− 7·6
	3438	......	8·0	9 57 17	84 15	2 52·9	55·0	10·444	29·75	......	31·0	......	......	6	+50 15 28·1	− 9·9
	......	Nadir ‖	......	10 9 0	214 0	2 33·1	41·4	10·000	......	33·2	31·0	......	......	......	......	......
	......	Nadir ‖	......	......	214 0	2 38·2	47·9	10·000	......	......	......	......	......	......	......	......
Feb. 14	......	Nadir ‖	......	8 40 0	214 0	2 33·7	42·4	10·000	......	33·0	32·0	......	......	......	......	......
	......	Nadir ‖	......	......	214 0	2 39·3	48·2	10·000	......	......	......	......	......	......	......	......
	3083	......	6·0	8 55 32	38 35	2 18·5	20·9	10·000	30·36	......	32·0	5, N.W.	9	5	+ 4 34 39·2	− 2·8
	3223	(a) α Hydræ	7·0	9 20 44	98 0	1 17·9	20·1	10·000	30·36	......	32·0	......	......	3	+63 58 41·1	− 8·9
	3331	(b) ε Leonis	3·0	9 37 57	65 30	4 31·6	34·3	10·000	30·36	......	32·1	......	......	4	+31 31 53·3	− 9·2
	3592	......	8·0	10 22 32	87 45	1 9·0	12·2	10·000	30·36	......	32·0	......	......	4	+53 43 32·2	−11·7
	......	Nadir ‖	......	10 55 0	214 0	2 33·1	41·0	10·000	......	32·9	32·0	......	......	......	......	......
	......	Nadir ‖	......	......	214 0	2 39·1	49·1	10·000	......	......	......	......	......	......	......	......
Feb. 15	......	Nadir ‖	......	7 53 0	214 0	2 33·2	42·8	10·000	......	35·8	41·1	......	......	......	......	......
	......	Nadir ‖	......	......	214 0	2 39·0	48·7	10·000	......	......	......	......	......	......	......	......
	2748	......	......	8 4 28	75 30	3 54·3	58·8	10·285	30·11	......	41·0	7, W.	8	5	+41 31 25·3	− 3·5
	......	Nadir ‖	......	8 40 0	214 0	2 33·0	43·2	10·000	30·11	35·7	41·0	......	......	......	......	......
	......	Nadir ‖	......	......	214 0	2 39·1	46·9	10·000	......	......	......	......	......	......	......	......
Feb. 17	......	Nadir ‖	......	8 29 0	214 0	2 32·0	42·2	10·000	......	37·9	37·2	......	......	......	......	......
	......	Nadir ‖	......	......	214 0	2 38·8	48·9	10·000	......	......	......	......	......	......	......	......
	3053	......	6·0	8 49 52	80 0	3 25·0	29·3	10·381	30·22	......	37·2	......	......	5	+46 0 59·1	− 7·0
	3083	......	7·0	8 55 13	38 35	2 17·5	22·0	10·000	30·22	......	37·2	4, N.W.	10	3	+ 4 34 39·3	− 2·2
	3242	δ Ursæ Majoris	2·0	9 23 15	37 40	1 16·9	19·9	10·000	30·22	......	37·1	......	......	6	+ 3 36 37·9	− 5·3
	3331	ε Leonis	2·0	9 37 57	65 30	4 20·9	24·0	10·370	30·22	......	37·0	......	......	6	+31 31 53·0	− 9·1
	3438	......	9·0	9 57 10	84 15	3 1·1	4·5	10·123	30·20	......	36·7	......	......	4	+50 15 27·7	−10·9
	3520	......	6·5	10 12 55	82 50	0 55·7	58·1	10·249	30·20	......	36·7	......	......	5	+48 48 25·2	−11·7
Feb. 20	......	Nadir ‖	......	8 25 0	214 0	2 32·1	42·1	10·000	29·42	36·2	34·2	......	......	......	......	......
	......	Nadir ‖	......	......	214 0	2 39·3	49·1	10·000	......	......	......	......	......	......	......	......
	3053	......	6·0	8 49 33	80 0	3 28·1	32·8	10·281	29·41	......	34·6	4. N.N.W.	9	4	+46 0 59·6	− 7·1
	3133	......	6·0	9 4 19	85 30	2 22·1	26·0	10·421	29·41	......	34·6	......	......	6	+51 29 57·3	− 5·5
	3242	δ Ursæ Majoris	2·0	9 22 58	37 40	1 17·8	19·8	10·000	29·41	......	34·6	......	......	6	+ 3 38 38·4	− 4·7
	3336	......	5·0	9 38 12	82 35	2 46·9	49·4	10·270	29·41	......	34·0	......	......	7	+48 35 17·2	−10·0
	3375	......	8·5	9 44 43	54 20	1 14·4	17·0	10·297	29·41	......	34·0	......	......	4	+20 18 43·7	− 8·6
	3431	(c)	10·0	9 55 33	56 50	2 3·7	6·3	10·000	29·41	......	34·0	......	......	2	+22 49 24·8	− 9·8
	3520	......	6·5	10 12 38	82 50	0 57·9	59·7	10·190	29·41	......	34·0	......	......	5	+48 48 25·6	−11·9
	......	Nadir ‖	......	10 20 0	214 0	2 32·0	42·1	10·000	......	35·2	34·0	......	......	......	......	......
	......	Nadir ‖	......	......	214 0	2 38·8	49·0	10·000	......	......	......	......	......	......	......	......
Feb. 21	......	Nadir ‖	......	8 46 0	214 0	2 33·9	43·3	10·000	......	36·3	31·0	......	......	......	......	......
	......	Nadir ‖	......	......	214 0	2 38·8	48·1	10·000	......	......	......	......	......	......	......	......
	3133	(d)	6·0	9 4 13	85 30	2 34·8	38·0	10·000	29·65	......	31·0	......	......	5	+51 29 58·0	− 8·6
	3331	ε Leonis	3·0	9 37 15	65 30	4 29·7	33·1	10·092	29·65	......	31·[illegible]	......	10	7	+31 31 54·4	− 9·0
	3592	......	8·0	10 21 50	87 45	1 3·1	7·1	10·168	29·65	......	30·7	......	......	4	+53 43 31·5	−12·4

(a) Scarcely seen at time of transit. Clouds increasing. (b) Definition bad. Stars unsteady. (c) Scarcely visible. (d) Aurora in N.W. extending to Zenith.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1860.
1860.				h m s	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Feb. 21	3726	....	7·0	10 44 21	88 10	2 46·0	49·8	10·000	29·65	......	30·1	....	......	6	+54 10 9·6	−13·3
	3780	....	9·0	10 55 44	81 35	3 58·8	61·7	10·000	29·65	......	30·0	....	......	4	+47 36 21·7	−14·2
	3836	....	9·0	11 6 2	86 55	1 55·1	58·1	10·173	29·65	......	30·0	....	......	4	+52 54 23·1	−14·2
	......	Nadir	......	11 11 0	214 0	2 32·7	42·3	10·000	......	34·8	30·0	....	......	......	....	......
	......	Nadir	......	....	214 0	2 37·7	47·1	10·000	......	......	......	....	......	......	....	......
Feb. 22	......	Nadir	......	8 19 0	214 0	2 32·4	42·6	10·000	......	36·1	37·0	....	......	......	....	......
	......	Nadir	......	....	214 0	2 39·0	49·0	10·000	......	......	......	....	......	......	....	......
	3053	....	7·5	8 49 22	80 0	3 35·7	40·2	10·000	29·65	......	37·2	6, W.	9	4	+46 0 59·3	− 7·2
	3086	(a)	8·0	8 55 8	30 5	1 8·1	11·1	10·000	29·65	......	37·2	....	...	3	− 3 56 30·8	+ 0·1
	......	Nadir	......	9 10 0	214 0	2 32·6	42·3	10·000	......	37·0	37·0	....	......	......	....	......
	......	Nadir	......	....	214 0	2 39·9	48·8	10·000	......	......	......	....	......	......	....	......
Feb. 24	......	Nadir	......	8 36 0	214 0	2 32·0	42·3	10·000	29·62	39·0	40·8	....	......	......	....	......
	......	Nadir	......	....	214 0	2 39·4	49·3	10·000	......	......	......	....	......	......	....	......
	3726	(b)	6·5	10 44 2	88 10	2 41·2	46·3	10·164	29·62	......	40·0	10, W.	......	5	+54 10 10·1	−13·6
Feb. 27	......	Nadir	......	9 0 0	214 0	2 32·1	43·3	10·000	......	30·2	38·3	....	......	......	....	......
	......	Nadir	......	....	214 0	2 37·1	47·3	10·000	......	......	......	....	......	......	....	......
	3242	θ Ursæ Majoris......	3·0	9 23 17	37 40	1 8·1	12·1	10·198	29·04	......	38·0	15, N.W.	10	5	+ 3 38 35·6	− 3·3
	3336	....	4·0	9 36 30	82 35	2 48·1	52·2	10·170	29·04	......	38·0	....	......	6	+48 35 16·9	−10·4
	3427	(c)	9·0	9 55 34	56 40	0 26·0	29·0	10·031	29·04	......	38·0	18, N.W.	10	4	+22 37 48·7	− 9·0
	3484	....	8·0	10 5 53	57 50	2 34·1	36·0	10·223	29·04	......	38·0	....	......	3	+23 50 1·5	−10·1
	3529	....	8·0	10 12 56	82 50	0 54·8	56·4	10·460	29·04	......	38·0	....	......	3	+48 48 30·2	−12·3
	3592	....	7·0	10 22 15	87 45	1 11·9	16·0	10·000	29·04	......	37·7	....	......	4	+53 43 36·0	−12·3
	3780	....	9·0	10 56 8	81 35	1 1·8	4·1	10·000	29·04	......	37·5	....	......	3	+47 36 24·8	−14·5
	3834	δ Leonis...........	2·0	11 6 23	68 40	2 5·4	8·9	10·236	29·04	......	37·5	....	......	5	+34 39 34·6	−15·2
	3869	....	7·0	11 14 53	71 45	2 6·2	9·0	10·321	29·04	......	37·5	....	......	5	+37 44 37·5	−15·7
	......	Nadir	......	11 40 0	214 0	2 32·9	42·4	10·000	......	37·3	37·3	....	......	......	....	......
	......	Nadir	......	....	214 0	2 38·0	47·5	10·000	......	......	......	....	......	......	....	......
Feb. 29	......	Nadir	......	8 50 0	214 0	2 32·2	42·1	10·000	......	38·1	36·1	....	......	......	....	......
	......	Nadir	......	....	214 0	2 38·0	47·8	10·000	......	......	......	....	......	......	....	......
	3133	....	6·5	9 4 26	85 30	2 24·1	27·7	10·390	29·63	......	36·1	3, S.W.	7	6	+51 29 58·6	− 9·0
	3157	....	7·0	9 9 22	29 35	3 1·6	5·9	10·000	29·63	......	36·0	....	......	5	− 4 24 36·2	+ 0·2
	3223	α Hydræ...........	2·0	9 20 14	98 0	1 12·1	16·4	10·360	29·63	......	35·9	....	......	7	+63 58 46·7	−11·2
	3325	....	7·0	9 36 29	26 5	1 24·4	28·2	10·033	29·63	......	35·9	....	......	5	− 7 56 12·7	− 2·4
	3375	....	8·0	9 44 49	54 20	1 17·9	20·8	10·085	29·63	......	35·9	....	......	4	+20 18 41·8	− 7·6
	3528	....	4·0	10 13 46	6 10	4 30·8	36·2	10·000	29·63	......	35·9	....	......	5	−27 18 6·1	− 3·9
	3996	....	6·0	11 41 29	84 0	0 54·4	58·0	10·301	29·63	......	35·8	4, S.W.	6	5	+49 58 26·5	−16·5
	......	Nadir	......	11 51 0	214 0	2 31·7	42·5	10·000	......	37·0	35·8	....	......	......	....	......
	......	Nadir	......	....	214 0	2 37·4	48·4	10·000	......	......	......	....	......	......	....	......
March 2	......	Nadir	......	8 50 0	214 0	2 32·7	42·9	10·000	......	38·9	35·8	....	......	......	....	......
	......	Nadir	......	....	214 0	2 38·0	48·4	10·000	......	......	......	....	......	......	....	......
	3133	(d)	6·0	9 4 14	85 30	2 25·0	29·7	10·338	29·55	......	36·0	5, W.	9	7	+51 29 58·6	− 9·1
	3438	....	6·5	9 56 49	81 15	2 56·3	59·5	10·394	29·55	......	36·0	....	......	6	+50 15 30·7	−11·7
	3484	....	7·0	10 5 29	57 50	2 37·7	40·3	10·000	29·55	......	36·0	6, W.	9	3	+23 49 59·0	− 9·6
	3528	(e) Draconis...........	5·5	10 13 34	6 40	1 30·7	36·1	10·000	29·55	......	36·0	....	......	6	−27 18 6·4	− 3·3
	3592	....	5·5	10 21 50	87 45	1 0·2	4·2	10·420	29·55	......	36·0	....	......	7	+53 43 35·9	−13·2
	3780	....	7·5	10 55 45	81 35	4 2·8	6·2	10·000	29·55	......	36·0	....	......	4	+47 36 26·1	−14·6

(a) Sky becoming cloudy. (b) Wind increasing and clouds overspreading the sky. (c) Wind shaking the roof and affecting the steadiness of the circle. (d) Definition very good. (e) Following.

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				h. m. s.	° ′	′ ″	″	revs.	inches	°					° ′ ″	″
1860. Mar. 2	3821	....	7·0	11 2 40	20 55	3 34·0	38·9	10·000	29·55	......	36·0	....	......	6	− 13 4 3·8	− 11·2
	3869	....	7·5	11 14 29	71 45	2 8·2	11·7	10·200	29·55	......	36·1	....	......	5	+ 37 44 36·5	− 15·6
	3996	....	6·0	11 41 16	94 0	1 1·3	4·7	10·087	29·55	......	36·8	....	......	7	+ 49 58 27·3	− 16·6
	......	Nadir	......	11 51 0	214 0	2 32·7	42·4	10·000	......	37·2	36·9	....	......	......	....	......
	......	Nadir	......	....	214 0	2 37·9	47·5	10·000	......	......	......	....	......	......	....	......
Mar. 5	......	Nadir	......	9 22 0	214 0	2 32·2	43·0	10·000	30·20	40·1	39·8	....	......	......	....	......
	......	Nadir	......	....	214 0	2 37·8	48·4	10·000	......	......	......	....	......	......	....	......
	3336	....	7·0	9 37 49	82 35	2 47·1	51·3	10·147	30·20	......	39·7	W.	8	4	+ 46 35 15·0	− 10·7
	3380	....	6·0	9 46 24	83 20	1 59·3	63·9	10·089	30·20	......	39·0	5. W.	9	5	+ 49 19 25·8	− 11·2
	3418	....	9·0	9 53 38	80 20	1 47·7	51·8	10·000	30·20	......	39·0	....	......	3	+ 46 19 11·4	− 11·2
	3528	(a)	5·0	10 14 16	6 40	4 29·7	36·4	10·000	30·20	......	39·0	....	......	6	− 27 18 6·8	− 2·4
	......	Nadir	......	12 18 0	214 0	2 32·7	43·4	10·000	......	38·2	39·0	....	......	......	....	......
	......	Nadir	......	....	214 0	2 38·8	48·1	10·000	......	......	......	....	......	......	....	......
Mar. 7	......	Nadir	......	9 0 0	214 0	2 31·7	43·2	10·000	......	40·3	35·8	....	......	......	....	......
	......	Nadir	......	....	214 0	2 39·2	49·2	10·000	......	......	......	....	......	......	....	......
	3325	....	6·5	9 36 47	26 5	1 30·2	34·4	10·000	30·29	......	......	1, E.	10	7	− 7 56 7·8	− 0·8
	3430	(b)	9·0	9 55 46	81 0	4 50·0	53·8	10·000	30·29	......	36·0	....	......	2	+ 47 2 13·4	− 11·4
	3628	....	5·5	10 14 2	6 40	4 29·0	35·4	10·000	30·29	......	36·0	....	......	7	− 27 18 7·6	− 1·8
	3821	....	6·0	11 3 10	20 55	3 36·5	40·4	10·000	30·29	......	36·0	....	......	6	− 13 4 1·8	− 9·8
	3869	....	9·0	11 14 59	71 45	2 1·2	3·4	10·423	30·29	......	36·0	....	......	3	+ 37 44 35·0	− 15·5
	......	Nadir	......	11 57 0	214 0	2 32·8	42·4	10·000	......	36·0	36·0	....	......	......	....	......
	......	Nadir	......	....	214 0	2 38·0	48·0	10·000	......	......	......	....	......	......	....	......
Mar. 8	......	Nadir	......	9 19 0	214 0	2 32·0	42·9	10·000	30·12	39·0	34·0	....	......	......	....	......
	......	Nadir	......	....	214 0	2 37·3	47·9	10·000	......	......	......	....	......	......	....	......
	3325	....	7·0	9 36 42	26 5	1 25·7	30·3	10·000	30·12	......	34·0	....	8	5	− 7 56 12·0	− 0·4
	3726	....	6·0	10 44 45	88 10	2 45·3	50·5	10·000	30·12	......	34·0	....	......	4	+ 51 10 9·8	− 14·5
	3996	....	8·0	11 41 40	84 0	0 57·1	61·8	10·153	30·11	......	33·5	....	......	3	+ 49 58 25·6	− 16·8
	4111	....	7·0	12 5 12	11 45	2 28·9	33·9	10·000	30·11	......	32·0	....	......	5	− 22 15 8·5	− 15·2
	4199	....	7·0	12 20 22	63 15	3 26·6	30·6	10·052	30·11	......	32·0	....	......	6	+ 29 15 51·6	− 19·3
	4231	....	9·0	12 26 17	64 45	1 25·6	28·9	10·000	30·11	......	32·0	....	......	5	+ 30 43 47·9	− 19·6
	......	Nadir	......	12 30 0	214 0	2 32·7	42·3	10·000	......	36·4	32·0	....	......	......	....	......
	......	Nadir	......	....	214 0	2 38·0	47·8	10·000	......	......	......	....	......	......	....	......
Mar. 9	......	Nadir	......	9 49 0	214 0	2 32·3	42·3	10·000	29·71	38·1	33·2	....	......	......	....	......
	......	Nadir	......	....	214 0	2 38·5	48·9	10·000	......	......	......	....	......	......	....	......
	3528	(c)	9·0	10 13 1	6 40	2 40·7	55·0	10·000	29·71	......	33·2	....	8	5	− 27 19 47·3	− 1·2
	3592	....	6·0	10 22 8	87 45	1 5·1	5·6	10·213	29·71	......	33·2	....	......	6	+ 53 43 34·7	− 13·6
	......	Nadir	......	11 31 0	214 0	2 31·5	42·1	10·000	29·71	35·6	33·1	....	......	......	....	......
	......	Nadir	......	....	214 0	2 37·7	49·0	10·000	......	......	......	....	......	......	....	......
Mar. 12	......	Nadir	......	9 50 0	214 0	2 32·7	43·1	10·000	29·11	38·5	34·9	....	......	......	....	......
	......	Nadir	......	....	214 0	2 36·1	48·3	10·000	......	......	......	....	......	......	....	......
	3528	(c) Draconis..............	9·0	10 12 47	6 40	2 47·5	52·6	10·000	29·11	......	34·9	2, N.W.	10	5	− 27 19 49·5	− 0·3
	3592	....	7·0	10 21 49	87 45	1 11·7	16·0	10·000	29·11	......	34·9	....	......	5	+ 53 43 35·8	− 13·7
	3662	....	7·5	10 33 38	78 30	0 55·7	58·2	10·290	29·11	......	34·9	....	......	5	+ 44 28 26·7	− 13·4
	3726	....	6·0	10 44 22	88 10	2 41·4	45·2	10·300	29·11	......	34·9	....	......	6	+ 54 10 13·8	− 14·7
	4010	....	6·5	11 44 16	51 15	1 38·2	41·1	10·000	29·11	......	34·0	....	......	6	+ 17 13 59·7	− 16·0

(a) Following. Sky getting hazy. (b) Scarcely seen at time of transit. (c) Preceding.

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				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
Mar. 12	4111	(a)	7·0	12 4 47	11 45	2 28·7	33·4	10·000	29·11	......	34·0	5·5 W.N.W.	10	......	− 22 15 8·7	− 14·0
	4153	....	......	12 12 38	62 35	0 41·1	42·1	10·124	29·11	......	34·0	....	......	6	+ 28 33 5·6	− 18·5
	......	Nadir	......	12 32 0	214 0	2 32·6	41·0	10·000	......	34·8	34·0	....	......	......	....	......
	......	Nadir	......	....	214 0	2 38·9	47·7	10·000	......	......	......	....	......	......	....	......
Mar. 13	......	Nadir	......	9 33 0	214 0	2 32·8	42·1	10·000	29·21	37·7	34·0	....	......	......	....	......
	......	Nadir	......	....	214 0	2 38·9	48·0	10·000	......	......	......	....	......	......	....	......
	3380	....	6·0	9 45 35	83 20	2 0·9	4·0	10·160	29·21	......	33·9	....	......	6	+ 49 19 28·7	− 11·4
	3662	....	8·0	10 33 32	78 30	0 57·7	60·0	10·261	29·21	......	33·0	7, N.W.	9	5	+ 44 28 27·7	− 13·4
	3726	....	6·0	10 44 16	88 10	2 39·7	43·3	10·323	29·21	......	33·0	....	......	7	+ 54 10 12·6	− 14·8
	3780	....	7·0	10 55 38	81 35	3 58·7	62·0	10·012	29·21	......	33·0	....	......	6	+ 47 36 22·7	− 14·8
	3821	....	6·0	11 2 35	20 55	3 33·3	37·9	10·000	29·21	......	32·9	....	......	7	− 13 4 4·3	− 8·1
	3869	....	6·0	11 14 24	71 45	2 6·8	7·7	10·261	29·21	......	32·8	....	......	6	+ 37 44 35·6	− 15·2
	3096	....	6·0	11 41 10	84 0	1 5·4	7·8	10·000	29·21	......	32·6	....	......	5	+ 49 58 28·5	− 17·0
	......	Nadir	......	11 46 0	214 0	2 32·4	41·6	10·000	......	34·0	32·6	....	......	......	....	......
	......	Nadir	......	....	214 0	2 38·6	47·4	10·000	......	......	......	....	......	......	....	......
Mar. 14	......	Nadir	......	9 51 0	214 0	2 32·0	42·6	10·000	29·38	37·7	33·8	....	......	......	....	......
	......	Nadir	......	....	214 0	2 38·7	48·7	10·000	......	......	......	....	......	......	....	......
	3484	(b)	8·0	10 6 17	57 50	2 39·9	42·3	10·000	29·38	......	33·8	2, N.W.	10	4	+ 23 50 1·1	− 8·2
	3836	....	6·0	....	86 55	1 46·7	49·9	10·565	29·38	......	33·3	....	......	7	+ 52 54 25·8	− 15·6
	3996	....	6·0	11 42 4	84 0	0 50·2	53·7	10·411	29·38	......	32·7	....	......	7	+ 49 58 26·0	− 17·0
	......	Nadir	......	12 35 0	214 0	2 33·1	41·0	10·000	......	33·2	31·0	....	......	......	....	......
	......	Nadir	......	....	214 0	2 39·1	47·7	10·000	......	......	......	....	......	......	....	......
Mar. 15	......	Nadir	......	9 47 0	214 0	2 33·0	42·2	10·000	29·47	38·0	36·4	....	......	......	....	......
	......	Nadir	......	....	214 0	2 39·7	49·1	10·000	......	......	......	....	......	......	....	......
	3439	(c)	7·0	9 57 37	51 15	3 59·1	58·3	10·000	29·17	......	36·4	3, N.W.	10	5	+ 20 16 17·1	− 6·7
	3484	....	7·5	10 6 11	57 50	2 30·8	33·1	10·240	29·17	......	36·4	....	......	5	+ 23 49 58·5	− 8·1
	3662	....	7·5	10 34 21	78 30	0 58·7	61·7	10·121	29·17	......	36·6	....	......	4	+ 44 28 24·8	− 13·3
	3726	....	6·0	10 45 3	88 10	2 36·9	40·9	10·463	29·47	......	36·6	....	......	6	+ 54 10 13·5	− 14·9
	3836	....	6·0	11 6 43	86 55	1 51·0	51·0	10·172	29·47	......	36·7	....	......	6	+ 52 54 27·2	− 15·7
	3996	....	6·0	11 41 58	84 0	1 5·1	8·3	10·000	29·49	......	36·7	....	......	6	+ 49 58 26·2	− 17·0
	4111	....	7·0	12 5 30	11 45	2 27·0	31·4	10·000	29·49	......	36·6	5, N.W.	10	6	− 22 15 11·9	− 13·1
	4153	....	6·0	12 13 20	62 30	5 30·9	31·9	10·466	29·49	......	36·6	....	......	5	+ 28 33 4·6	− 18·2
	4205	....	......	12 21 41	62 55	4 30·5	32·0	10·323	29·49	......	36·6	....	......	7	+ 28 57 0·4	− 18·7
	4244	....	8·0	12 28 25	52 45	3 11·6	12·7	10·000	29·49	......	36·6	....	......	5	+ 18 45 32·0	− 18·9
	......	Nadir	......	12 37 0	214 0	2 32·9	42·0	10·000	......	37·1	36·5	....	......	......	....	......
	......	Nadir	......	....	214 0	2 38·4	48·3	10·000	......	......	......	....	......	......	....	......
Mar. 20	......	Nadir	......	10 2 0	214 0	2 32·1	43·3	10·000	......	41·0	40·0	....	......	......	....	......
	......	Nadir	......	....	214 0	2 38·7	48·7	10·000	......	......	......	....	......	......	....	......
	3726	....	6·0	10 44 34	88 10	2 38·1	44·1	10·445	29·10	......	40·0	25, W.	10	6	+ 54 10 15·3	− 15·0
	3780	....	7·5	10 55 56	81 35	3 49·3	54·1	10·380	29·10	......	40·0	....	......	5	+ 47 36 23·9	− 14·8
	3836	....	6·5	11 6 14	86 55	1 53·8	58·4	10·390	29·10	......	39·3	....	......	7	+ 52 54 28·6	− 15·8
	3996	....	9·0	11 41 28	84 0	0 53·7	58·9	10·312	29·10	......	39·2	....	......	4	+ 49 58 26·6	− 17·0
	4199	....	7·0	12 20 10	63 15	3 23·1	25·4	10·316	29·10	......	39·5	....	......	5	+ 29 15 53·3	− 18·1
	......	Nadir	......	12 46 0	214 0	2 32·3	43·1	10·000	......	40·3	39·8	....	......	......	....	......
	......	Nadir	......	....	214 0	2 38·7	48·1	10·000	......	......	......	....	......	......	....	......

(a) Middle Star. (b) Nebulous. Aurora in N.W. from 3° to 7° above horizon. (c) Aurora in N. from horizon upwards.

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				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
Mar. 21	......	Nadir	......	10 5 0	214 0	2 32·3	42·9	10·000	......	41·0	36·3	......	......	......	......	......
	......	Nadir	......	......	214 0	2 37·5	48·3	10·000	......	......	......	......	......	......	......	......
	3592	......	6·5	10 21 57	87 45	1 8·3	13·3	10·122	29·20	......	36·3	3, N.W.	......	5	+ 53 43 35·9	− 14·0
	3780	......	7·5	10 55 50	81 35	3 56·6	61·0	10·078	29·20	......	36·0	......	......	5	+ 47 36 22·6	− 14·8
	3821	......	6·0	11 2 46	20 55	3 29·0	33·3	10·000	29·20	......	36·0	......	......	6	− 13 4 9·0	− 5·9
	3869	......	6·0	11 14 35	71 45	2 4·3	7·3	10·300	29·20	......	35·9	......	......	5	+ 37 44 34·8	− 14·7
	4010	......	6·5	11 44 22	51 15	1 36·8	41·0	10·000	29·19	......	35·9	......	......	7	+ 17 13 58·7	− 14·4
	4111	(a)	8·0	12 4 58	11 45	2 25·6	29·4	10·000	29·19	......	35·9	......	......	3	− 22 15 12·6	− 11·3
	4153	......	6·0	12 12 44	62 35	0 31·2	34·1	10·402	29·19	......	35·9	3·5, N.W.	9	6	+ 28 33 4·0	− 17·5
	4205	......	7·0	12 21 4	62 55	4 29·0	31·4	10·294	29·19	......	35·9	......	......	7	+ 28 56 58·7	− 18·0
	4244	......	8·0	12 27 48	52 45	3 9·1	12·3	10·000	29·19	......	35·9	......	......	4	+ 18 45 30·6	− 17·9
	4364	......	8·0	12 54 10	67 55	3 9·0	11·8	10·109	29·19	......	35·9	......	......	5	+ 33 55 34·1	− 19·9
	4421	β Comæ	5·5	13 4 47	61 20	4 17·7	20·9	10·428	29·19	......	35·9	6, N.W.	......	7	+ 27 21 51·3	− 20·5
	......	Nadir	......	13 31 0	214 0	2 32·5	42·3	10·000	......	37·8	35·8	......	......	......	......	......
	......	Nadir	......	......	214 0	2 38·2	47·6	10·000	......	......	......	......	......	......	......	......
Mar. 22	......	Nadir	......	10 55 0	214 0	2 32·8	43·2	10·000	......	38·9	38·0	......	......	......	......	......
	......	Nadir	......	......	214 0	2 38·8	49·7	10·000	......	......	......	......	......	......	......	......
	4005	......	6·0	11 43 4	76 55	0 53·6	58·1	10·161	29·25	......	38·0	10, W.N.W	9	6	+ 42 53 21·1	− 16·6
	4199	......	7·5	12 19 58	63 15	3 23·0	24·8	10·303	29·25	......	38·0	20	......	5	+ 29 15 52·3	− 17·5
Mar. 26	......	Nadir	......	10 28 0	214 0	2 32·9	42·6	10·000	29·23	40·3	39·0	......	......	......	......	......
	......	Nadir	......	......	214 0	2 37·4	47·0	10·000	......	......	......	......	......	......	......	......
	3726	......	6·0	10 44 0	88 10	2 47·2	53·3	10·000	29·23	......	39·0	3, N.W.	9	5	+ 54 10 12·3	− 15·2
	4364	......	7·0	12 54 41	67 55	3 3·0	6·9	10·291	29·24	......	36·8	......	......	3	+ 33 55 31·0	− 19·4
	4421	β Comæ	5·0	13 5 18	61 20	4 16·3	19·3	10·179	29·24	......	36·6	......	......	6	+ 27 21 51·5	− 19·8
	4457	......	6·5	13 12 36	54 5	2 58·7	62·4	10·259	29·24	......	36·6	......	......	6	+ 20 5 28·6	− 20·0
	4503	......	7·0	13 22 5	85 20	3 2·4	6·7	10·434	29·24	......	36·5	......	......	5	+ 51 20 38·7	− 19·9
	4552	......	5·0	13 31 13	52 55	4 32·1	36·1	10·000	29·24	......	36·5	......	......	5	+ 18 56 54·3	− 21·0
	......	Nadir	......	13 40 0	214 0	2 31·0	41·5	10·000	29·24	36·0	36·5	......	......	......	......	......
	......	Nadir	......	......	214 0	2 38·3	48·8	10·000	......	......	......	......	......	......	......	......
Mar. 27	......	Nadir	......	10 55 0	214 0	2 31·4	42·2	10·000	29·10	41·4	43·3	......	......	......	......	......
	......	Nadir	......	......	214 0	2 37·4	47·3	10·000	......	......	......	......	......	......	......	......
	3869	......	7·0	11 15 0	71 45	2 13·8	16·9	10·000	29·10	......	42·4	6, W.N.W.	8	5	+ 37 44 36·4	− 14·2
	4199	......	7·0	12 20 30	63 15	3 21·7	23·8	10·362	29·10	......	41·8	......	......	5	+ 29 15 53·5	− 17·2
	4457	......	6·5	13 12 30	54 5	3 2·0	6·0	10·189	29·10	......	41·4	......	......	6	+ 20 5 29·4	− 19·8
	4503	......	9·0	13 21 58	85 20	3 16·9	20·7	10·000	29·10	......	41·4	5, N.W.	......	3	+ 51 20 40·8	− 19·9
	4555	......	6·0	13 31 37	36 40	1 49·9	54·3	10·000	29·10	......	41·4	......	......	4	+ 2 39 12·0	− 20·2
	4610	......	6·0	13 42 10	58 5	1 35·9	38·9	10·230	29·10	......	41·4	10	......	7	+ 24 4 3·9	− 21·5
	4652	......	6·5	13 49 49	57 15	1 57·2	60·2	10·000	29·10	......	41·4	18	......	6	+ 23 14 18·8	− 21·8
	......	Nadir	......	13 56 0	214 0	2 31·8	42·3	10·000	......	41·4	41·3	......	......	......	......	......
	......	Nadir	......	......	214 0	2 38·2	46·7	10·000	......	......	......	......	......	......	......	......
Mar. 28	......	Nadir	......	10 47 0	214 0	2 31·9	42·7	10·000	......	41·1	40·0	......	......	......	......	......
	......	Nadir	......	......	214 0	2 37·7	47·9	10·000	......	......	......	......	......	......	......	......
	4111	......	......	12 5 12	11 45	2 23·2	28·0	10·000	29·21	......	39·0	2, N.W.	10	4	− 22 15 14·2	− 9·2
	4153	......	6·0	12 13 4	62 35	0 31·6	34·4	10·361	29·24	......	39·0	......	......	8	+ 28 33 3·5	− 16·6
	4199	(a)	9·0	12 20 23	63 15	3 32·9	35·2	10·000	29·24	......	39·0	......	......	3	+ 29 15 54·6	− 17·1
	4421	β Comæ	5·5	13 5 6	61 20	4 30·0	32·8	10·000	29·24	......	38·4	......	......	5	+ 27 21 51·8	− 19·5
	......	Nadir	......	13 50 0	214 0	2 32·9	43·0	10·000	......	39·1	38·2	......	......	......	......	......
	......	Nadir	......	......	214 0	2 38·4	46·7	10·000	......	......	......	......	......	......	......	......

(a) Not well seen at time of transit. Middle star observed.

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Date.	Star or other Object Observed. No. in British Assn. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. Max = 10.	Est. Value of Obs. Max = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1860.
				h. m. s.	° ′	′ ″	″	revs.	inches	°	°				° ′ ″	″
Mar. 29	......	Nadir	......	10 44 0	214 0	2 32·5	43·4	10·000	......	42·1	40·0	......	......	......	......	......
	......	Nadir	......	......	214 0	2 37·1	48·4	10·000	......	......	......	......	......	......	......	......
	3760	......	......	10 56 3	81 35	4 2·1	6·4	10·000	29·36	......	40·0	......	10	6	+47 36 26·1	−14·7
	3621	......	6·0	11 3 0	20 55	3 27·6	32·0	10·000	29·36	......	40·0	......	......	7	−13 4 10·1	− 3·7
	3869	......	6·0	11 14 48	71 45	2 8·9	12·7	10·111	29·36	......	40·0	......	......	5	+37 44 34·9	−14·1
	4111	(a)	7·5	12 5 5	11 45	2 22·1	26·9	10·000	29·36	......	40·0	......	......	4	−22 15 15·3	− 8·8
	4205	......	......	12 21 18	62 55	4 26·3	28·9	10·400	29·36	......	40·0	......	......	5	+28 56 59·3	−17·0
	4470	......	6·0	13 14 15	87 5	4 32·3	36·3	10·031	29·36	......	39·3	......	......	7	+53 6 57·3	−19·6
	4555	(b)	......	13 31 34	36 40	1 51·9	55·9	10·000	29·36	......	39·0	......	3	3	+ 2 39 13·6	−19·7
	4610	......	6·0	13 42 0	58 5	1 36·0	40·1	10·141	29·36	......	38·4	......	......	5	+24 4 2·1	−21·2
	......	Nadir	......	13 50 0	214 0	2 32·6	42·0	10·000	......	41·0	38·3	......	......	......	......	......
	......	Nadir	......	......	214 0	2 37·7	47·7	10·000	......	......	......	......	......	......	......	......
Mar. 30	......	Nadir	......	10 55 0	214 0	2 31·4	41·1	10·000	......	42·3	45·2	......	......	......	......	......
	......	Nadir	......	......	214 0	2 37·7	47·7	10·000	......	......	......	......	......	......	......	......
	3869	......	6·0	11 14 42	71 45	2 3·6	6·7	10·347	28·87	......	45·0	......	......	6	+37 44 36·0	−14·0
April 2	......	Nadir	......	11 12 0	214 0	2 31·0	41·1	10·000	......	43·6	39·0	......	......	......	......	......
	......	Nadir	......	......	214 0	2 37·0	48·2	10·000	......	......	......	......	......	......	......	......
	4457	......	6·5	13 11 54	54 5	3 8·0	11·8	10·000	28·83	......	37·0	......	......	6	+20 5 30·0	−18·7
	4575	......	6·0	13 36 24	66 35	0 7·9	11·3	10·311	28·85	......	36·7	......	......	7	+32 32 39·0	−20·4
	4627	......	8·0	13 44 8	54 30	1 52·1	54·3	10·271	28·85	......	36·7	......	......	4	+20 29 20·8	−20·5
	......	Nadir	......	13 55 0	214 0	2 33·2	42·9	10·000	28·86	37·5	36·7	......	......	......	......	......
	......	Nadir	......	......	214 0	2 39·4	47·9	10·000	......	......	......	......	......	......	......	......
April 3	......	Nadir	......	11 5 0	214 0	2 31·2	42·8	10·000	29·26	43·8	43·0	......	......	......	......	......
	......	Nadir	......	......	214 0	2 37·0	49·3	10·000	......	......	......	......	......	......	......	......
	4153	......	6·0	12 12 27	62 35	0 40·0	42·4	10·000	29·27	......	41·0	1, W.	5	6	+28 33 1·7	−15·7
	4205	......	6·5	12 20 48	62 55	4 29·0	31·4	10·250	29·30	......	41·0	......	......	6	+28 56 57·8	−16·2
April 5	......	Nadir	......	11 26 0	214 0	2 31·8	42·1	10·000	......	43·6	38·0	......	......	......	......	......
	......	Nadir	......	......	214 0	2 38·0	47·6	10·000	......	......	......	......	......	......	......	......
	4153	......	6·0	12 12 15	62 30	5 39·8	42·6	10·000	29·80	......	38·0	1, N.E.	10	5	+28 33 2·1	−15·4
	4231	......	8·0	12 25 31	64 45	1 16·5	19·2	10·277	29·79	......	37·0	......	......	5	+30 43 46·5	−16·5
	4364	......	8·0	12 53 40	67 55	2 58·8	62·0	10·370	29·78	......	36·5	......	......	5	+33 55 31·9	−18·2
	4421	β Comæ	......	13 4 18	61 20	4 18·4	20·9	10·344	29·78	......	36·6	......	......	6	+27 21 49·9	−18·2
	4470	......	6·0	13 13 31	87 5	4 18·3	22·3	10·440	29·78	......	36·6	......	......	6	+53 6 54·9	−19·6
	4503	......	7·0	13 21 5	85 20	2 59·4	64·0	10·449	29·78	......	36·6	......	......	6	+51 20 36·5	−19·7
	4610	......	7·0	13 41 17	58 5	1 25·2	28·2	10·502	29·78	......	36·2	......	......	4	+24 4 1·1	−19·9
	4652	......	7·0	13 48 56	57 15	1 44·7	48·7	10·200	29·78	......	36·0	......	......	4	+23 14 12·7	−20·2
	4694	......	7·0	13 59 11	58 25	3 29·2	33·2	10·310	29·78	......	36·0	......	......	5	+24 26 0·3	−20·8
	4738	(c)	9·0	14 9 39	49 35	1 22·0	25·6	10·000	29·77	......	36·7	......	......	3	+15 33 44·3	−21·1
	......	Nadir	......	14 24 0	214 0	2 31·6	41·1	10·000	......	40·2	36·8	......	......	......	......	......
	......	Nadir	......	......	214 0	2 37·1	46·4	10·000	......	......	......	......	......	......	......	......
April 10	......	Nadir	......	11 41 0	214 0	2 32·2	43·2	10·000	......	40·9	37·0	......	......	......	......	......
	......	Nadir	......	......	214 0	2 37·7	48·0	10·000	......	......	......	......	......	......	......	......
April 27	......	Nadir	......	13 34 0	214 0	2 32·3	42·1	10·000	......	46·8	39·0	......	......	......	......	......
	......	Nadir	......	......	214 0	2 38·4	47·9	10·000	......	......	......	......	......	......	......	......
	4729	α Bootis	......	14 6 0	70 0	4 50·7	54·3	10·000	30·09	......	38·9	1. E.	......	4	+36 2 13·4	−18·5

(a) Middle star. (b) Clouds gathering. (c) Bad definition. Stars unsteady.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1860.
				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
April 27	4797	......	6·0	14 19 17	53 5	5 22·0	26·0	10·020	30·08	......	38·9	1, E.	......	5	+19 7 44·7	−16·7
	4876	ι Bootis......	......	14 35 40	62 15	4 35·7	39·9	10·399	30·08	......	38·9	......	......	5	+28 17 9·3	−18·0
	4965	......	6·0	14 54 58	44 45	3 34·7	39·0	10·000	30·08	......	38·7	......	......	5	+10 45 56·7	−17·6
	5001	......	......	15 1 52	60 10	3 54·1	58·0	10·411	30·08	......	38·7	......	......	5	+26 11 27·7	−18·5
	5034	β Libræ......	2·0	15 6 16	98 45	4 59·3	63·8	10·000	30·08	......	38·2	......	......	6	+64 47 24·2	−17·8
	5091	......	6·0	15 17 10	26 5	4 55·9	59·3	10·000	30·08	......	38·1	......	......	6	− 7 52 42·4	−17·4
	5284	γ Serpentis......	......	15 46 46	73 50	2 11·8	16·7	10·000	30·08	......	38·0	......	......	6	+39 49 35·3	−16·7
	......	Nadir ‖......	......	15 55 0	214 0	2 33·0	41·4	10·000	......	42·3	38·0	......	......	......	......	......
	......	Nadir ‖......	......	......	214 0	2 39·2	48·2	10·000	......	......	......	......	......	......	......	......
May 1	......	Nadir ‖......	......	12 56 0	214 0	2 30·0	42·1	10·000	......	52·7	48·0	......	......	......	......	......
	......	Nadir ‖......	......	......	214 0	2 36·2	48·3	10·000	......	......	......	......	......	......	......	......
	4470	......	6·0	13 10 57	87 5	4 19·8	25·3	10·403	30·20	......	48·0	......	......	5	+53 6 56·5	−18·4
	4621	......	6·0	13 42 49	70 35	4 48·1	51·9	10·280	30·20	......	48·0	......	......	6	+36 37 19·4	−16·6
	4678	......	7·0	13 55 43	57 35	4 28·8	34·1	10·270	30·20	......	48·9	......	10	5	+23 36 59·7	−15·2
	4737	......	6·5	14 10 10	74 0	4 31·7	37·1	10·289	30·20	......	49·1	......	......	6	+40 2 4·3	−17·5
	4820	......	7·5	14 27 39	56 50	0 52·1	58·1	10·000	30·20	......	49·0	......	......	5	+22 48 15·8	−16·4
	4965	......	6·0	14 57 34	44 45	3 29·6	36·0	10·000	30·20	......	48·8	......	......	6	+10 45 53·4	−16·5
	5034	β Libræ......	2·0	15 8 51	98 45	4 57·1	62·6	10·049	30·20	......	48·0	......	......	7	+64 47 24·5	−17·8
	5284	γ Serpentis......	3·0	15 49 22	73 50	2 10·2	17·0	10·000	30·18	......	47·8	......	......	7	+39 49 35·4	−18·0
	5414	δ Ophiuchi......	......	16 6 23	93 15	3 23·7	29·9	10·000	30·18	......	47·8	......	......	6	+59 15 49·8	−16·4
	......	Nadir ‖......	......	16 12 0	214 0	2 31·1	41·9	10·000	......	49·7	48·6	......	......	......	......	......
	......	Nadir ‖......	......	......	214 0	2 37·0	47·4	10·000	......	......	......	......	......	......	......	......
May 3	......	Nadir ‖......	......	13 4 0	214 0	2 31·2	43·2	10·000	......	52·8	49·0	......	......	......	......	......
	......	Nadir ‖......	......	......	214 0	2 36·1	48·1	10·000	......	......	......	......	......	......	......	......
	4470	(a)	6·0	13 13 45	87 5	4 21·6	29·0	10·290	30·01	......	49·0	......	10	4	+53 6 56·7	−18·3
	4610	......	7·0	13 41 31	58 5	1 27·4	32·8	10·230	30·01	......	49·0	......	......	5	+24 3 56·8	−14·3
	4720	α Bootis......	1·0	14 8 28	70 0	4 47·9	53·7	10·000	30·00	......	49·6	......	......	7	+36 2 12·0	−17·5
	4809	......	6·0	14 25 20	62 40	1 38·4	43·2	10·390	30·00	......	49·6	......	......	5	+28 39 12·3	−16·4
	4876	ι Bootis......	......	14 38 3	62 15	4 28·7	33·8	10·570	30·00	......	49·5	......	......	6	+28 17 7·7	−16·8
	5284	γ Serpentis......	......	15 49 10	73 50	2 5·6	11·4	10·234	30·00	......	48·2	2. N.W.	10	6	+39 49 36·4	−17·7
	5415	......	6·0	16 5 31	31 40	2 7·7	12·8	10·000	30·00	......	48·2	......	......	6	......	−18·0
	5452	......	6·0	16 13 10	68 30	1 5·4	10·4	10·281	30·00	......	48·2	......	......	6	+34 28 36·7	−17·8
	......	Nadir ‖......	......	16 20 0	214 0	2 32·4	41·4	10·000	......	50·5	48·2	......	......	......	......	......
	......	Nadir ‖......	......	......	214 0	2 38·3	48·0	10·000	......	......	......	......	......	......	......	......
May 7	......	Nadir ‖......	......	13 6 0	214 0	2 31·6	43·3	10·000	29·28	50·0	49·0	......	......	......	......	......
	......	Nadir ‖......	......	......	214 0	2 36·3	48·8	10·000	......	......	......	......	......	......	......	......
	4729	α Bootis......	......	14 8 5	70 0	4 37·9	43·3	10·315	29·28	......	51·0	......	6	5	+36 2 11·4	−16·9
May 9	......	Nadir ‖......	......	13 20 0	214 0	2 32·2	43·3	10·000	......	46·1	42·9	......	......	......	......	......
	......	Nadir ‖......	......	......	214 0	2 37·1	48·0	10·000	......	......	......	......	......	......	......	......
	4652	......	7·0	13 48 34	57 15	1 42·3	47·7	10·112	29·40	......	43·0	6. W.	10	6	+23 14 8·5	−13·2
	4678	......	9·0	13 54 57	57 35	4 28·0	34·2	10·237	29·40	......	43·0	......	......	5	+23 36 56·6	−13·5
	4723	(b)	8·0	14 6 18	60 10	4 3·7	7·7	10·000	29·40	......	43·0	......	......	4	+26 11 26·3	−14·3
	4756	......	......	14 12 16	37 15	4 24·4	27·9	10·000	29·40	......	43·0	......	......	5	+ 3 16 46·4	−11·3
	4820	......	......	14 26 52	56 50	0 39·7	45·0	10·327	29·40	......	42·7	7. W.	......	6	+22 48 11·8	−14·5
	4876	ι Bootis......	......	14 37 29	62 15	4 30·0	34·9	10·550	29·40	......	42·6	......	......	7	+28 17 8·4	−15·5
	4942	......	6·0	14 52 41	49 45	2 49·2	53·4	10·000	29·40	......	42·4	......	......	7	+15 45 11·8	−16·4

(a) Star unsteady. (b) Not seen double.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. Max. = 10	Est. Value of Obs. Max. = 10	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1860.
1860.				h m s	° '	' "	"	revols.	inches.	°	°				° ' "	"
May 9	5001	....	7·0	15 3 38	60 10	4 7·3	10·2	10·000	29·40	......	42·1	....	......	5	+ 26 11 29·4	− 15·8
	5091	(a)	......	15 18 59	26 5	4 51·7	54·7	10·000	29·40	......	42·3	12	......	6	− 7 52 46·5	− 13·6
	......	Nadir |	......	15 26 0	214 0	2 32·0	42·7	10·000	......	44·0	42·3	....	......	......	....	......
	......	Nadir ||	......	....	214 0	2 36·9	47·4	10·000	......	......	......	....	......	......	....	......
May 11	......	Nadir ||	......	11 0 0	214 0	2 31·7	42·8	10·000	......	52·0	54·0	....	......	......	....	......
	......	Nadir ||	......	....	214 0	2 36·6	48·3	10·000	......	......	......	....	......	......	....	......
	4756	....	6·0	14 13 4	37 15	4 22·1	25·7	10·000	29·36	......	54·0	....	10	5	+ 3 16 44·1	− 10·7
	4876	ε Bootis..............	3·0	14 38 17	62 15	4 35·6	39·7	10·342	29·36	......	54·0	....	......	7	+ 28 17 7·8	− 15·1
July 20	......	(b) Nadir |	......	18 7 0	54 0	2 46·2	54·4	0·500	......	58·7	54·0	....	......	......	....	......
	......	Nadir ||	......	....	54 0	2 57·7	64·3	0·500	......	......	......	....	......	......	....	......
	6423	β Lyræ..............	2·0	18 45 25	256 45	2 30·7	44·9	0·517	29·52	......	53·3	2, W.	7	5	+ 22 44 42·9	+ 4·8
	6527	....	8·0	18 58 15	271 0	3 49·1	61·9	0·500	29·52	......	53·1	....	......	4	+ 37 1 1·2	+ 4·8
	6735	ε Draconis..............	4·0	19 34 5	220 35	0 1·7	13·1	0·453	29·52	......	53·0	....	......	6	− 13 27 50·8	+ 4·9
	6772	γ Aquilæ..............	......	19 40 2	279 40	2 32·7	46·3	0·572	29·52	......	53·0	....	......	3	+ 45 39 47·5	+ 6·9
	6852	....	......	19 51 32	230 40	0 5·5	19·4	0·963	29·52	......	53·0	....	......	5	− 3 22 3·9	+ 5·5
	6966	....	5·0	20 9 47	264 50	0 0·9	14·7	0·313	29·52	......	52·9	....	......	6	+ 30 47 35·3	+ 7·9
	......	Nadir |	......	20 30 0	54 0	2 48·6	55·0	0·500	29·52	54·0	52·7	....	......	......	....	......
	......	Nadir ||	......	....	51 0	2 59·3	66·0	0·500	......	......	......	....	......	......	....	......
Aug. 1	......	Nadir |	......	21 4 0	54 0	2 47·9	55·3	0·500	......	57·0	54·0	....	......	......	....	......
	......	Nadir |	......	....	54 0	2 58·0	65·0	0·500	......	......	......	....	......	......	....	......
Aug. 2	......	Nadir |	......	18 47 0	54 0	2 48·8	57·0	0·500	......	59·0	55·0	....	......	......	....	......
	......	Nadir ||	......	....	54 0	2 56·8	64·2	0·500	......	......	......	....	......	......	....	......
Aug. 27	......	Nadir |	......	20 50 0	54 0	2 48·0	55·0	0·500	......	55·0	51·0	....	......	......	....	......
	......	Nadir |	......	....	54 0	2 61·2	68·0	0·500	......	......	......	....	......	......	....	......
	7510	....	......	21 28 36	210 5	0 41·0	52·8	0·330	29·45	......	51·0	1, S.W.	9	6	− 23 57 15·6	+ 17·1
	7561	....	......	21 37 5	280 40	4 45·5	58·0	0·500	29·45	......	50·7	....	......	7	+ 46 41 56·4	+ 20·6
	7644	....	7·0	21 50 1	218 10	0 30·1	43·3	0·429	29·45	......	50·6	....	......	5	− 15 52 23·1	+ 17·7
	7709	....	......	....	228 20	4 1·8	14·0	0·500	29·45	......	50·3	....	......	6	− 5 38 50·1	+ 18·7
	7779	(c)	......	22 10 3	217 20	2 59·0	71·4	0·610	29·45	......	50·2	....	......	5	− 16 39 49·8	+ 17·1
	......	Nadir ||	......	23 40 0	54 0	2 49·7	55·8	0·500	......	53·0	51·1	....	......	......	....	......
	......	Nadir |	......	....	54 0	2 60·0	66·0	0·500	......	......	......	....	......	......	....	......
Aug. 28	......	Nadir ||	......	20 30 0	54 0	2 48·0	55·3	0·500	29·29	55·4	51·1	....	......	......	....	......
	......	Nadir |	......	....	54 0	2 61·1	68·1	0·500	......	......	......	....	......	......	....	......
	7268	....	6·5	20 50 47	243 5	1 57·4	72·6	0·260	29·29	......	51·0	2, E.	9	5	+ 9 4 1·6	+ 19·6
	7336	61[1] Cygni..............	7·0	21 0 18	251 55	0 47·9	62·4	0·555	29·29	......	50·8	....	......	5	+ 17 52 59·9	+ 22·0
	7430	(d)	6·5	21 16 41	229 50	0 16·4	29·4	0·406	29·29	......	50·7	....	......	7	− 4 12 37·2	+ 19·4
	7644	(e)	......	21 50 2	218 10	0 21·4	34·2	0·633	29·27	......	50·0	....	5	6	− 15 52 26·3	+ 18·1
	7708	(f)	9·0	22 0 33	228 20	4 4·4	17·0	0·410	29·27	......	51·0	....	3	5	− 5 38 49·8	+ 19·0
	......	Nadir |	......	23 24 0	54 0	2 47·4	54·0	0·500	......	52·4	51·8	....	......	......	....	......
	......	Nadir ||	......	....	54 0	2 61·0	66·6	0·500	......	......	......	....	......	......	....	......
Aug. 30	......	Nadir ||	......	22 48 0	54 0	2 49·5	56·1	0·500	......	55·0	52·2	....	......	......	....	......
	......	Nadir ||	......	....	54 0	2 60·0	67·2	0·500	......	......	......	....	......	......	....	......
	8269	....	8·0	23 40 22	286 30	4 34·7	47·1	0·500	28·79	......	52·2	15, S.W.	4	5	+ 52 31 45·7	+ 26·2

(a) Wind increasing to a storm. (b) The month of June was occupied in making certain important alterations on the illumination-micrometer and other parts of the Mural Circle, as fully detailed in the "Explanation of Mural Circle Observations." (c) Observed smaller of two stars of 7·5 and 10 magnitudes. (d) The following of two stars in field. (e) Thin clouds. (f) Almost invisible at time of transit.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. (Max. = 10.)	Est. Value of Obs. (Max. = 10.)	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1860.
1860.				h. m. s.	° ′	′ ″	″	revs.	inches	°	°				° ′ ″	″
Aug. 30	26	γ Pegasi	......	0 5 44	275 30	4 41·7	54·2	0·500	28·80	......	52·3	......	......	6	+ 41 31 52·2	+ 24·9
	......	Nadir	......	0 9 0	54 0	2 49·2	55·2	0·500	......	53·0	52·3	......	......	......	......	......
	......	Nadir	......	......	54 0	2 62·1	66·9	0·500	......	......	......	......	......	......	......	......
Aug. 31	......	Nadir	......	21 7 0	54 0	2 48·3	54·7	0·500	29·25	55·2	52·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 61·0	67·2	0·500	......	......	......	......	......	......	......	......
	7759	......	......	22 7 9	229 55	1 3·1	15·9	0·230	29·25	......	51·0	3, W.	6	7	− 4 6 55·6	+ 20·2
	7908	ζ Pegasi	......	22 34 11	279 50	2 44·0	56·9	0·560	29·25	......	50·6	......	......	6	+ 45 49 56·8	+ 23·8
	7977	(a)	9·0	22 46 25	258 50	2 20·4	34·4	0·621	29·25	......	50·5	......	......	6	+ 54 49 41·6	+ 24·6
	8024	......	6·5	22 55 20	233 35	3 41·9	53·7	0·540	29·25	......	50·5	......	......	7	− 0 24 9·0	+ 19·5
	8065	(b)	9·0	23 1 55	288 35	0 9·0	23·8	0·853	29·25	......	50·4	......	......	5	+ 54 32 31·5	+ 25·2
	8139	......	8·0	23 14 15	252 10	0 30·1	44·5	0·750	29·25	......	50·4	......	......	5	+ 18 7 47·4	+ 21·9
	8204	......	7·0	23 26 20	218 45	1 29·3	42·7	0·560	29·25	......	50·4	......	......	8	− 15 16 20·2	+ 16·6
	8252	(c)	......	23 36 1	237 35	2 20·8	34·4	0·460	29·25	......	50·4	......	9	5	+ 3 34 28·6	+ 19·2
	8280	......	6·5	23 41 48	230 45	3 1·5	13·2	0·474	29·25	......	50·4	......	......	6	− 3 14 51·1	+ 17·9
	8315	......	......	23 48 11	262 30	2 3·8	17·8	0·450	29·25	......	50·4	......	......	5	+ 18 29 14·4	+ 26·0
	8338	......	......	23 53 23	228 35	1 10·0	22·4	0·577	29·25	......	50·3	......	......	7	− 5 26 39·4	+ 17·0
	8372	......	......	23 58 42	232 20	0 36·5	48·9	0·600	29·25	......	50·3	......	......	8	− 1 42 12·2	+ 17·5
	18	......	7·0	0 2 59	231 5	1 21·9	37·3	0·419	29·25	......	50·3	......	......	7	− 2 56 28·9	+ 17·1
	39	......	8·0	0 8 12	213 45	4 59·7	71·5	0·628	29·25	......	50·1	......	5	5	− 20 12 49·1	+ 13·8
	......	Nadir	......	0 11 0	54 0	2 49·0	55·4	0·500	......	52·0	50·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 60·8	66·4	0·500	......	......	......	......	......	......	......	......
Sept. 6	......	Nadir	......	21 14 0	54 0	2 49·0	55·0	0·500	......	59·7	62·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 59·7	65·6	0·500	......	......	......	......	......	......	......	......
	7510	......	......	21 28 41	210 5	0 32·7	43·9	0·500	30·18	......	62·0	1, W.	10	5	− 23 57 19·5	+ 20·7
	7569	......	6·5	21 37 37	261 50	2 33·9	47·5	0·560	30·18	......	62·0	......	......	6	+ 27 49 46·2	+ 23·0
	7644	......	8·0	21 50 3	218 10	0 21·9	34·9	0·500	30·18	......	62·0	......	......	4	− 15 52 29·4	+ 21·4
	7779	......	9·0	22 10 6	217 20	3 4·1	14·7	0·327	30·18	......	61·6	......	......	6	− 16 39 53·4	+ 21·0
	7908	ζ Pegasi	......	22 34 13	279 50	2 43·7	57·1	0·500	30·18	......	61·0	......	......	6	+ 45 49 55·1	+ 24·7
	8024	......	......	22 55 22	233 35	3 41·9	53·3	0·437	30·18	......	60·2	......	......	7	− 0 24 12·0	+ 21·9
	8083	......	7·0	23 6 20	233 35	1 5·6	18·8	0·630	30·18	......	60·0	......	......	6	− 0 26 41·9	+ 21·6
	8137	......	7·0	23 13 56	228 45	2 39·7	50·5	0·703	30·18	......	60·6	......	......	6	− 5 15 7·1	+ 20·7
	8204	......	6·5	23 26 25	218 45	1 19·7	32·1	0·816	30·18	......	60·8	......	......	7	− 15 16 23·3	+ 18·9
	8252	......	......	23 36 2	237 35	2 16·0	29·2	0·500	30·18	......	60·8	......	......	5	+ 3 34 24·9	+ 21·2
	8298	......	......	23 45 10	213 10	0 49·4	60·4	0·675	30·18	......	61·1	......	......	6	− 20 51 58·1	+ 17·2
	8355	(d)	......	23 55 14	224 40	1 3·1	13·5	0·300	30·18	......	61·1	......	......	5	− 9 21 55·1	+ 18·5
	18	......	......	0 3 11	231 5	1 21·4	33·2	0·511	30·18	......	61·1	......	......	4	− 2 56 30·1	+ 19·2
	68	......	......	0 13 48	222 55	2 23·6	35·8	0·500	30·18	......	61·1	......	......	8	− 11 5 28·1	+ 17·2
	105	......	......	0 21 53	213 45	0 36·2	48·4	0·500	30·18	......	61·0	......	......	6	− 20 17 15·7	+ 15·2
	149	......	......	0 28 25	277 30	2 10·8	33·0	0·500	30·18	......	61·0	......	......	7	+ 43 29 31·1	+ 26·4
	177	......	......	0 33 43	281 20	3 15·0	29·2	0·500	30·18	......	61·0	......	......	5	+ 47 20 26·[illegible]	+ 27·0
	......	Nadir	......	0 40 0	54 0	2 49·0	55·0	0·500	......	60·8	61·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 60·3	66·1	0·500	......	......	......	......	......	......	......	......
Sept. 7	......	Nadir	......	21 15 0	54 0	2 48·8	55·2	0·500	......	60·6	59·2	......	......	......	......	......
	......	Nadir	......	......	54 0	2 60·8	67·2	0·500	......	......	......	......	......	......	......	......
	7569	(e)	6·5	21 37 37	261 50	2 36·8	50·0	0·500	29·96	......	59·0	2, N.W.	9	6	+ 27 49 48·[illegible]	+ 23·2
	7644	......	7·0	21 50 2	218 10	0 23·1	35·1	0·500	29·96	......	58·2	......	......	6	− 15 52 28·9	+ 21·7

(a) Stars well defined. (b) A star of about 6·5 mag. near star observed, transiting about 20s before. (c) Star of 8 mag. near, transiting 25s before. (d) Double. Larger star observed. (e) Larger star observed.

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Date.	Star or other Object Observed. No. in British Assn. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes A.	Microscopes B.	Micrometer	Barometer	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South	Cor. to Mean N. Polar Dist., Jan. 1, 1860.
				h m s	° ′	° ′	′	revols.	inches.						° ′ ″	″
1860. Sept. 7	7708	......	6·0	22 0 36	228 20	3 57·7	68·7	0·608	29·96	......	57·8	......	......	8	− 5 38 51·9	+ 22·6
	7779	(a)	9·0	22 10 6	217 20	2 55·8	66·8	0·712	29·96	......	57·6	......	......	5	− 16 39 51·0	+ 21·4
	7908	ζ Pegasi	......	22 34 14	279 50	2 40·0	52·6	0·607	29·96	......	57·0	......	5	7	+ 45 49 53·7	+ 24·8
	7977	......	......	22 46 27	288 50	2 24·7	37·7	0·510	29·96	......	57·0	......	......	5	+ 54 49 36·5	+ 25·2
	8034	α Pegasi	......	22 57 32	275 30	1 45·8	58·6	0·560	29·96	......	57·0	......	......	6	+ 41 28 58·3	+ 25·4
	8083	......	......	23 6 19	233 35	1 8·6	20·0	0·500	29·96	......	56·7	......	......	5	− 0 26 43·7	+ 21·9
	8139	......	......	23 14 19	252 10	0 31·4	45·0	0·550	29·95	......	56·5	......	7	6	+ 18 7 42·6	+ 24·9
	18	......	......	0 3 0	231 5	1 21·0	32·8	0·520	29·95	......	55·5	......	......	5	− 2 56 30·5	+ 19·5
	39	......	7·0	0 8 11	213 50	0 1·2	13·6	0·500	29·95	......	55·4	......	......	5	− 20 12 50·7	+ 16·4
	68	......	......	0 13 45	222 55	2 20·2	36·8	0·500	29·95	......	55·4	......	......	5	− 11 5 29·7	+ 17·6
	99	......	......	0 19 59	274 40	3 58·1	69·9	0·500	29·95	......	55·2	......	......	7	+ 40 41 6·3	+ 26·2
	149	......	7·0	0 28 24	277 30	2 20·7	33·1	0·500	29·95	......	55·2	......	......	1	+ 43 20 31·4	+ 26·5
	......	Nadir	......	0 33 0	54 0	2 50·0	55·2	0·500	......	55·3	55·1	......	......	......	......	......
	......	Nadir	......	......	54 0	2 61·8	67·0	0·500	......	......	......	......	......	......	......	......
Sept. 10	......	Nadir	......	21 55 0	54 0	2 49·7	55·1	0·500	......	55·0	50·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 62·1	67·5	0·500	......	......	......	......	......	......	......	......
	7759	......	......	22 7 3	229 55	0 53·3	63·9	0·500	29·96	......	49·6	......	8	5	− 4 6 59·7	+ 23·7
	7908	ζ Pegasi	......	22 34 11	279 50	2 41·8	53·8	0·500	29·96	......	49·2	......	......	5	+ 45 49 51·6	+ 25·2
	8034	α Pegasi	......	22 57 30	275 30	1 41·3	52·9	0·680	29·96	......	49·0	......	......	7	+ 41 28 56·1	+ 25·8
	8083	......	6·0	23 6 18	233 35	1 13·3	24·9	0·277	29·96	......	48·7	......	......	6	− 0 26 45·6	+ 23·0
	8139	......	9·0	23 14 15	252 10	0 30·0	43·0	0·500	29·96	......	48·6	......	......	4	+ 18 7 39·0	+ 24·7
	8204	(b)	......	23 26 20	218 45	1 26·4	38·0	0·566	29·96	......	48·6	......	......	5	− 15 16 24·6	+ 20·4
	8252	......	......	23 36 2	237 35	2 11·1	23·1	0·663	29·96	......	48·2	1, W.	......	6	+ 3 34 23·1	+ 22·6
	8280	......	......	23 41 47	230 45	2 54·8	65·9	0·649	29·96	......	48·0	......	......	6	− 3 11 54·0	+ 21·4
	8338	......	......	23 53 20	228 35	1 6·7	19·1	0·589	29·96	......	48·0	......	......	5	− 5 26 43·0	+ 20·6
	8364	......	7·0	23 57 27	232 10	4 48·8	60·8	0·449	29·96	......	48·0	......	......	7	− 1 48 5·3	+ 21·0
	26	γ Pegasi	......	0 5 46	275 30	4 36·9	47·3	0·540	29·97	......	47·7	......	......	8	+ 41 31 47·0	+ 26·8
	63	......	......	0 17 17	237 40	3 34·3	47·2	0·588	29·97	......	47·6	......	......	7	+ 3 40 44·6	+ 21·0
	105	......	7·0	0 21 49	213 45	0 35·6	47·8	0·598	29·97	......	47·5	......	......	5	− 20 17 14·3	+ 16·7
	149	......	6·0	0 28 23	277 30	2 19·3	30·2	0·500	29·97	......	47·1	......	......	6	+ 43 29 28·8	+ 27·0
	177	......	7·0	0 33 40	281 20	3 17·0	28·7	0·550	29·97	......	47·0	......	......	......	+ 47 20 28·2	+ 27·5
	218	ε Cassiopeæ	......	0 40 24	232 55	0 39·6	52·0	0·509	29·97	......	47·0	......	......	7	− 1 7 12·3	+ 18·9
	......	Nadir	......	0 50 0	54 0	2 50·4	55·0	0·500	......	48·0	47·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·9	67·9	0·500	......	......	......	......	......	......	......	......
Sept. 11	......	Nadir	......	21 32 0	54 0	2 51·0	56·2	0·500	......	54·2	48·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 62·9	67·1	0·500	......	......	......	......	......	......	......	......
	7779	(a)	10·0	22 10 6	217 20	2 57·4	68·1	0·650	30·06	......	48·0	2, W.	10	5	− 16 39 51·7	+ 22·8
	7908	ζ Pegasi	......	22 34 11	279 50	2 40·1	52·9	0·650	30·06	......	48·0	......	......	......	+ 45 49 54·7	+ 25·3
	8024	......	......	22 55 20	233 35	3 10·7	51·0	0·473	30·06	......	47·7	......	......	6	− 0 24 13·4	+ 23·6
	8091	......	......	23 7 50	262 40	0 44·8	58·0	0·141	30·06	......	47·6	......	......	6	+ 28 37 53·1	+ 25·8
	8137	......	......	......	228 45	2 45·7	56·0	0·500	30·06	......	47·7	......	......	3	− 5 15 7·6	+ 22·6
	8247	......	......	23 35 9	272 5	0 32·6	45·0	0·500	30·05	......	47·9	......	......	5	+ 38 2 42·7	+ 26·5
	8272	......	......	23 40 45	282 30	0 33·9	46·4	0·497	30·05	......	47·9	......	......	6	+ 48 27 44·4	+ 27·3
	8338	......	......	23 53 22	228 35	1 9·3	19·5	0·523	30·05	......	47·9	2, W.	10	5	− 5 26 43·2	+ 21·0
	28	......	......	0 5 50	249 40	3 51·1	63·5	0·500	30·05	......	46·0	......	......	7	+ 15 40 59·7	+ 23·6
	68	......	......	0 13 42	222 55	2 24·4	35·4	0·500	30·05	......	46·0	......	......	6	− 11 5 28·6	+ 19·0
	98	......	8·0	0 19 57	274 40	3 57·9	70·0	0·472	30·05	......	45·6	......	......	7	+ 40 41 7·1	+ 26·8
	177	......	......	0 33 40	281 20	3 20·3	32·7	0·384	30·05	......	45·0	......	......	6	+ 47 20 27·4	+ 27·6

(a) Smaller star observed. (b) Definition bad.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. (Max. = 10.)	Est. Value of Obs. (Max. = 10.)	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist. Jan. 1, 1860.
1860.				h m s	° ′	′ ″	″	revols.	inches	°	°				° ′ ″	″
Sept. 11	224	......	......	0 41 22	262 0	1 58·0	69·7	0·542	30·05	......	44·7	......	......	7	+27 59 8·4	+24·4
	259	......	4·0	0 48 43	252 15	0 13·9	26·4	0·500	30·05	......	44·7	......	......	6	+18 12 22·9	+22·4
	290	......	......	0 56 46	236 30	2 40·8	52·9	0·538	30·05	......	44·7	......	......	......	+ 2 29 49·4	+19·0
	......	Nadir ‖	......	0 58 0	54 0	2 49·7	55·3	0·500	......	48·8	44·7	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 60·9	64·9	0·500	......	......	......	......	......	......	......	......
Sept. 13	......	Nadir ‖	......	23 14 0	54 0	2 50·7	55·5	0·500	......	54·8	55·6	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 62·2	66·8	0·500	......	......	......	......	......	......	......	......
	8269	(a)	7·5	23 40 13	286 30	1 24·0	37·1	0·500	29·15	......	55·6	......	5	4	+[illegible] 28 35·3	+27·6
	8315	......	......	23 48 6	282 30	2 1·6	13·5	0·526	29·15	......	55·5	5, S.E.	......	5	+48 29 12·8	+27·6
	8372	(b)	......	23 58 36	232 20	0 31·9	44·1	0·538	29·14	......	55·2	......	......	6	− 1 42 19·2	+22·0
	28	......	5·0	0 5 54	249 40	3 51·5	63·1	0·461	29·14	......	55·0	......	......	8	+15 40 58·7	+24·2
	83	......	......	0 17 11	237 40	3 34·3	45·7	0·536	29·14	......	54·8	......	......	5	+ 3 40 42·7	+21·9
	120	......	......	0 23 39	257 10	0 56·9	68·1	0·437	29·14	......	54·8	......	......	6	+23 8 3·9	+24·7
	259	......	......	0 48 43	252 15	0 12·1	24·6	0·457	29·14	......	54·9	......	......	7	+18 12 20·0	+22·9
	357	......	9·0	1 4 47	258 35	4 32·8	44·4	0·440	29·14	......	54·9	......	......	6	+24 36 40·0	+23·5
	......	Nadir ‖	......	1 10 0	54 0	2 49·9	55·2	0·500	......	55·0	54·9	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 61·7	65·3	0·500	......	......	......	......	......	......	......	......
Sept. 17	......	(c) Nadir ‖	......	21 44 0	54 0	2 49·3	55·5	0·500	......	53·6	48·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 60·3	65·3	0·500	......	......	......	......	......	......	......	......
	7996	......	7·0	22 50 2	286 50	4 48·1	59·7	0·500	29·27	......	47·7	2, W.	10	5	+52 51 59·2	+26·2
	8034	α Pegasi	......	22 57 23	275 30	1 46·0	58·2	0·500	29·27	......	47·7	......	......	6	+41 28 57·0	+27·0
	8204	......	7·0	23 26 11	218 45	1 24·9	36·1	0·500	29·27	......	47·4	......	......	7	−15 16 27·1	+23·0
	8269	(d)	9·0	23 40 16	286 30	4 30·0	42·0	0·500	29·27	......	47·5	......	......	5	+52 31 41·3	+27·9
	8338	......	6·0	23 53 15	228 35	1 4·3	16·1	0·500	29·27	......	47·5	......	......	7	− 5 26 47·2	+23·0
	8364	......	......	23 57 21	232 10	4 43·7	54·3	0·500	29·27	......	47·5	......	......	6	− 1 48 8·6	+23·4
	42	......	7·0	0 8 23	286 30	0 4·0	17·2	0·513	29·26	......	47·6	3, W.	10	5	+52 27 16·4	+26·1
	83	......	......	0 17 10	237 40	3 37·1	48·8	0·340	29·26	......	47·6	......	......	6	+ 3 40 41·1	+23·2
	120	......	......	0 23 37	257 10	0 51·4	63·4	0·546	29·26	......	47·6	......	......	7	+23 8 2·6	+25·6
	192	......	......	0 34 8	232 0	0 51·9	64·1	0·418	29·26	......	47·7	......	......	7	− 2 2 1·7	+21·4
	237	......	7·5	0 43 42	287 20	0 57·0	69·0	0·391	29·26	......	47·7	......	......	6	+53 18 5·4	+28·8
	290	......	......	0 55 40	236 30	2 40·4	52·0	0·390	29·26	......	47·9	......	......	6	+ 2 29 45·6	+20·9
	335	......	......	1 2 1	226 30	2 47·0	57·0	0·247	29·26	......	47·9	......	......	4	− 7 30 12·6	+18·7
	379	......	......	1 8 25	222 55	0 33·5	44·9	0·444	29·26	......	47·9	......	......	7	−11 7 20·0	+17·6
	......	Nadir ‖	......	1 17 0	54 0	2 49·6	53·6	0·500	......	49·7	47·9	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 60·4	64·4	0·500	......	......	......	......	......	......	......	......
Sept. 18	......	Nadir ‖	......	21 47 0	54 0	2 49·3	54·3	0·500	......	53·1	49·0	......	......	......		
	......	Nadir ‖	......	......	54 0	2 60·3	64·5	0·500	......	......	......	......	......	......	......	......
	7908	ζ Pegasi	......	22 34 6	279 50	2 40·6	52·7	0·500	29·20	......	49·0	1, W.	10	7	+45 49 51·9	+26·0
	7977	......	......	22 46 20	288 50	2 24·8	37·0	0·500	29·20	......	48·3	......	......	6	+54 49 36·7	+26·0
	8083	......	6·0	23 6 10	233 35	1 7·9	18·2	0·362	29·19	......	48·5	......	......	6	− 0 26 48·0	+25·7
	8138	......	7·0	23 14 6	228 30	3 9·8	19·8	0·417	29·19	......	48·5	......	......	5	− 5 29 44·7	+25·0
	8204	......	7·0	23 26 13	218 45	1 19·7	31·5	0·659	29·19	......	48·5	......	......	6	−15 16 27·3	+23·4
	8252	......	......	23 35 54	237 35	2 15·5	27·1	0·330	29·19	......	48·5	......	......	7	+ 3 34 19·4	+25·2
	8260	......	......	23 41 41	230 45	2 52·8	62·6	0·518	29·19	......	48·5	......	......	9	− 3 14 59·0	+24·2
	8315	......	......	23 48 4	282 30	2 0·0	12·0	0·400	29·19	......	48·5	......	......	7	+48 [illegible] 8·8	+23·1
	8338	......	......	23 53 14	228 35	1 5·8	16·9	0·435	29·19	......	48·5	......	......	7	− 5 26 47·5	+23·4
	8372	......	......	23 58 35	232 20	0 31·8	43·0	0·440	29·19	......	48·5	......	......	......	− 1 42 21·4	+23·7
	39	......	......	0 8 2	213 46	4 55·8	65·7	0·520	29·19	......	48·2	......	......	6	−20 12 56·2	+20·6

(a) Following. (b) Wind blowing in gusts, and increasing rapidly. (c) In the course of this day, an examination was successfully made, of the collimation error in Right Ascension of the Mural Circle, *per se*, or without introduction of either the level, or azimuth, errors,—by means of two temporary collimating telescopes on horizontal axes North and South of the Circle and specially prepared for the occasion. The error was found to be very small, or within the range usually allowed for a Meridian bisection, and quite insensible in its effects on the N. P. D. of the star observed. (d) Preceding.

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Date.	Star or other Object Observed. No. in British Assoc. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A	B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity in miles per hour, and Direction.	Blue Sky. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1860.
1860				h m s	° ′	° ′	′	revs	inches	°	°				° ′ ″	″
Sept. 18	68	......	......	0 13 37	222 55	2 24·9	35·3	0·260	29·19	......	48·2	......	......	7	− 11 5 31·0	+ 21·6
	98	......	......	0 19 51	274 40	3 54·4	66·0	0·500	29·19	......	48·2	......	......	6	+ 40 11 6·3	+ 27·8
	120	......	......	0 23 36	257 10	0 50·8	61·8	0·580	29·19	......	48·0	......	......	6	+ 23 8 2·7	+ 25·9
	149	......	......	0 28 17	277 30	2 16·4	27·1	0·500	29·19	......	48·0	......	......	7	+ 43 29 26·9	+ 28·0
	177	......	......	0 33 34	281 20	3 17·0	28·2	0·419	29·19	......	48·0	......	......	......	+ 47 20 25·6	+ 28·3
	224	......	......	0 41 16	262 0	1 57·7	68·8	0·500	29·19	......	48·0	......	......	5	+ 27 59 7·8	+ 26·0
	259	......	......	0 48 37	252 15	0 11·9	24·0	0·391	29·19	......	48·0	......	......	4	+ 18 12 18·8	+ 24·2
	290	......	......	0 55 40	236 30	2 38·7	49·0	0·490	29·19	......	47·0	......	10	5	+ 2 29 46·3	+ 21·2
	376	......	9·0	1 8 2	217 50	1 56·2	66·0	0·500	29·19	......	47·0	......	......	5	− 16 10 56·2	+ 17·1
	403	(a)	......	1 13 16	217 50	3 23·9	39·9	0·467	29·19	......	47·0	......	......	4	− 16 9 23·4	+ 16·7
	......	Nadir	......	1 20 0	54 0	2 49·0	55·1	0·500	......	50·2	47·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 60·7	64·7	0·500	......	......	......	......	......	......	......	......
Sept. 20	......	Nadir	......	22 14 0	54 0	2 50·0	53·8	0·500	......	52·6	50·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 61·4	65·4	0·500	......	......	......	......	......	......	......	......
	149	......	......	0 28 15	277 30	2 18·7	30·4	0·500	29·36	......	50·0	12, N W.	5	5	+ 43 29 29·6	+ 28·2
	259	......	4·0	0 48 36	252 15	0 7·0	18·8	0·597	29·36	......	48·0	......	......	6	+ 18 12 19·2	+ 24·7
	290	......	7·0	0 55 38	236 30	2 38·6	49·7	0·450	29·36	......	48·0	......	......	7	+ 2 29 45·3	+ 21·8
	335	......	......	1 2 0	226 30	2 45·0	54·4	0·276	29·36	......	48·0	......	......	7	− 7 30 14·1	+ 19·7
	376	......	......	1 8 2	217 50	1 58·5	68·9	0·412	29·36	......	48·0	......	......	9	− 16 10 56·3	+ 17·8
	403	......	7·0	1 13 16	217 50	3 29·0	38·2	0·520	29·36	......	48·0	......	......	9	− 16 9 23·6	+ 17·4
	455	......	......	1 24 4	273 45	0 2·6	14·1	0·392	29·38	......	48·0	......	9	8	+ 39 42 10·3	+ 26·7
	......	Nadir	......	1 37 0	54 0	2 49·6	53·7	0·500	......	49·2	48·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 61·8	66·0	0·500	......	......	......	......	......	......	......	......
Sept. 24	......	(b) Nadir	......	0 29 0	54 0	2 48·0	56·0	0·500	......	44·8	43·8	......	......	......	......	......
	......	Nadir	......	......	54 0	2 58·3	67·1	0·500	......	......	......	......	......	......	......	......
	226	......	6·5	0 41 45	226 30	0 55·6	[illegible]1·3	0·500	29·48	......	43·8	......	......	6	− 7 31 51·3	+ 22·5
	263	......	9·0	......	263 40	4 39·3	55·5	0·550	29·48	......	43·8	......	......	4	+ 20 41 52·8	+ 27·1
	296	......	......	0 56 21	224 45	1 [illegible]	65·4	0·556	29·48	......	43·8	......	......	5	− 9 15 58·7	+ 21·2
	403	......	......	1 13 7	217 50	3 25·7	40·7	0·500	29·48	......	43·7	......	......	7	− 16 9 24·7	+ 18·8
	455	......	......	1 24 1	273 40	4 56·7	71·3	0·500	29·48	......	43·7	......	......	7	+ 39 42 8·6	+ 27·2
	514	......	......	1 33 15	260 35	1 0·6	14·8	0·533	29·47	......	43·7	......	......	6	+ 26 36 12·5	+ 24·7
	547	......	......	1 40 5	212 45	2 51·4	68·0	0·426	29·47	......	43·7	......	......	7	+ 8 45 0·3	+ 21·0
	......	Nadir	......	1 50 0	54 0	2 49·4	57·4	0·500	......	43·9	43·7	......	......	......	......	......
	......	Nadir	......	......	54 0	2 59·2	67·4	0·590	......	......	......	......	......	......	......	......
Sept. 25	......	Nadir	......	22 24 0	54 0	2 47·4	57·0	0·500	......	49·2	45·9	......	......	......	......	......
	......	Nadir	......	......	54 0	2 59·9	67·3	0·500	......	......	......	......	......	......	......	......
	8024	......	......	22 55 4	233 35	3 30·7	45·9	0·529	29·42	......	45·9	3, W.	10	7	− 0 24 19·0	+ 28·2
	8137	......	7·0	23 13 36	228 45	2 33·1	48·0	0·617	29·42	......	45·9	......	......	7	− 5 15 14·0	+ 27·1
	8252	......	7·0	23 35 46	237 35	2 14·3	30·1	0·282	29·42	......	45·8	......	......	6	+ 3 34 18·3	+ 27·4
	8272	......	......	23 40 37	282 30	0 21·6	38·0	0·500	29·42	......	45·3	......	......	5	+ 18 27 34·6	+ 28·6
	8315	......	......	23 47 56	282 30	1 51·1	66·8	0·604	29·42	......	45·2	......	......	6	+ 18 29 0·7	+ 28·7
	8350	85 Pegasi	......	23 54 22	263 35	3 41·1	57·0	0·500	29·42	......	45·2	......	......	7	+ 29 35 52·8	+ 28·5
	8372	(c)	......	23 58 26	232 20	0 26·8	42·4	0·526	29·42	......	45·1	......	......	6	− 1 42 22·6	+ 26·0
	28	......	6·0	0 5 45	249 40	3 42·2	57·7	0·597	29·42	......	45·1	......	......	5	+ 15 40 55·5	+ 27·4
	98	......	......	0 19 45	274 40	3 53·8	70·0	0·426	29·43	......	45·0	7, W.	10	6	+ 40 41 4·1	+ 28·7
	133	......	......	0 25 50	270 15	4 20·0	35·6	0·500	29·43	......	45·0	......	......	4	+ 36 16 31·9	+ 28·4
	218	α Cassiopeæ	......	0 40 7	232 55	0 29·0	45·9	0·590	29·43	......	45·0	......	......	6	− 1 7 18·0	+ 23·8

(a) Scarcely seen at time of transit. (b) 8 standard stars were observed in R.A. this evening at various Polar Distances, to test the Meridian error of the circle's path, and they all agreed together within 1·1 sec. excepting a near Polar one. (c) Aurora towards the N.W.

Date.	Star or other Object Observed. No. in British Assn. Catalogue	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky.	Est. Value of Obs.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1860.
				h m s	° ′	′ ″	″	revs.	inches	°	°		Max. = 10.	Max. = 10.	° ′ ″	″
1860. Sept. 25	299	....	......	0 56 17	261 0	4 34.9	49.6	0.500	29.43	......	45.0	....	......	5	+27 1 45.7	+26.7
	472	....	......	1 27 7	289 40	4 8.4	24.1	0.426	29.43	......	45.0	....	......	5	+55 41 19.3	+29.2
	516	....	......	1 33 28	255 25	2 11.9	27.7	0.463	29.43	......	45.0	....	......	6	+21 24 22.0	+24.0
	538	....	......	1 38 30	273 15	1 18.9	35.3	0.590	29.13	......	45.0	....	......	7	+39 13 33.9	+26.7
	562	....	......	1 43 25	239 10	2 55.0	70.2	0.500	29.13	......	45.0	....	......	5	+5 10 4.7	+20.4
	......	Nadir ‖............	......	1 51 0	51 0	2 49.1	58.4	0.500	......	46.0	45.0	....	......	......	....	......
	......	Nadir ‖............	......	....	54 0	2 57.7	67.5	0.500	......	......	......	....	......	......	....	......
Oct. 3	......	Nadir ‖............	......	23 11 0	54 0	2 47.4	57.2	0.500	......	49.1	45.0	....	......	......	....	......
	......	Nadir ‖............	......	....	54 0	2 59.2	67.1	0.500	......	......	......	....	......	......	....	......
	8270	....	9.0	23 40 7	266 30	4 28.8	43.9	0.500	29.85	......	43.4	9, N.W.	10	5	+52 31 41.1	+28.8
	83	....	6.0	0 16 53	237 40	3 26.7	42.0	0.500	29.85	......	43.0	....	......	5	+3 40 36.4	+29.2
	133	....	......	0 25 48	270 15	4 14.0	25.7	0.757	29.85	......	44.0	....	......	5	+36 16 32.7	+29.6
	263	....	6.0	0 49 0	263 40	4 45.9	61.7	0.337	29.85	......	43.8	....	......	6	+29 41 53.2	+28.7
	314	μ Cassiopeæ........	......	0 58 25	235 45	0 50.3	67.1	0.574	29.85	......	43.7	....	......	7	+1 43 2.4	+25.5
	360	α Ursæ Minoris....	......	1 6 30	201 25	1 41.0	55.0	0.633	29.85	......	43.8	....	......	7	−32 36 8.3	+20.0
	457	....	9.0	1 24 55	209 15	2 31.8	46.2	0.607	29.85	......	43.8	....	......	8	−24 45 16.3	+19.7
	516	....	......	1 33 26	255 25	2 7.4	23.4	0.571	29.85	......	43.1	....	......	7	+21 24 20.4	+25.7
	547	....	......	1 50 2	242 45	2 47.7	63.7	0.525	29.85	......	43.0	....	......	6	+8 44 58.9	+23.4
	626	....	7.0	1 55 11	207 5	1 37.4	49.6	0.424	29.87	......	43.5	....	......	7	−26 56 16.7	+16.1
	691	....	......	2 7 28	226 10	3 40.0	55.6	0.182	29.87	......	43.4	....	......	6	−7 49 10.8	+18.2
	728	....	7.0	2 15 11	279 45	1 56.5	71.9	0.520	29.85	......	43.4	....	......	5	+45 44 9.1	+14.7
	......	Nadir ‖............	......	2 25 0	54 0	2 49.9	58.3	0.500	......	43.7	43.4	....	......	......	....	......
	......	Nadir ‖............	......	....	54 0	2 60.2	68.8	0.500		......	......	....	......	......	....	......
Oct. 22	......	Nadir ‖............	......	0 16 0	51 0	2 49.6	57.3	0.500	......	49.1	49.0	....	......	......	....	......
	......	Nadir ‖............	......	....	54 0	2 58.6	66.8	0.500	......	......	......	....	......	......	....	......
	360	α Ursæ Minoris....	......	1 7 12	201 25	1 36.2	49.8	0.550	29.61	......	48.0	....	5	6	−32 36 13.7	+27.3
Nov. 1	......	Nadir ‖............	......	0 51 0	51 0	2 48.3	56.7	0.500		48.1	43.0	....	......	......	....	......
	......	Nadir ‖............	......	....	54 0	2 58.0	66.2	0.500	......	......	......	....	......	......	....	......
	403	....	......	1 13 40	217 50	3 11.4	25.8	0.500	30.00	......	43.0	2, E.	10	5	−16 0 38.9	+32.1
	457	....	7.5	1 25 33	209 15	2 23.2	37.6	0.530	30.00	......	43.0	....	......	7	−24 46 26.3	+30.4
	516	....	......	1 34 0	255 25	2 1.3	17.3	0.500	30.00	......	43.0	....	......	6	+21 24 13.1	+31.6
	547	....	......	1 40 37	242 45	2 39.6	55.0	0.500	30.00	......	42.3	....	......	6	+6 44 50.3	+30.6
	588	....	......	1 49 22	226 0	3 39.4	54.0	0.450	30.00	......	42.0	....	......	7	−7 59 12.2	+29.2
	647	....	8.0	1 58 47	261 55	4 26.9	43.1	0.500	30.00	......	42.0	....	......	4	+30 56 39.6	+29.0
	694	....	8.0	2 8 3	226 10	3 30.7	46.3	0.450	30.00	......	42.0	....	......	6	−7 49 20.3	+27.2
	764	....	......	2 22 9	281 0	2 21.2	38.8	0.454	30.00	......	42.0	....	......	7	+46 59 33.8	+27.3
	793	....	8.0	2 28 6	283 45	0 34.5	52.0	0.500	30.00	......	42.0	....	......	4	+49 42 48.4	+26.9
	891	....	......	2 45 17	284 0	4 45.4	63.1	0.300	30.00	......	42.0	....	......	3	+50 1 54.2	+25.9
	......	Nadir ‖............	......	4 15 0	54 0	2 47.0	55.8	0.500	......	45.7	41.1	....	......	......	....	......
	......	Nadir ‖............	......	....	54 0	2 60.0	66.0	0.500		......	......	....	......	......	....	......
Nov. 2	......	Nadir ‖............	......	1 20 0	51 0	2 47.3	50.9	0.500	......	46.0	38.3	....	......	......	....	......
	......	Nadir ‖............	......	....	54 0	2 58.0	67.0	0.500	......	......	......	....	......	......	....	......
	586	....	6.0	1 49 22	226 0	3 35.2	48.1	0.606	30.00	......	37.1	....	10	6	−7 50 12.6	+29.5
	718	....	7.0	2 12 4	233 20	3 53.3	67.4	0.453	30.00	......	37.1	....	......	5	−0 38 37.9	+27.5
	764	....	7.0	2 22 7	281 0	2 21.1	37.1	0.367	30.00	......	37.1	....	......	6	+46 59 30.8	+27.2
	822	(a)	8.0	....	247 50	3 37.2	52.3	0.500	30.00	......	37.1	....	......	4	+13 50 18.5	+26.0

(a) A loose scattered group of stars.

Date	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. Max = 10.	Est. Value of Obs. Max = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1860.
1860.				h. m. s.	° ′	′ ″	″	turns	inches	°	°				° ′ ″	″
Nov. 2	891	...	...	2 45 16	284 0	4 35·7	50·1	0·500	30·00	...	37·1	...	...	4	+ 50 1 48·7	+ 25·0
	962	ι Persei ...	...	2 59 0	210 55	5 11·3	26·9	0·523	30·00	...	37·0	...	10	6	+ 6 52 22·7	+ 22·7
	1101	...	8·0	3 26 56	258 45	1 49·9	61·9	0·411	30·00	...	37·1	...	...	7	+ 24 43 59·3	+ 21·1
	1262	...	...	...	241 15	1 2·9	18·9	0·500	30·00	...	37·0	...	...	4	+ 7 13 13·9	+ 14·4
	1318	...	...	4 10 32	233 45	5 7·1	22·7	0·500	30·00	...	37·0	...	...	7	− 0 12 42·5	+ 12·3
	1361	...	...	4 16 48	271 15	1 8·7	21·0	0·500	30·00	...	37·3	...	...	5	+ 37 13 21·3	+ 17·3
	...	Nadir ‖ ...	...	4 24 0	54 0	2 47·0	54·8	0·500	...	42·3	37·1	...	...	...	...	...
	...	Nadir ǂ ...	...	...	54 0	2 58·0	66·2	0·500	...	...	...	...	...	...	...	...
Nov. 5	...	Nadir ‖ ...	...	1 30 0	54 0	2 43·0	57·6	0·500	...	41·0	41·0	...	...	...	...	...
	...	Nadir ǂ ...	...	...	54 0	2 54·6	67·2	0·500	...	...	...	...	...	...	...	...
	588	...	...	1 [illegible] 17	226 0	3 37·3	51·1	0·500	30·18	...	41·0	...	8	5	− 7 59 13·7	+ 30·4
	645	...	6·0	1 58 13	261 45	4 24·7	43·3	0·500	30·18	...	41·0	...	...	6	+ 30 16 40·6	+ 29·4
	694	...	...	2 8 0	226 10	3 28·7	42·4	0·500	30·18	...	41·0	...	...	7	− 7 49 22·3	+ 28·4
	725	...	8·0	2 13 1	233 15	0 7·2	22·0	0·500	30·18	...	41·0	...	...	7	− 0 47 43·5	+ 28·2
	761	...	7·0	2 22 3	281 0	2 17·0	33·2	0·610	30·18	...	41·0	...	...	7	+ 46 59 32·7	+ 27·2
	793	...	...	2 28 21	283 15	0 31·1	50·3	0·471	30·18	...	41·0	...	...	8	+ 49 42 46·2	+ 26·8
	1166	η Tauri ...	3·0	3 39 1	266 15	4 3·8	19·1	0·500	30·19	...	41·1	...	...	7	+ 32 16 15·7	+ 20·6
	1361	(a) ...	7·0	4 16 11	271 15	1 11·7	30·1	0·267	30·19	...	41·1	...	...	7	+ 37 13 20·0	+ 17·4
	1434	...	5·0	4 30 16	277 45	0 27·8	41·0	0·230	30·19	...	41·0	...	...	8	+ 43 42 32·8	+ 16·8
	...	Nadir ‖ ...	...	4 34 0	54 0	2 48·0	53·2	0·500	...	43·0	41·0	...	...	...	...	...
	...	Nadir ǂ ...	...	...	54 0	2 60·0	67·0	0·500	...	...	...	...	...	...	...	...
Nov. 6	...	Nadir ‖ ...	...	2 42 0	54 0	2 48·5	57·3	0·500	...	43·7	39·7	...	...	...	...	...
	...	Nadir ǂ ...	...	...	54 0	2 59·0	65·9	0·500	...	...	...	...	...	...	...	...
	949	α Ceti ...	2·5	2 54 51	286 25	1 12·1	28·0	0·430	30·22	...	39·2	1, E.	7	6	+ 52 23 23·9	+ 24·8
	986	...	8·0	3 4 3	215 15	2 12·1	25·0	0·570	30·22	...	39·1	...	...	7	− 18 45 37·5	+ 21·5
	1055	(b) ...	...	3 16 20	268 25	1 36·8	52·5	0·500	30·22	...	39·1	...	...	6	+ 34 23 51·6	+ 23·3
	...	Nadir ‖ ...	...	4 25 0	54 0	2 48·9	56·5	0·500	...	43·1	39·0	...	...	...	...	...
	...	Nadir ǂ ...	...	...	54 0	2 57·9	65·8	0·500	...	...	...	...	...	...	...	...
Nov. 27	...	Nadir ‖ ...	...	2 47 0	54 0	2 49·3	57·4	0·500	...	39·0	34·2	...	...	...	...	...
	...	Nadir ǂ ...	...	...	54 0	2 59·8	66·0	0·500	...	...	...	...	...	...	...	...
	1055	...	7·5	3 16 48	268 25	1 38·0	52·1	0·566	29·48	...	33·7	1, E.	0	5	+ 34 23 50·7	+ 23·9
	1101	...	...	3 27 17	258 45	1 49·7	61·8	0·444	29·48	...	33·7	...	...	6	+ 24 43 59·1	+ 23·5
	1166	(b) η Tauri ...	...	3 39 32	266 15	4 2·8	18·2	0·500	29·48	...	33·7	...	...	7	+ 32 16 14·5	+ 21·6
	1459	...	6·5	4 37 1	234 35	4 7·8	20·9	0·528	29·48	...	33·9	...	...	7	+ 0 36 20·0	+ 13·5
	1491	(c) ...	...	4 43 20	281 15	4 29·9	44·9	0·475	29·48	...	33·9	...	...	8	+ 47 16 41·4	+ 14·5
	1626	...	...	5 9 16	249 40	1 14·0	29·0	0·500	29·48	...	33·9	...	...	4	+ 15 38 24·2	+ 9·3
	1656	...	6·0	5 14 27	281 40	1 40·3	56·5	0·610	29·48	...	33·9	...	...	8	+ 47 38 56·0	+ 11·1
	1683	...	...	5 17 54	255 10	3 48·0	64·0	0·500	29·48	...	33·9	...	...	6	+ 21 40 59·3	+ 8·5
	...	Nadir ‖ ...	...	5 40 0	54 0	2 49·7	57·3	0·500	...	37·0	34·0	...	...	...	...	...
	...	Nadir ǂ ...	...	...	54 0	2 59·2	67·0	0·500	...	...	...	...	...	...	...	...
Nov. 28	...	Nadir ‖ ...	...	3 23 0	54 0	2 49·4	57·0	0·500	...	38·4	35·0	...	...	...	...	...
	...	Nadir ǂ ...	...	...	54 [illegible]	2 59·7	67·1	0·500	...	...	...	...	...	...	...	...
	1166	η Tauri ...	...	3 39 31	266 15	4 0·0	14·2	0·620	29·61	...	35·0	1, E.	4	6	+ 32 16 14·4	+ 21·8
	1434	...	5·0	4 30 41	277 45	0 21·1	36·3	0·570	29·61	...	35·0	...	...	7	+ 43 42 34·8	+ 15·8
	1459	...	7·0	4 37 1	234 35	4 11·1	24·1	0·436	29·61	...	35·0	...	...	7	+ 0 36 17·9	+ 13·8
	1501	...	8·0	4 45 39	234 20	4 25·5	39·0	0·397	29·61	...	34·9	...	7	5	+ [illegible] 21 31·4	+ 12·3
	1626	...	...	5 9 14	249 40	1 4·4	19·6	0·780	29·61	...	34·9	...	...	6	+ 15 38 22·4	+ 9·4

(a) Definition good. (b) Sky getting cloudy. (c) Clouds dispersing.

Date.	Star or other Object Observed. No. in British Assn. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South	Cor. to Mean N. Polar Dist., Jan. 1, 1860.
1860.				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
Nov. 28	1683			5 17 54	255 40	3 48·1	61·4	0·500	29·61		34·7			7	+21 40 58·1	+ 8·6
	1730	δ Orionis		5 25 11	290 20	2 51·1	66·6	0·500	29·61		34·7			7	+56 20 4·1	+10·4
		Nadir		6 9 0	54 0	2 49·0	56·9	0·500		37·2	34·1					
		Nadir			54 0	2 60·0	66·2	0·500								
Dec. 5		Nadir		3 44 0	54 0	2 49·7	57·0	0·500		43·0	43·0					
		Nadir			54 0	2 58·7	66·3	0·500								
	1318	(a)	6·0		233 45	5 2·4	17·4	0·500	29·05		43·0		4	4	− 0 12 48·4	+19·5
	1501		8·0	4 45 31	234 20	4 17·7	30·5	0·660	29·08		43·0			5	+ 0 21 30·6	+13·7
		Nadir		5 0 0	54 0	2 48·6	56·1	0·500								
		Nadir			54 0	2 59·3	66·7	0·500								
Dec. 11		Nadir		6 19 0	54 0	2 49·4	55·9	0·500		40·3	39·9					
		Nadir			54 0	2 61·3	66·4	0·500								
	2184		7·0	6 33 26	273 25	3 3·7	16·6	0·303	29·76		40·0	1, E.	7	7	+39 25 9·8	− 0·6
	2238			6 43 40	266 10	3 48·0	63·1	0·588	29·76		40·0			6	+32 11 1·9	− 2·9
	2292	(b)		6 53 23	279 5	4 57·0	70·3	0·942	29·76		40·0			5	+45 7 20·5	− 2·5
		Nadir		6 58 0	54 0	2 49·2	56·6	0·500		40·4	40·0					
		Nadir			54 0	2 60·9	67·0	0·500								
Dec. 13		Nadir		3 43 0	54 0	2 48·9	57·3	0·500		41·5	38·8					
		Nadir			54 0	2 58·3	66·1	0·500								
	1282			4 3 30	241 15	0 34·6	70·6	0·590	29·96		38·7		5	5	+ 7 13 7·2	+21·8
	1318			4 10 40	233 50	0 3·0	18·0	0·366	29·96		38·7			6	− 0 12 51·5	+21·2
	1347			4 15 11	265 50	4 45·9	60·5	0·500	29·96		38·7			6	+31 51 57·2	+17·9
	1361			4 16 55	271 15	1 10·0	24·1	0·500	29·96		38·7			5	+37 13 21·0	+17·2
	1434		5·0	4 30 28	277 45	0 27·3	11·9	0·391	29·96		38·7			7	+43 42 35·8	+15·0
	1459			4 36 49	234 35	4 6·1	19·3	0·543	29·96		38·7			6	+ 0 36 16·0	+16·8
	1491			4 43 8	281 15	4 31·4	44·4	0·500	29·96		38·7			7	+47 16 42·6	+13·2
	1501			4 45 28	234 20	4 17·2	29·4	0·633	29·96		38·7			8	+ 0 21 29·1	+15·4
	1626			5 9 3	249 40	1 11·3	25·9	0·477	29·96		38·7			7	+15 38 20·6	+11·1
	1730	(b) δ Orionis		5 24 59	290 20	2 55·3	69·6	0·487	29·96		38·5			6	+56 20 7·1	+ 8·3
	1751			5 28 36	224 20	3 21·9	34·0	0·550	29·96		38·4			4	− 9 39 29·8	+ 7·7
	1883	α Orionis	2·0	5 47 44	282 35	1 16·0	31·6	0·594	29·96		38·1		4	7	+48 33 31·0	+ 5·7
		Nadir		6 11 0	54 0	2 49·7	56·9	0·500		40·2	38·0					
		Nadir			54 0	2 59·9	66·2	0·500								
Dec. 14		Nadir		5 20 0	54 0	2 48·9	57·1	0·500		41·7	43·0					
		Nadir			54 0	2 58·8	65·8	0·500								
	1769	(c)		5 30 8	236 30	4 54·4	67·1	0·573	29·96		43·0			6	+ 2 32 5·1	+ 7·7
		Nadir		5 41 0	54 0	2 49·0	56·8	0·500		43·1	41·7					
		Nadir			54 0	2 59·0	65·7	0·500								
Dec. 15		Nadir		4 42 0	54 0	2 47·7	56·5	0·500		41·0	38·0					
		Nadir			54 0	2 58·9	66·3	0·500								
	1626			5 9 2	249 40	1 9·0	24·0	0·611	29·93		38·0	6, N.W.	9	7	+15 38 22·5	+11·3
	1656			5 14 12	281 40	1 47·3	62·9	0·500	29·93		38·0			5	+47 38 59·9	+ 9·5
		Nadir		5 27 0	54 0	2 47·9	55·0	0·500		38·8	38·0					
		Nadir			54 0	2 60·2	67·2	0·500								
Dec. 17		Nadir		4 24 0	54 0	2 48·8	56·0	0·500		38·8	34·8					
		Nadir			54 0	2 59·4	67·2	0·500								

(a) Seen rather late. (b) Sky getting cloudy. (c) Cloudy.

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Date.	Star or other Object Observed. No. in British Ass. Catalogue	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. (Max. = 10.)	Est. Value of Obs. (Max. = 10.)	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1860.
1860.				h. m. s.	° ′	′ ″	″	revs.	inches	°	°				° ′ ″	″
Dec. 17	1463	....	7·0	4 37 21	266 35	2 16·7	32·3	0·585	29·43	......	34·8	1, N.	9	6	−32 34 30·9	+15·0
	1491	....	5·6	4 43 4	281 15	4 31·1	45·3	0·500	29·43	......	34·8	....	......	6	+47 16 43·1	+12·9
	1626	....	......	5 9 0	240 40	1 11·5	26·7	0·473	29·43	......	34·8	....	......	6	+15 38 21·3	+11·5
	1656	....	......	5 14 12	281 40	1 46·2	61·4	0·500	29·43	......	34·8	....	......	7	+47 38 58·6	+ 9·3
	1683	....	......	5 17 39	255 40	3 48·0	62·6	0·500	29·43	......	34·8	....	......	6	+21 40 58·8	+ 9·9
	1703	....	......	5 20 10	273 40	0 3·0	19·2	0·423	29·43	......	34·8	....	......	7	+39 37 13·3	+ 8·9
	1751	....	......	....	224 20	3 22·9	34·1	0·500	29·41	......	34·5	3, N.	9	5	− 9 30 29·4	+ 8·6
	1813	....	......	5 38 2	221 30	4 54·0	65·0	0·548	29·41	......	34·4	....	......	7	−12 27 56·9	+ 6·9
	1962	(a)	......	6 1 0	265 40	3 52·0	66·2	0·500	29·41	......	34·4	....	......	5	+31 41 3·3	− 3·3
	2022	....	6·0	6 9 29	279 55	4 42·2	56·0	0·534	29·41	......	34·4	....	......	6	+45 56 54·9	+ 2·5
	2046	....	......	6 14 45	233 35	4 5·5	19·1	0·240	29·40	......	34·0	....	......	8	− 0 23 52·6	0·0
	2083	....	6·0	6 20 24	216 10	2 50·3	63·9	0·571	29·40	......	34·0	....	......	7	−17 49 59·0	− 1·4
	2184	....	......	6 34 23	273 25	2 48·4	63·2	0·781	29·40	......	34·0	....	......	6	+39 25 8·0	− 1·0
	2238	....	......	6 43 36	266 10	3 44·3	58·9	0·675	29·40	......	34·0	....	......	7	+32 11 0·6	− 3·0
	2292	....	10·0	6 53 16	279 10	0 9·0	19·0	0·500	29·40	......	34·0	....	......	4	+45 7 18·5	− 3·2
	......	Nadir I	......	6 59 0	54 0	2 49·2	55·9	0·500	29·39	36·3	33·9	....	......	......	....	......
	......	Nadir II	......	....	54 0	2 60·0	66·8	0·500	......	......	......	....	......	......	....	......

(a) Nebulous

ROYAL OBSERVATORY, EDINBURGH.

Individual Observations of Mean North Polar Distances of the Stars observed at the Royal Observatory, Edinburgh, in the Year 1860, reduced to January 1, 1860.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1860.
			h. m.	° ′ ″
B.A.C. 18.				
Aug. 31	0·66	7·0	0 3	31 6 22·1
Sept. 6	0·68			23·0
7	0·68			22·8
B.A.C. 26, γ Pegasi.				
Aug. 30	0·66	(2·0)	0 6	75 35 43·2
Sept. 10	0·69			42·4
B.A.C. 28.				
Sept. 11	0·70		0 6	49 44 16·6
13	0·70	5·0		15·4
25	0·73	6·0		15·9
B.A.C. 39.				
Aug. 31	0·66	8·0	0 8	13 49 40·6
Sept. 7	0·68	7·0		41·3
18	0·71			40·2
B.A.C. 42.				
Sept. 17	0·71	7·0	0 8	86 31 35·8
B.A.C. 68.				
Sept. 6	0·68	(7·0)	0 14	22 57 14·7
7	0·68			13·4
11	0·70			15·7
18	0·71			13·2
B.A.C. 83.				
Sept. 10	0·69		0 17	37 43 46·2
13	0·70			45·0
17	0·71			44·8
Oct. 3	0·76	6·0		45·2
B.A.C. 98.				
Sept. 7	0·68		0 20	74 44 60·8
11	0·70	8·0		61·3
18	0·71			58·8
25	0·73			59·2
B.A.C. 105.				
Sept. 6	0·68		0 22	13 45 15·1
10	0·69	7·0		17·6
B.A.C. 120.				
Sept. 13	0·70	(6·0)	0 24	57 11 29·4
17	0·71			29·4
18	0·71			29·7
B.A.C. 133.				
Sept. 25	0·73	(8·0)	0 26	70 20 19·5
Oct. 3	0·76			22·3
B.A.C. 149.				
Sept. 6	0·68		0 26	77 33 28·7
7	0·68	7·0		29·3
10	0·69	6·0		28·1
18	0·71			25·7
20	0·72			28·6
B.A.C. 177.				
Sept. 6	0·68		0 34	81 24 32·8
10	0·69	7·0		36·0
11	0·70			35·7
18	0·71			32·4
B.A.C. 182.				
Sept. 17	0·71	(7·0)	0 34	32 0 54·5
B.A.C. 218, η Cassiopeæ.				
Sept. 10	0·69	(4·0)	0 40	32 55 42·3
25	0·73			41·5
B.A.C. 224.				
Sept. 11	0·70	(6·0)	0 41	62 2 41·0
18	0·71			40·9
B.A.C. 228.				
Sept. 24	0·73	6·5	0 42	26 30 57·3
B.A.C. 237.				
Sept. 17	0·71	7·5	0 44	87 22 27·5
B.A.C. 259, μ Andromedæ.				
Sept. 11	0·70	4·0	0 49	52 15 41·5
13	0·70			38·1
18	0·71			38·5
20	0·72	4·0		39·5
B.A.C. 263.				
Sept. 24	0·73	9·0	0 49	63 45 29·8
Oct. 3	0·76	6·0		32·2
B.A.C. 290.				
Sept. 11	0·70		0 56	36 32 47·8
17	0·71			46·3
18	0·71			46·8
20	0·72	7·0		46·4
B.A.C. 298.				
Sept. 24	0·73	(7·5)	0 57	24 46 49·8

Note.—Magnitudes of stars in parenthesis, are the tabular magnitudes from the British Association Catalogue.

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Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1860.
B.A.C. 299.				
Sept. 25	0·73	(6·0)	h. m. 0 57	° ′ ″ 61 5 18·7
B.A.C. 314, μ Cassiopeæ.				
Oct. 3	0·76	(5·5)	0 59	35 46 6·5
B.A.C. 335.				
Sept. 17	0·71	6·5	1 2	26 32 35·4
20	0·72			34·9
B.A.C. 357.				
Sept. 13	0·70	9·0	1 5	58 40 6·0
B.A.C. 360, α Ursæ Minoris.				
Oct. 3	0·76	(2·0)	1 8	1 26 12·9
22	0·81			13·5
B.A.C. 376.				
Sept. 18	0·71	9·0	1 8	17 51 41·1
20	0·72			41·7
B.A.C. 379.				
Sept. 17	0·71	(7·0)	1 9	22 55 23·2
B.A.C. 403.				
Sept. 18	0·71	7·0	1 13	17 53 13·6
20	0·72			14·0
24	0·73			14·1
Nov. 1	0·84			12·8
B.A.C. 455.				
Sept. 20	0·72	(8·0)	1 24	73 46 1·4
24	0·73			0·8
B.A.C. 457.				
Oct. 3	0·76	9·0	1 25	9 17 13·1
Nov. 1	0·84			13·6
B.A.C. 472.				
Sept. 25	0·73	(7·5)	1 28	89 45 49·7
B.A.C. 514.				
Sept. 24	0·73	(6·5)	h. m. 1 34	60 39 43·1
B.A.C. 516.				
Sept. 25	0·73	(5·5)	1 34	55 27 45·4
Oct. 3	0·76			45·9
Nov. 1	0·84			44·1
B.A.C. 538.				
Sept. 25	0·73	(6·5)	1 39	73 17 24·6
B.A.C. 547.				
Sept. 24	0·73	(6·0)	1 41	42 48 7·0
Oct. 3	0·76			8·2
Nov. 1	0·84			6·8
B.A.C. 562.				
Sept. 25	0·73	(6·5)	1 44	39 13 7·1
B.A.C. 588.				
Nov. 1	0·84	6·0	1 49	26 3 45·5
2	0·84			45·3
5	0·85			45·1
B.A.C. 626.				
Oct. 3	0·76	7·0	1 56	7 6 6·6
B.A.C. 645.				
Nov. 5	0·85	6·0	1 59	64 50 22·4
B.A.C. 647. (a)				
Nov. 1	0·84	6·0	1 59	65 0 20·9
B.A.C. 694.				
Oct. 3	0·76	(7·5)	2 8	26 13 36·1
Nov. 1	0·84			35·6
5	0·85			34·7
B.A.C. 718.				
Nov. 2	0·84	7·0	2 12	33 24 5·7
B.A.C. 725.				
Nov. 5	0·85	6·0	h. m. 2 13	° ′ ″ 33 15 20·7
B.A.C. 728.				
Oct. 3	0·76	7·0	2 15	79 48 0·8
B.A.C. 764.				
Nov. 1	0·84		2 22	61 3 41·4
2	0·84			3[illegible]·9
5	0·85	7·0		40·7
B.A.C. 793.				
Nov. 1	0·84	(6·5)	2 28	63 47 1·9
5	0·85			0·2
B.A.C. 822.				
Nov. 2	0·84	(b)	2 34	47 54 6·1
B.A.C. 891.				
Nov. 1	0·84	(8·0)	2 45	84 6 7·5
2	0·84			2·7
B.A.C. 949, α Ceti.				
Nov. 8	0·85	2·5	2 55	86 27 43·3
B.A.C. 962, ι Persei.				
Nov. 2	0·84	(4·0)	2 59	40 55 29·4
B.A.C. 985.				
Nov. 8	0·85	8·0	3 4	15 17 0·4
B.A.C. 1055.				
Nov. 8	0·85	7·5	3 16	68 27 32·8
27	0·91			32·0
B.A.C. 1101.				
Nov. 2	0·84	8·0	3 27	58 47 24·8
27	0·91			26·7

(a) 2″ greater than B. A. C., but confirmed by an obs. in 1858.

(b) An 8 mag. star in a straggling group called a nebula in B. A. C.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1860.
		B.A.C. 1166, η Tauri.		
Nov. 5	0·85	3·0	h. m. 3 39	° ′ ″ 66 19 50·8
27	0·91			50·3
28	0·91			50·4
		B.A.C. 1282.		
Nov. 2	0·84	(6·0)	4 3	41 16 12·7
Dec. 13	0·95			13·3
		B.A.C. 1316.		
Nov. 2	0·84		4 11	33 50 6·4
Dec. 5	0·93	6·0		7·7
13	0·95	6·0		6·3
		B.A.C. 1347.		
Dec. 13	0·95	(8·0)	4 15	65 55 28·9
		B.A.C. 1361.		
Nov. 2	0·84		4 17	71 16 60·8
5	0·85	7·0		59·6
Dec. 13	0·95			60·2
		B.A.C. 1434.		
Nov. 5	0·85	5·0	4 30	77 46 23·5
28	0·91	5·0		24·1
Dec. 13	0·95	5·0		24·5
		B.A.C. 1459.		
Nov. 27	0·91	6·5	4 37	34 39 10·9
28	0·91	7·0		9·1
Dec. 13	0·95			10·2
		B.A.C. 1463.		
Dec. 17	0·96	7·0	4 37	66 38 0·4
		B.A.C. 1491.		
Nov. 27	0·91		4 43	81 20 36·8
Dec. 13	0·95			37·1
17	0·96	5·6		36·6
		B.A.C. 1501.		
Nov. 28	0·91	8·0	h. m. 4 46	° ′ ″ 34 24 20·9
Dec. 5	0·93	8·0		21·5
13	0·95	8·0		21·7
		B.A.C. 1626.		
Nov. 27	0·91	(7·5)	5 9	49 41 26·9
28	0·91			25·2
Dec. 13	0·95			25·2
15	0·96			27·3
17	0·96			26·1
		B.A.C. 1656.		
Nov. 27	0·91	6·0	5 14	81 42 48·8
Dec. 15	0·96			51·5
17	0·96			49·4
		B.A.C. 1683.		
Nov. 27	0·91	(6·0)	5 18	55 44 8·2
28	0·91			7·1
Dec. 17	0·96			9·0
		B.A.C. 1703.		
Dec. 17	0·96	(7·0)	5 20	73 40 47·8
		B.A.C. 1730, δ Orionis.		
Nov. 28	0·91	(2·0)	5 25	90 24 20·2
Dec. 13	0·95			21·5
		B.A.C. 1751.		
Dec. 13	0·95	(5·5)	5 29	24 23 5·6
17	0·96			6·0
		B.A.C. 1769.		
Dec. 14	0·94	(6·0)	5 30	36 34 52·2
		B.A.C. 1813.		
Dec. 17	0·96	(6·0)	5 38	21 34 33·8
		B.A.C. 1883, α Orionis.		
Dec. 13	0·95	2·0	5 48	82 37 21·0
		B.A.C. 1962.		
Dec. 17	0·96	(a)	h. m. 6 1	° ′ ″ 65 44 13·2
		B.A.C. 2022.		
Dec. 17	0·96	6·0	6 9	80 0 35·2
		B.A.C. 2046.		
Dec. 17	0·96	(7·0)	6 15	33 38 43·8
		B.A.C. 2070.		
Jan. 10	0·02	7·0	6 16	85 20 21·3
		B.A.C. 2083.		
Jan. 20	0·05	6·0	6 21	16 12 16·8
Dec. 17	0·96	6·0		17·4
		B.A.C. 2184.		
Jan. 10	0·02	7·0	6 33	73 25 33·0
13	0·03	7·0		31·0
17	0·04	7·0		31·9
20	0·05	7·0		32·1
Dec. 11	0·94	7·0		33·7
17	0·96			32·0
		B.A.C. 2238.		
Jan. 6	0·01	6·0	6 43	66 14 11·4
17	0·04			9·8
20	0·05	6·5		11·0
Dec. 11	0·94			13·0
17	0·96			11·6
		B.A.C. 2292.		
Jan. 6	0·01	6·0	6 53	79 10 52·7
10	0·02	6·0		54·2
13	0·03			51·5
Dec. 11	0·94			54·0
17	0·96	10·0		51·3
		B.A.C. 2306.		
Jan. 17	0·04	6·0	6 56	78 50 47·4

(a) One of several stars in a straggling cluster, reputed a nebula in B. A. Cat.

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1860.
B.A.C. 2334.				
Jan. 6	0·01	6·5	h m 7 1	° ′ ″ 39 59 7·5
B.A.C. 2363.				
Jan. 10	0·02	7·0	7 6	65 3 9·1
31	0·08	7·5		11·6
B.A.C. 2410, δ Geminorum.				
Jan. 17	0·04	3·5	7 12	67 45 49·3
Feb. 1	0·08	3·0		48·3
B.A.C. 2463.				
Jan. 6	0·01	6·0	7 20	62 10 2·2
10	0·02	7·0		2·1
20	0·05			2·3
Feb. 1	0·08	8·0		3·4
B.A.C. 2488.				
Jan. 6	0·01	7·0	7 26	43 30 56·0
16	0·04	6·0		56·6
20	0·05	6·0		58·0
Feb. 1	0·08	6·0		57·2
B.A.C. 2522, α Canis Minoris.				
Jan. 17	0·04		7 32	84 25 10·0
31	0·08	1·0		9·6
B.A.C. 2586.				
Jan. 6	0·01	6·5	7 41	61 27 13·8
16	0·04			15·9
17	0·04			13·8
B.A.C. 2683.				
Jan. 6	0·01	6·0	7 57	70 45 55·4
17	0·04	6·0		55·0
Feb. 6	0·10			55·0
B.A.C. 2688.				
Jan. 16	0·04	7·5	7 57	62 4 31·4
31	0·08	7·0		31·2
Feb. 1	0·08	7·5		32·8
B.A.C. 2737.				
Jan. 10	0·02	7·0	h m 8 3	° ′ ″ 74 57 32·5
20	0·05	6·5		32·6
B.A.C. 2748.				
Jan. 6	0·01	7·0	8 4	75 34 50·4
31	0·08	6·0		51·4
Feb. 1	0·08	7·0		51·3
15	0·12			51·3
B.A.C. 2761.				
Jan. 16	0·04	6·5	8 7	76 31 50·1
17	0·04	9·0		48·8
B.A.C. 2867.				
Jan. 6	0·01	6·5	8 25	79 27 43·4
16	0·04	6·0		42·5
17	0·04	7·0		42·1
Feb. 1	0·08	6·0		43·2
B.A.C. 2971, ι Hydræ.				
Jan. 17	0·04	(4·0)	8 39	83 4 11·5
B.A.C. 2988.				
Jan. 16	0·04	7·5	8 43	34 31 36·8
Feb. 1	0·08	8·0		36·9
6	0·10	7·5		38·4
B.A.C. 3053.				
Jan. 17	0·04	8·0	8 50	60 4 31·6
Feb. 6	0·10	6·0		30·8
17	0·13	6·0		31·3
20	0·14	6·0		30·4
22	0·14	7·5		30·1
B.A.C. 3083.				
Jan. 16	0·04		8 55	38 37 18·7
Feb. 1	0·08	6·0		17·3
14	0·12	6·0		18·1
17	0·13	7·0		18·7
B.A.C. 3086.				
Feb. 22	0·14	8·0	h m 8 56	° ′ ″ 30 6 2·0
B.A.C. 3133.				
Jan. 16	0·04	6·0	9 5	85 33 41·0
17	0·04	6·5		40·0
Feb. 1	0·08	6·0		40·6
20	0·14	6·0		39·6
21	0·14	6·0		41·4
29	0·16	6·5		40·8
Mar. 2	0·17	6·0		40·4
B.A.C. 3157.				
Feb. 29	0·16	7·0	9 11	29 37 56·2
B.A.C. 3223, α Hydræ.				
Feb. 6	0·10	2·0	9 21	98 3 15·2
14	0·12			13·8
29	0·16	2·0		13·1
B.A.C. 3242, θ Ursæ Majoris.				
Feb. 1	0·08		9 23	37 41 15·2
17	0·13	2·0		13·3
20	0·14	2·0		14·3
27	0·16	3·0		12·8
B.A.C. 3325.				
Feb. 29	0·16	7·0	9 37	26 6 13·5
Mar. 7	0·18	6·5		20·0
8	0·18	7·0		16·0
B.A.C. 3331, ο Leonis.				
Feb. 14	0·12	3·0	9 38	65 34 58·5
17	0·13	2·0		57·7
21	0·14	3·0		59·0
B.A.C. 3336.				
Feb. 1	0·08	5·0	9 39	82 38 49·3
20	0·14	5·0		51·0
27	0·16	4·0		48·8
Mar. 5	0·18	7·0		49·0

(n)

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1860.
			h m	° ′ ″
B.A.C. 3375.				
Feb. 20	0·14	8·5	9 45	54 21 33·8
29	0·16	8·0		33·0
B.A.C. 3380.				
Mar. 5	0·18	6·0	9 46	83 23 1·1
13	0·20	6·0		2·3
B.A.C. 3418.				
Mar. 5	0·18	9·0	9 54	80 22 39·8
B.A.C. 3427.				
Feb. 27	0·16	9·0	9 56	56 40 40·6
B.A.C. 3430.				
Mar. 7	0·18	9·0	9 56	81 5 43·8
B.A.C. 3431.				
Feb. 20	0·14	10·0	9 56	56 52 16·7
B.A.C. 3438.				
Feb. 6	0·10	8·0	9 57	84 19 7·2
17	0·13	9·0		6·0
Mar. 2	0·17	6·5		6·8
B.A.C. 3439.				
Mar. 15	0·20	7·0	9 58	54 19 9·0
B.A.C. 3484.				
Feb. 27	0·16	8·0	10 6	57 52 53·8
Mar. 2	0·17	7·0		52·3
14	0·20	8·0		55·8
15	0·20	7·5		53·2
B.A.C. 3528.				
Feb. 29	0·16	4·0	10 13	6 43 56·2
Mar. 2	0·17	5·5		56·6
5	0·18	5·0		56·6
7	0·18	5·5		56·1

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1860.
			h m	° ′ ″
B.A.C. 3528 (a small star accomp. 9).				
Mar. 9	0·19	9·0	10 13	6 42 17·4
12	0·19	9·0		16·8
B.A.C. 3529				
Feb. 17	0·13	6·5	10 13	82 51 59·1
20	0·14	6·5		57·9
27	0·16	8·0		60·7
B.A.C. 3592.				
Feb. 14	0·12	8·0	10 23	87 47 20·6
21	0·14	8·0		17·5
27	0·16	7·0		19·2
Mar. 2	0·17	5·5		19·9
8	0·18	6·0		19·2
12	0·19	7·0		18·3
21	0·22	6·5		16·1
B.A.C. 3662.				
Mar. 12	0·19	7·5	10 34	78 31 47·3
13	0·20	8·0		48·8
15	0·20			46·1
B.A.C. 3726.				
Feb. 21	0·14	7·0	10 45	88 13 56·1
24	0·15	6·5		54·5
Mar. 8	0·18	6·0		55·7
12	0·19	6·0		56·5
13	0·20	6·0		55·9
15	0·20	6·0		56·8
20	0·22	8·0		56·9
26	0·23	6·0		54·2
B.A.C. 3780.				
Feb. 21	0·14	9·0	10 56	81 39 50·0
27	0·16	9·0		50·4
Mar. 2	0·17	7·5		53·0
13	0·20	7·0		49·0
20	0·22	8·0		49·0
21	0·22	7·5		48·5
29	0·24			51·9

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1860.
			h m	° ′ ″
B.A.C. 3821.				
Mar. 2	0·17	7·0	11 3	20 58 8·1
7	0·18	6·0		11·1
13	0·20	6·0		10·7
21	0·22	6·0		8·3
29	0·24	6·0		9·5
B.A.C. 3834, δ Leonis.				
Feb. 27	0·16	2·0	11 7	69 42 36·2
B.A.C. 3836.				
Feb. 21	0·14	9·0	11 6	86 58 4·9
Mar. 14	0·20	8·0		5·0
15	0·20	6·0		6·0
20	0·22	8·0		5·9
B.A.C. 3869.				
Feb. 27	0·16	7·0	11 15	71 47 43·4
Mar. 2	0·17	6·0		43·4
7	0·18	9·0		43·2
13	0·20	6·0		42·7
21	0·22	6·0		42·1
27	0·24	7·0		43·4
29	0·24	6·0		42·7
30	0·24	6·0		42·6
B.A.C. 3996.				
Feb. 29	0·16	6·0	11 42	84 1 57·3
Mar. 2	0·17			57·7
8	0·18	8·0		57·6
13	0·20	6·0		58·3
14	0·20	6·0		56·1
15	0·20	6·0		58·0
20	0·22	8·0		55·1
B.A.C. 4005.				
Mar. 22	0·22	6·0	11 44	76 56 35·4
B.A.C. 4010.				
Mar. 12	0·19	6·5	11 45	51 16 39·6
21	0·22			39·1

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1860.
B.A.C. 4111 (middle star).				
			h. m.	° ′ ″
Mar. 8	0·18	7·0	12 5	11 46 48·3
12	0·19	7·0		50·2
15	0·20	7·0		48·6
21	0·22	8·0		49·0
28	0·24	7·5		49·6
29	0·24	7·5		48·9
B.A.C. 4153.				
Mar. 12	0·19		12 13	62 35 55·7
15	0·20	6·0		55·3
21	0·22	8·0		55·1
28	0·24	6·0		55·3
April 3	0·25	6·0		54·3
5	0·26	6·0		55·8
B.A.C. 4199.				
Mar. 8	0·18	7·0	12 21	63 18 43·1
20	0·22	8·0		44·4
22	0·22	7·5		43·9
27	0·24	7·0		45·3
28	0·24			46·9
B.A.C. 4205.				
Mar. 15	0·20		12 22	62 59 51·1
21	0·22	7·0		49·8
29	0·24	6·5		51·3
April 3	0·25			50·5
B.A.C. 4231.				
Mar. 8	0·18	9·0	12 26	64 46 41·2
April 5	0·26	8·0		42·2
B.A.C. 4244. (a)				
Mar. 15	0·20	8·0	12 28	52 48 9·9
21	0·22	8·0		9·3
B.A.C. 4364.				
Mar. 26	0·23	7·0	12 55	67 58 30·3
April 5	0·26	8·0		30·5
B.A.C. 4421, β Comæ.				
			h. m.	° ′ ″
Mar. 21	0·22	5·5	13 5	61 24 37·8
26	0·23	5·0		38·7
28	0·24	5·5		39·2
April 5	0·26			39·3
B.A.C. 4457.				
Mar. 26	0·23	6·5	13 13	54 8 6·8
27	0·24	6·5		7·4
April 2	0·25	6·5		9·1
B.A.C. 4470.				
Mar. 29	0·24	6·0	13 15	87 10 32·1
April 5	0·26	6·0		31·2
May 1	0·33	6·0		33·3
3	0·34	6·0		32·9
B.A.C. 4503.				
Mar. 26	0·23	7·0	13 22	85 24 8·5
27	0·24	9·0		9·5
April 5	0·26	7·0		7·9
B.A.C. 4552.				
Mar. 26	0·23	5·0	13 31	52 59 30·2
B.A.C. 4555.				
Mar. 27	0·24	6·0	13 32	36 41 31·3
29	0·24			33·6
B.A.C. 4575.				
April 2	0·25	6·0	13 37	66 35 32·2
B.A.C. 4610.				
Mar. 27	0·24	6·0	13 42	58 6 44·9
29	0·24	6·0		43·8
April 5	0·26	7·0		44·6
May 3	0·34	7·0		45·4
B.A.C. 4621.				
May 1	0·33	6·0	13 43	70 40 23·4
B.A.C. 4627.				
			h. m.	° ′ ″
April 2	0·25	8·0	13 45	54 31 58·6
B.A.C. 4652.				
Mar. 27	0·24	6·5	13 50	57 16 55·5
April 5	0·26	7·0		54·9
May 9	0·35	7·0		57·0
B.A.C. 4678.				
May 1	0·33	7·0	13 56	57 39 47·0
9	0·35	9·0		47·2
B.A.C. 4694.				
April 5	0·26	7·0	14 0	58 28 43·4
B.A.C. 4723.				
May 9	0·35	8·0	14 8	60 14 17·3
B.A.C. 4729, α Bootis.				
April 27	0·32	1·0	14 9	70 5 15·2
May 3	0·34			13·7
7	0·35			12·6
B.A.C. 4737.				
May 1	0·33	6·5	14 11	74 5 13·0
B.A.C. 4738.				
April 5	0·26	9·0	14 11	49 36 16·6
B.A.C. 4756.				
May 9	0·35		14 14	37 19 15·2
11	0·36	6·0		13·4
B.A.C. 4797.				
April 27	0·32	6·0	14 23	53 10 25·6
B.A.C. 4809.				
May 3	0·34	6·0	14 26	62 42 4·6

(a) Called a nebula in B. A. Cat.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1860.
B.A.C. 4820.				
May 1	0·33	7·5	h. m. 14 28	° ′ ″ 56 50 60·9
9	0·35			58·5
B.A.C. 4876, ι Bootis.				
April 27	0·32		14 38	62 19 60·3
May 3	0·34			59·1
9	0·35			60·9
11	0·36	3·0		59·9
B.A.C. 4942.				
May 9	0·35	6·0	14 54	49 47 48·6
B.A.C. 4965.				
April 27	0·32	6·0	14 58	44 48 27·3
May 1	0·33	6·0		24·9
B.A.C. 5001.				
April 27	0·32		15 5	60 14 15·4
May 9	0·35	7·0		18·9
B.A.C. 5034, β Libræ.				
April 27	0·32	2·0	15 9	98 51 49·7
May 1	0·33	2·0		48·0
B.A.C. 5091.				
April 27	0·32	6·0	15 20	26 9 28·7
May 9	0·35			28·7
B.A.C. 5284.				
April 27	0·32	3·0	15 50	73 52 43·3
May 1	0·33			43·3
3	0·34			44·3
B.A.C. 5414, δ Ophiuchi.				
May 1	0·33	(3·0)	16 7	93 19 49·0
B.A.C. 5452.				
May 3	0·34	6·0	16 14	68 31 35·9
B.A.C. 6429, β Lyræ.				
July 20	0·55	2·0	h. m. 18 45	° ′ ″ 56 47 48·4
B.A.C. 6527.				
July 20	0·55	8·0	18 59	71 4 25·8
B.A.C. 6735.				
July 20	0·55	4·0	19 33	20 34 37·2
B.A.C. 6772, γ Aquilæ.				
July 20	0·55	(3·0)	19 40	79 43 29·5
B.A.C. 7268.				
Aug. 28	0·66	6·5	20 51	43 7 7·1
B.A.C. 7336, 61[1] Cygni.				
Aug. 28	0·66	7·0	21 1	51 56 17·0
B.A.C. 7430 (foll. of two stars in the field).				
Aug. 28	0·66	6·5	21 17	29 50 14·8
B.A.C. 7510.				
Aug. 27	0·65	(5·5)	21 29	10 5 12·9
Sept. 6	0·68			12·6
B.A.C. 7561, ε Pegasi.				
Aug. 27	0·65	(2·5)	21 37	80 45 54·4
B.A.C. 7569 (larger star observed).				
Sept. 6	0·68	6·5	21 38	61 53 16·2
7	0·68	6·5		18·2
B.A.C. 7644.				
Aug. 27	0·65	7·0	21 50	18 10 15·2
28	0·66			12·4
Sept. 6	0·68	8·0		12·5
7	0·68	7·0		13·3
B.A.C. 7708.				
Aug. 27	0·65	9·0	h. m. 22 1	° ′ ″ 28 23 59·8
28	0·66			60·4
Sept. 7	0·68	6·0		61·8
B.A.C. 7759.				
Aug. 31	0·67	(6·0)	22 8	29 55 57·3
Sept. 10	0·69			56·6
B.A.C. 7779 (smaller of two stars).				
Aug. 27	0·65		22 10	17 22 47·0
Sept. 6	0·68	9·0		47·2
7	0·68	9·0		50·0
11	0·70	10·0		50·3
B.A.C. 7908, ζ Pegasi.				
Aug. 31	0·67	(3·0)	22 34	79 53 55·8
Sept. 6	0·68			55·6
7	0·68			54·3
10	0·69			53·8
11	0·70			57·1
18	0·71			53·1
B.A.C. 7977.				
Aug. 31	0·67	9·0	22 47	88 53 63·4
Sept. 7	0·68			59·8
18	0·71			60·1
B.A.C. 7996.				
Sept. 17	0·71	7·0	22 50	66 56 17·5
B.A.C. 8024.				
Aug. 31	0·67	0·65	22 56	33 38 47·2
Sept. 6	0·68			46·3
11	0·70			46·6
25	0·73			45·6
B.A.C. 8034, α Pegasi.				
Sept. 7	0·68	(2·0)	21 58	75 32 51·2
10	0·69			50·2
17	0·71			51·3

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1860.
B.A.C. 8065 (star 6·5 mag. precedes 20 secs.)				
			h. m.	° ′ ″
Aug. 31	0·67	9·0	23 2	88 36 53·1
B.A.C. 8083				
Sept. 6	0·68	7·0	23 6	33 36 16·1
7	0·68			14·6
10	0·69	6·0		13·8
18	0·71	6·0		14·1
B.A.C. 8091.				
Sept. 11	0·70	(7·0)	23 8	62 41 27·7
B.A.C. 8137.				
Sept. 6	0·68	7·0	23 14	28 47 45·1
11	0·70			46·4
25	0·73	7·0		44·9
B.A.C. 8138.				
Sept. 18	0·71	7·0	23 14	28 33 11·6
B.A.C. 8139.				
Aug. 31	0·67	8·0	23 15	52 10 64·7
Sept. 7	0·68			63·1
10	0·69	9·0		59·6
B.A.C. 8204				
Aug. 31	0·67	7·0	23 27	18 46 17·7
Sept. 6	0·68	6·5		16·7
10	0·69			16·7
17	0·71	7·0		17·1
18	0·71	7·0		17·4

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1860.
B.A.C. 8247.				
			h. m.	° ′ ″
Sept. 11	0·70	(7·5)	23 33	72 6 31·9
B.A.C. 8252 (star 8 mag. precedes 25 secs.)				
Aug. 31	0·67		23 36	37 37 28·3
Sept. 6	0·68			26·5
10	0·69			26·1
18	0·71			24·9
25	0·73	7·0		26·1
B.A.C. 8270 (another star near).				
Aug. 30	0·66	8·0	23 41	86 36 1·2
Sept. 13	0·70	7·5		
17	0·71	9·0		0·5
Oct. 3	0·76	9·0		3·6
B.A.C. 8272				
Sept. 11	0·70	(7·0)	23 41	82 31 54·6
25	0·73			45·1
B.A.C. 8280.				
Aug. 31	0·67	6·5	23 42	30 47 60·4
Sept. 10	0·69			60·9
18	0·71			58·8
B.A.C. 8298.				
Sept. 6	0·68	(7·0)	23 45	13 10 34·0

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1860.
B.A.C. 8315.				
			h. m.	° ′ ″
Aug. 31	0·67	(7·0)	23 48	82 33 21·3
Sept. 13	0·70			20·4
18	0·71			17·9
25	0·73			17·3
B.A.C. 8338.				
Aug. 31	0·67		23 54	28 36 9·0
Sept. 10	0·69			8·8
11	0·70			9·0
17	0·71	8·0		7·1
18	0·71			7·3
B.A.C. 8350.				
Sept. 25	0·73	(6·0)	23 55	63 39 30·9
B.A.C. 8355 (double, larger observed).				
Sept. 6	0·68	(6·0)	23 55	24 40 50·7
B.A.C. 8364.				
Sept. 10	0·69	7·0	23 58	32 14 50·7
17	0·71			49·8
B.A.C. 8372.				
Aug. 31	0·67	(6·5)	23 59	32 20 40·4
Sept. 13	0·70			37·9
18	0·71			37·4
25	0·73			38·5

MURAL CIRCLE OBSERVATIONS IN 1860.

The observations with the Mural Circle in 1860 were taken by Mr Peter Williamson, Second Assistant Astronomer, under the supervision of the Astronomer.

The subjects observed were chiefly stars remarkable for proper motion. They are designated as far as possible by the number in the British Association Catalogue, in col. 2, and by proper name or description in col. 3, assisted if necessary by notes at the foot of the page, as well as by approximate estimate of the magnitude in col. 4, and time of transit past centre of field (by an uncorrected sidereal journeyman clock, but showing fairly differences from star to star) in col. 5.

In Polar distance the star was always carefully bisected when crossing the centre of the field, either at the precise instant if its motion was steady, or in its mean path through several seconds if unsteady or undulatory, as was too often the case. Such bisection, previous to June was performed simply by a single spider-line placed on the image of the star, but subsequently to that date, by bringing the stellar image between two parallel lines about 7 seconds of space apart: such line or lines being illuminated in a dark field.

Between the end of May and beginning of June extensive cleanings with repairs and alterations of small parts were performed upon the Mural Circle, and included the following items, as entered in a note-book at the time,—

(1.) Took down fixed stage, and slid circle out from pier, cleaned bearings, axle, &c., put in fresh oil.

(2.) Took out the telescope from circle, and cleaned its special axis of occasional movement.

(3.) Improved the illumination, by making one gas-light illuminate the Clock, both Microscopes A, B, and the wires of the telescope also; the latter by means of a tin tube attached to telescope, receiving light on a diagonal reflector at centre of circle, and conducting it down the tube to another reflector near the eye-end which throws it on the spider-threads, and illumines them so strongly that they are visible by reflexion in the Mercury trough, and can be used there for obtaining the nadir-point with the same eye-piece and illumination wherewith the stars are observed direct in the sky.

(4.) A diagonal prism is now adapted to end of eye-piece to allow of observations at *all* angles of altitude being taken by an observer looking in *one* constant angular direction; *i.e.*, horizontally and towards the west.

(5.) A wooden arm 8 feet long is fixed centrically across circle by soft

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attachment to its spokes, to enable the observer more easily and safely to move the circle approximately, and bring the star sufficiently near the spider-line to be bisected by the Micrometer screw.

(6.) The size of the Mercury trough is increased from 5 × 7 to 10 × 11 inches, and 17 pounds more mercury added.

(7.) The heads of Micrometers both of the telescope and of Microscopes A and B are ratched so as to show by feel when they are being turned so as to *increase the readings;* the last movement in making any observations being directed to be always made in that manner.

(8.) In place of merely one vertical wire, or spider-line, as before, there are now two vertical wires to mark the Meridian, one on either side of it and about 6·5 seconds of time apart, for a star near the equator, and every star is only to be observed when crossing *between* these vertical and parallel wires. While in addition to the one horizontal wire for bisecting a star, there is, at a distance of about 20″ below it, a pair of horizontal wires 7 seconds apart in Polar distance, and between which a star is to be brought for Polar distance observation; such method being thought for small stars more exact than bisection, which often implies eclipsing or occulting, them by a single wire.

(9.) The Micrometer frame is remade in gun-metal, of unusual strength and stiffness, and with its central aperture, to be spanned by the spider-threads, only 0·6 inch in diameter, so as to reduce the flexure of these fiducial lines to a minimum; while the object-glass is now fastened into its cell, and the cell portions are closed on each other with chemical as well as mechanical fixings. Transits of standard stars were observed in September to test the Meridian error of the Circle's path as shown by the middle space between the two vertical wires, and it was found to be very small.

The same general principles of observations as before have been kept up since with these improved details. The completion of every observation therefore in Polar distance still depends largely on the Telescope micrometer, whose numbers are a necessary addition to the readings both of the Pointer on the Limb of the Circle and of the two horizontal Microscopes A, B; all which numerical particulars are given in columns 6, 7, 8, and 9.

In columns 10 and 12, the readings of the Barometer and exterior thermometer are noted for refraction purposes: the interior thermometer being assumed to be practically the same as the exterior, for all star-observations when a thorough draught was kept up through the observing room, as was always the case during star observations. During observations for the Nadir-point, on the contrary, all shutters and windows were closed to prevent disturbance to the mercury, and then a sensible difference between the thermometers usually occurred, and is shown by the figures in the narrow column 11, compared with those in column 12.

Columns 13, 14, and 15 contain various points connected with the meteorologic and other circumstances of the observations, as they appeared to the observer at the time, and column 16 contains the reduction of the angular observations in columns 6 to 9, to the stage of "Apparent Zenith Distance South."

To this end, the readings of the Microscopes have been corrected for the error of their runs, as ascertained over 5′ spaces on the limb of the Circle, with the telescope directed first to the Zenith and then to the Nadir: also for the difference between the mean of two and the mean of six Microscopes as ascertained by examination in 1855 (see p. 76, vol. xii.); also for the Telescope micrometer readings converted into arc on the estimate of one revolution being equal to 27·704″, as ascertained by observations in the Mercury trough with the collimating eye-piece, combined with readings of all the six circumferential Microscopes. The Circle positions are then converted into Apparent Zenith Distances, by the application of a reading for the Zenith point derived from observation of the Nadir, as shown by making the bisecting wire cover its illuminated image in the Mercury trough, an observation made generally both at the beginning and conclusion of every series of star measures. The chief data of these several corrections are contained in the following Tables I., II., and III.

TABLE I.

CORRECTION FOR RUNS OF MICROSCOPES IN 1860.

Date.	Thermometer.		Runs Correction observed.			Adopted Runs Correction.	For Period.
	Interior.	Exterior.	Nadir.	Zenith.	Mean.		
1860.	°F.	°F.					
Jan. 14	39·7	39·7	0·0 0·0	−0·2 −1·7	−0·1 −0·8	−0·4	Jan. 1 to Jan. 21.
Feb. 4	40·8	44·0	+0·6 −0·8 +0·1	+0·1 +0·6 +0·2	+0·4 −0·1 +0·2	0·0 +0·2 0·0	Jan. 22 to Jan. 31. Feb. 1 to Feb. 11. Feb. 12 to Feb. 29.
March 3	39·0	38·0	−0·2 +0·2	−0·4 −0·5	−0·3 −0·2	−0·2	Mar. 1 to Mar. 10.
23	38·0	39·0	−0·1 0·0	+0·3 +0·2	+0·1 +0·1	+0·1	Mar. 11 to Mar. 31.
April 14	43·0	42·5	+0·5 0·0	0·0 +0·1	+0·2 0·0	+0·1	April 1 to May 25.
1860.	°F.	°F.					Circle and Microscopes cleaned, new wire system applied.
June 22	57·0	56·0	+0·7 +1·0 +0·6	+0·5 +0·6 +0·8	+0·6 +0·8 +0·7	+0·5	June 22 to July 31.
Sept. 22	44·4	51·0	+0·5 −0·2 +0·8	+0·5 −1·4 −1·8	+0·5 −0·8 −0·5	−0·3	Aug. 1 to Sept. 30.
Dec. 31	34·1	32·2	+0·4 +1·0	+0·3 0·0	+0·4 +0·5	+0·4	Oct. 1 to Dec. 31.

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TABLE II.

CORRECTION TO REDUCE THE MEAN OF THE TWO HORIZONTAL, TO THE MEAN OF THE WHOLE SIX, MICROSCOPES FOR THE YEAR 1860.

Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.
0° & 180°	+1″·0	30° & 210°	+0″·2	60° & 240°	+0″·5	90° & 270°	+2″·4	120° & 300°	+3″·1	150° & 330°	+2″·4
1 181	+0·9	31 211	+0·2	61 241	+0·6	91 271	+2·4	121 301	+3·1	151 331	+2·4
2 182	+0·8	32 212	+0·1	62 242	+0·7	92 272	+2·5	122 302	+3·0	152 332	+2·3
3 183	+0·8	33 213	+0·1	63 243	+0·7	93 273	+2·5	123 303	+3·0	153 333	+2·3
4 184	+0·7	34 214	0·0	64 244	+0·8	94 274	+2·6	124 304	+2·9	154 334	+2·2
5 185	+0·6	35 215	0·0	65 245	+0·9	95 275	+2·6	125 305	+2·9	155 335	+2·2
6 186	+0·6	36 216	0·0	66 246	+0·9	96 276	+2·6	126 306	+2·9	156 336	+2·1
7 187	+0·6	37 217	+0·1	67 247	+1·0	97 277	+2·7	127 307	+2·9	157 337	+2·1
8 188	+0·5	38 218	+0·1	68 248	+1·0	98 278	+2·7	128 308	+2·8	158 338	+2·0
9 189	+0·5	39 219	+0·2	69 249	+1·1	99 279	+2·8	129 309	+2·8	159 339	+2·0
10 190	+0·5	40 220	+0·2	70 250	+1·1	100 280	+2·8	130 310	+2·8	160 340	+1·9
11 191	+0·4	41 221	+0·2	71 251	+1·2	101 281	+2·9	131 311	+2·8	161 341	+1·9
12 192	+0·4	42 222	+0·2	72 252	+1·2	102 282	+2·9	132 312	+2·8	162 342	+1·9
13 193	+0·3	43 223	+0·1	73 253	+1·3	103 283	+3·0	133 313	+2·7	163 343	+1·8
14 194	+0·3	44 224	+0·1	74 254	+1·3	104 284	+3·0	134 314	+2·7	164 344	+1·8
15 195	+0·2	45 225	+0·1	75 255	+1·4	105 285	+3·1	135 315	+2·7	165 345	+1·8
16 196	+0·2	46 226	+0·2	76 256	+1·5	106 286	+3·1	136 316	+2·7	166 346	+1·7
17 197	+0·2	47 227	+0·2	77 257	+1·6	107 287	+3·2	137 317	+2·7	167 347	+1·6
18 198	+0·2	48 228	+0·3	78 258	+1·7	108 288	+3·2	138 318	+2·8	168 348	+1·6
19 199	+0·2	49 229	+0·3	79 259	+1·8	109 289	+3·3	139 319	+2·8	169 349	+1·5
20 200	+0·2	50 230	+0·4	80 260	+1·9	110 290	+3·3	140 320	+2·8	170 350	+1·4
21 201	+0·2	51 231	+0·4	81 261	+1·9	111 291	+3·3	141 321	+2·8	171 351	+1·4
22 202	+0·2	52 232	+0·3	82 262	+2·0	112 292	+3·3	142 322	+2·8	172 352	+1·3
23 203	+0·2	53 233	+0·3	83 263	+2·0	113 293	+3·4	143 323	+2·7	173 353	+1·3
24 204	+0·2	54 234	+0·2	84 264	+2·1	114 294	+3·4	144 324	+2·7	174 354	+1·2
25 205	+0·2	55 235	+0·2	85 265	+2·1	115 295	+3·4	145 325	+2·7	175 355	+1·2
26 206	+0·2	56 236	+0·3	86 266	+2·2	116 296	+3·3	146 326	+2·6	176 356	+1·2
27 207	+0·2	57 237	+0·3	87 267	+2·2	117 297	+3·3	147 327	+2·6	177 357	+1·1
28 208	+0·2	58 238	+0·4	88 268	+2·3	118 298	+3·2	148 328	+2·5	178 358	+1·1
29 209	+0·2	59 239	+0·4	89 269	+2·3	119 299	+3·2	149 329	+2·5	179 359	+1·0

TABLE III.

NADIR AND ZENITH POINTS ON MURAL CIRCLE IN 1860.

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1860.				
Jan. 5	38·2	214 7 16·8 17·7	34 7 17·2	17·3
6	36·9	7 17·8 17·8	7 17·8	17·5
10	35·6	7 16·8 16·8	7 16·8	17·0
13	38·8	7 16·9	7 16·9	17·0
16	38·6	7 17·6 16·8	7 17·2	17·0
17	36·4	7 16·6 17·2	7 16·9	17·0
20	37·8	7 16·9	7 16·9	17·0
31	36·8	7 17·2	7 17·2	17·1
Feb. 1	33·6	7 17·6 17·0	7 17·3	17·3
6	34·6	7 17·2 7 17·5	7 17·4	17·4
14	33·0	7 17·6 7 17·9	7 17·8	17·6
15	33·8	7 17·9 7 18·0	7 18·0	17·7
17	37·9	7 17·4	7 17·1	17·6
20	35·7	7 17·4 7 17·6	7 17·5	17·5
21	35·6	7 17·0 7 18·0	7 17·5	17·5
22	37·0	7 17·6 7 17·8	7 17·7	17·6
24	39·0	7 17·8	7 17·8	17·5
27	38·2	7 17·2 7 16·9	7 17·0	17·2
29	37·6	7 17·0 7 17·1	7 17·0	17·2
March 2	38·0	7 17·0 7 17·4	7 17·2	17·2
5	39·2	7 17·6 7 17·2	7 17·4	17·2
7	38·2	7 17·2 7 17·[illegible]	7 17·4	17·2
8	37·7	7 17·1 7 16·9	7 17·0	17·2
March 9	36·8	214 7 17·0 7 17·4	34 7 17·2	17·2
12	36·6	7 17·2 7 17·6	7 17·4	17·2
13	35·8	7 17·1 7 17·5	7 17·3	17·2
14	35·4	7 17·3 7 17·6	7 17·4	17·4
15	37·6	7 18·1 7 17·5	7 17·8	17·6
20	40·6	7 17·4 7 17·6	7 17·5	17·5
21	39·4	7 17·2 7 17·2	7 17·2	17·5
22	38·9	7 18·2	7 18·2	17·8
26	39·2	7 17·1 17·0	7 17·0	17·2
27	41·4	7 16·7 17·3	7 17·0	17·2
28	40·1	7 17·2 7 17·6	7 17·4	17·2
29	41·6	7 17·5 7 17·1	7 17·3	17·2
30	42·3	7 16·6	7 16·6	17·0
April 2	40·6	7 16·4 7 17·9	7 17·2	17·2
3	43·8	7 17·2	7 17·2	17·2
5	41·9	7 17·0 7 16·2	7 16·6	16·9
27	44·6	7 17·3 7 17·6	7 17·4	17·3
May 1	51·2	7 16·2 7 16·4	7 16·3	16·6
3	51·6	7 16·8 7 17·2	7 17·0	17·0
7	50·0	7 17·1	7 17·1	17·0
9	46·0	7 17·3 7 16·9	7 17·1	17·0
11	52·0	7 16·9	7 16·9	17·0

On May 18th normal position of Micrometer made = 0r·500
Telescope on Circle was also moved at 8h S. T.

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1860.				
July 20	56°·4	54° 3′ 10″·0 3 11·6	234° 3′ 10″·8	11″·0
Aug. 27	54·0	3 12·0 3 11·8	3 11·9	11·8
28	53·9	3 12·0 3 11·2	3 11·6	11·8
30	54·0	3 12·1 3 12·2	3 12·2	12·0
31	53·6	3 11·7 3 11·8	3 11·8	11·8
Sept. 6	60·2	3 11·2 3 11·5	3 11·4	11·8
7	58·0	3 11·9 3 12·4	3 12·2	12·0
10	51·5	3 12·5 3 13·2	3 12·8	12·5
11	51·5	3 13·2 3 11·6	3 12·4	12·4
13	51·9	3 12·7 3 12·0	3 12·4	12·3
17	51·8	3 11·0 3 11·5	3 11·2	11·5
18	51·6	3 11·2 3 11·0	3 11·1	11·2
20	50·9	3 11·6 3 11·6	3 11·6	11·5
21	44·4	3 11·2 3 12·2	3 11·7	11·7
25	47·6	3 12·0 3 12·1	3 12·0	12·0
1860.				
Oct. 3	46°·4	54° 3′ 12″·1 3 13·7	234° 3′ 12″·9	12″·5
22	49·1	3 12·5	3 12·5	12·4
Nov. 1	46·9	3 11·7 3 11·5	3 11·6	11·8
2	44·2	3 11·7 3 10·8	3 11·2	11·5
5	43·5	3 12·8 3 12·2	3 12·5	12·3
8	43·6	3 12·0 3 12·0	3 12·0	12·2
27	38·0	3 12·6 3 12·7	3 12·6	12·4
28	37·8	3 12·7 3 12·4	3 12·6	12·4
Dec. 5	43·0	3 12·4 3 12·1	3 12·2	12·4
11	40·4	3 12·6 3 12·4	3 12·5	12·4
13	40·8	3 12·0 3 12·4	3 12·2	12·4
14	42·4	3 12·0	3 12·0	12·2
15	39·9	3 11·8 3 12·0	3 11·9	12·2
17	37·6	3 12·2 3 12·4	3 12·3	12·2

For the remaining reductions, the refractions have been computed by Bessel's Table, as represented in the Rev. R. Sheepshank's compendious forms; the Latitude of the Observatory has been assumed as in former years = 55° 57′ 23″·2; and the *Apparent* N. Polar Distances on the day of observation have been converted into *Mean* North Polar Distances for the beginning of the year of observation, by applying the corrections for precession, nutation, aberration, and proper motions, taken from the elements and subsidiary tables given in the Nautical Almanac and the British Association Catalogue; and whose sum is represented in the last column of each observation-page. The individual results for magnitude and place of each star are collected on pp. 46 to 53.

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ROYAL OBSERVATORY, EDINBURGH.

CATALOGUE

OF

THE MEAN PLACES OF ALL STARS

OBSERVED WITH

EITHER THE TRANSIT INSTRUMENT OR MURAL CIRCLE.

DURING

THE YEAR, AND

REDUCED TO JANUARY 1,

1860.

Stars. No. in B. A. C.	Stars. Name or Description.	Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension. h. m. s.	Fraction of Year.	Mean North Polar Distance. ° ′ ″	Fraction of Year.	No. of Observations. R. A.	No. of Observations. N. P. D.
4	α Andromedæ	(1·0)	(a)	0 1 9·40	0·72	61 41 ...	......	8	......
18		7·2	7·0	0 3 15·09	0·70	31 6 22·6	0·67	3	3
26	γ Pegasi	(2·0)	......	0 6 1·76	0·71	75 35 42·8	0·68	4	2
28		5·5	5·5	0 [illegible] 15·40	0·70	49 44 16·0	0·71	2	3
39		......	7·5	0 8 ...	......	13 49 40·7	0·68	......	3
42		7·0	7·0	0 8 46·20	0·71	86 31 35·8	0·71	2	1
48		8·0	......	0 9 32·56	0·71	76 51 ...	......	2	......
57		6·5	......	0 10 36·34	0·71	39 5 ...	......	2	......
68		6·7	......	0 13 57·95	0·74	22 57 14·2	0·69	5	4
83		5·8	6·0	0 17 33·34	0·71	37 43 45·3	0·72	4	4
98		6·8	8·0	0 20 14·62	0·71	74 45 ...	0·71	3	4
105		6·5	7·0	0 22 0·49	0·73	13 45 16·4	0·65	3	2
112	12 Ceti	(6·0)	......	0 22 53·60	0·75	94 44 ...	......	4	......
113		7·0	......	0 22 56·93	0·69	85 55 ...	......	1	......
120		......	(6·0)	0 24 ...	......	57 11 29·5	0·71	......	3
133		8·5	......	0 26 20·51	0·70	70 20 20·9	0·75	3	2
149		6·5	......	0 28 39·91	0·70	77 33 28·1	0·69	3	5
164	π Andromedæ	6·0	......	0 31 9·96	0·71	61 27 ...	......	1	......
177		7·0	7·0	0 33 57·94	0·69	81 24 34·2	0·69	1	4
182		6·5	......	0 34 29·79	0·71	32 0 54·5	0·71	1	1
197		6·0	......	0 37 40·64	0·69	42 54 ...	......	1	......
218	η Cassiopeæ	4·0	......	0 40 39·54	0·69	32 55 41·9	0·71	1	2
224		......	(6·0)	0 41 ...	......	62 2 41·0	0·70	......	2
228		......	6·5	0 42 ...	......	26 30 57·3	0·73	......	1
237		7·0	......	0 44 5·87	0·69	87 22 27·5	0·71	1	1
259	μ Andromedæ	......	4·0	0 49 ...	......	52 15 39·4	0·71	......	4
263		8·0	7·5	0 49 43·15	0·69	63 45 31·0	0·74	1	2
288	ε Piscium	(4·0)	......	0 55 40·76	0·77	82 52 ...	......	7	......
290		......	7·0	0 56 ...	......	36 32 46·8	0·71	......	4
298		......	(7·5)	0 57 ...	......	24 46 49·8	0·73	......	1
299		......	(6·0)	0 57 ...	......	61 5 18·7	0·73	......	1
314	μ Cassiopeæ	......	(5·5)	0 59 ...	......	35 46 6·5	0·76	......	1
335		......	6·5	1 2 ...	......	26 32 35·2	0·71	......	2
357		......	9·0	1 5 ...	......	58 40 6·0	0·70	......	1
360	α Ursæ Minoris	......	(2·0)	1 8 ...	......	1 26 13·2	0·78	......	2
376		......	9·0	1 8 ...	......	17 51 41·4	0·72	......	2
379		......	(7·0)	1 9 ...	......	22 55 23·2	0·71	......	1
403		......	7·0	1 13 ...	......	17 53 13·6	0·75	......	4
420	θ Ceti	(3·0)	......	1 17 1·49	0·75	98 54 ...	......	13	......
453	η Piscium	(4·0)	......	1 23 59·76	0·76	75 22 ...	......	14	......
455		......	(8·0)	1 24 ...	......	73 46 1·1	0·72	......	2
457		......	9·0	1 25 ...	......	9 17 13·4	0·80	......	2
472		......	(7·5)	1 26 ...	......	89 45 49·7	0·73	......	1
514		......	(6·5)	1 34 ...	......	60 39 43·1	0·73	......	1
516		......	(5·5)	1 34 ...	......	55 27 45·1	0·78	......	3
518	ο Piscium	(5·0)	......	1 34 8·87	0·75	85 13 ...	......	8	......
538		......	(6·5)	1 39 ...	......	73 17 24·6	0·73	......	1
547		......	(6·0)	1 41 ...	......	42 48 7·3	0·78	......	3
562		6·5	......	1 43 55·06	0·73	39 13 7·1	0·73	1	1
577	β Arietis	(3·0)	......	1 46 54·72	0·78	69 53 ...	......	8	......
588		......	6·0	1 49 ...	......	26 3 45·3	0·84	......	3

(a) Magnitudes of stars in parenthesis, are the tabular magnitudes from the B. A. Catalogue.

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Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ' "			
620	......	6·5	......	1 54 11·32	0·73	25 34 ...	......	1	......
626	......	......	7·0	1 56 ...	......	7 6 6·6	0·76	......	1
645	......	......	6·0	1 59 ...	......	64 50 22·4	0·85	......	1
647	(a)	......	6·0	1 59 ...	......	65 0 20·9	0·84	......	1
648	α Arietis	(2·0)	......	1 59 17·29	0·77	67 12 ...	......	6	......
694	......	......	(7·5)	2 8 ...	......	26 13 35·5	0·82	......	3
704	67 Ceti	(6·0)	......	2 10 0·11	0·80	97 4 ...	......	2	......
718	......	......	7·0	2 12 ...	......	33 24 5·7	0·84	......	1
725	......	......	8·0	2 13 ...	......	33 15 20·7	0·85	......	1
728	......	......	7·0	2 15 ...	......	79 48 0·8	0·76	......	1
760	ξ² Ceti	(4·0)	......	2 20 43·12	0·81	82 10 ...	......	1	......
764	......	......	7·0	2 22 ...	......	81 3 40·3	0·84	......	3
793	......	......	(6·5)	2 28 ...	......	83 47 1·0	0·84	......	2
822	......	......	(b)	2 34 ...	......	47 51 6·1	0·84	......	1
837	γ Ceti	(3·0)	......	2 36 2·92	0·82	87 21 ...	......	3	......
891	......	......	(8·0)	2 45 ...	......	84 6 5·1	0·84	......	2
949	α Ceti	(2·5)	......	2 54 57·87	0·82	86 27 43·3	0·85	3	1
962	ι Persei	......	(4·0)	2 59 ...	......	40 55 29·4	0·84	......	1
985	......	......	8·0	3 4 ...	......	15 17 0·4	0·85	......	1
986	δ Arietis	(4·0)	......	3 3 37·65	0·81	70 48 ...	......	1	......
1055	......	......	7·5	3 16 ...	......	68 27 32·4	0·88	......	2
1101	......	......	8·0	3 27 ...	......	58 47 25·8	0·88	......	2
1166	η Tauri	......	3·0	3 39 9·98	0·80	66 19 50·5	0·89	1	3
1262	......	......	(6·0)	4 3 ...	......	41 16 13·0	0·90	......	2
1316	......	......	6·0	4 11 ...	......	33 50 6·8	0·91	......	3
1347	......	......	(8·0)	4 15 ...	......	65 55 28·9	0·95	......	1
1361	......	......	7·0	4 17 ...	......	71 17 0·2	0·88	......	3
1420	α Tauri	(1·0)	......	4 27 53·42	0·84	73 46 ...	......	1	......
1434	......	......	5·0	4 30 ...	......	77 46 24·0	0·90	......	3
1459	......	......	6·8	4 37 ...	......	34 39 10·1	0·92	......	3
1463	......	......	7·0	4 37 —	......	66 38 0·4	0·96	......	1
1491	......	......	5·6	4 43 ...	......	81 20 36·8	0·94	......	3
1501	......	......	8·0	4 46 ...	......	34 24 21·4	0·93	......	3
1613	α Aurigæ	(1·0)	......	5 6 21·31	0·52	44 9 ...	......	1	......
1626	......	......	(7·5)	5 9 ...	......	49 41 26·1	0·94	......	5
1656	......	......	6·0	5 14 ...	......	81 42 49·9	0·94	......	3
1681	β Tauri	......	(2·0)	5 17 26·75	0·52	61 31 ...	......	1	......
1683	......	......	(6·0)	5 18 ...	......	55 44 8·1	0·93	......	3
1703	......	......	(7·0)	5 20 ...	......	73 40 47·8	0·96	......	1
1730	δ Orionis	......	(2·0)	5 25 ...	......	90 24 20·8	0·93	......	2
1751	......	......	(5·5)	5 29 ...	......	24 23 5·8	0·96	......	2
1769	......	......	(6·0)	5 30 ...	......	36 34 52·2	0·94	......	1
1813	......	......	(6·0)	5 38 ...	......	21 34 33·8	0·96	......	1
1883	α Orionis	(1·0)	2·0	5 47 35·50	0·52	82 37 21·0	0·95	1	1
1958	ν Orionis	(4·5)	......	5 59 34·74	0·02	75 13 ...	......	2	......
1962	......	......	(c)	6 1 ...	......	65 44 13·2	0·96	......	1
2022	......	......	6·0	6 9 ...	......	80 0 33·2	0·96	......	1
2046	......	(7·0)	......	6 14 36·44	0·01	33 38 43·8	0·96	1	1
2060	......	......	7·0	6 16 ...	......	85 20 21·3	0·02	......	1
2083	......	......	6·0	6 21 ...	......	16 12 17·1	0·50	......	2
2163	γ Geminorum	(2·5)	......	6 29 37·41	0·01	73 29 ...	......	4	......

(a) N. P. D. two minutes greater than that in B. A. C., but confirmed by an observation in 1858. (b) An 8th magnitude star in a straggling group, called a nebula in B. A. C. (c) One of several stars in a straggling cluster, reputed a nebula in B. A. C.

Stars: No. in B. A. C.	Stars: Name or Description.	Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension. h. m. s.	Fraction of Year.	Mean North Polar Distance. ° ′ ″	Fraction of Year.	No. of Observations: R. A.	No. of Observations: N. P. D.
2184	......	......	7·0	6 33 ...	......	73 28 32·3	0·34	......	6
2238	......	......	6·2	6 43 ...	......	66 14 11·4	0·40	......	5
2292	......	......	7·0	6 53 ...	......	79 10 52·8	0·39	......	5
2306	......	......	6·0	6 56 ...	......	78 50 47·4	0·04	......	1
2334	......	......	6·5	7 1 ...	......	39 59 7·5	0·01	......	1
2363	......	......	7·2	7 6 ...	......	65 3 10·4	0·05	......	2
2410	δ Geminorum	(3·0)	3·2	7 11 45·58	0·04	67 45 48·8	0·06	6	2
2463	......	......	7·0	7 20 ...	......	62 10 2·5	0·04	......	4
2485	α² Geminorum	(1·5)	......	7 25 39·75	0·11	57 48 ...	......	6	......
2488	......	......	6·2	7 26 ...	......	43 30 57·0	0·04	......	4
2522	α Canis Minoris	......	1·0	7 31 38·34	0·02	84 25 9·8	0·06	3	2
2555	β Geminorum	(2·0)	......	7 36 44·60	0·03	61 38 ...	......	6	......
2586	......	......	6·5	7 41 ...	......	61 27 14·5	0·02	......	3
2672	6 Cancri	(5·5)	......	7 54 54·91	0·06	61 49 ...	......	5	......
2683	......	......	6·0	7 57 ...	......	70 45 55·1	0·05	......	3
2688	......	......	7·3	7 57 ...	......	62 4 31·8	0·07	......	3
2737	......	......	6·8	8 3 ...	......	74 57 32·6	0·04	......	2
2748	......	......	7·3	8 4 ...	......	75 34 51·1	0·07	......	4
2761	......	......	7·8	8 7 ...	......	76 31 49·4	0·04	......	2
2862	η Cancri	(6·0)	......	8 24 36·53	0·07	69 5 ...	......	7	......
2867	......	......	6·4	8 26 ...	......	79 27 42·8	0·04	......	1
2971	ε Hydræ	(4·0)	......	8 39 21·49	0·09	83 4 11·5	0·04	4	1
2988	......	......	7·7	8 43 ...	......	34 31 37·4	0·07	......	3
3053	......	......	6·7	8 50 ...	......	80 4 30·8	0·11	......	5
3083	......	......	6·3	8 55 ...	......	38 37 18·2	0·09	......	4
3086	......	......	8·0	8 56 ...	......	30 6 2·0	0·14	......	1
3133	......	......	6·1	9 5 ...	......	85 33 40·5	0·11	......	7
3157	......	......	7·0	9 10 ...	......	29 37 56·2	0·16	......	1
3171	83 Cancri	(6·0)	......	9 11 9·80	0·10	71 42 ...	......	4	......
3223	α Hydræ	......	2·0	9 20 42·32	0·12	98 3 14·0	0·13	2	3
3242	θ Ursæ Majoris	......	2·3	9 23 ...	......	37 41 13·9	0·13	......	4
3325	......	......	6·8	9 37 ...	......	26 6 16·5	0·17	......	3
3331	ε Leonis	......	2·7	9 37 53·91	0·14	65 34 58·4	0·13	9	3
3336	......	......	5·2	9 39 ...	......	82 38 49·5	0·14	......	4
3375	......	......	8·2	9 45 ...	......	54 21 33·4	0·15	......	2
3380	......	......	6·0	9 46 ...	......	83 23 1·7	0·19	......	2
3415	π Leonis	(4·5)	......	9 52 48·71	0·17	81 17 ...	......	7	......
3418	......	......	9·0	9 54 ...	......	80 22 39·8	0·18	......	1
3427	......	......	9·0	9 56 ...	......	56 40 40·6	0·16	......	1
3430	......	......	9·0	9 56 ...	......	81 5 43·8	0·18	......	1
3431	......	......	10·0	9 56 ...	......	56 52 16·7	0·14	......	1
3436	......	......	7·8	9 57 ...	......	84 19 6·7	0·13	......	3
3439	......	......	7·0	9 58 ...	......	54 19 9·0	0·20	......	1
3459	α Leonis	(1·0)	......	10 0 54·79	0·16	77 21 ...	......	12	......
3484	......	......	7·6	10 6 ...	......	57 52 53·8	0·18	......	4
3523	γ¹ Leonis	(2·0)	......	10 12 14·95	0·16	69 27 ...	......	5	......
3529	(1)	......	5·0	10 13 ...	......	6 43 56·4	0·17	......	4
3528	(2)	......	9·0	10 13 ...	......	6 42 17·1	0·19	......	2
3529	......	......	7·0	10 13 ...	......	82 51 59·2	0·14	......	3
3592	......	......	6·9	10 23 ...	......	87 47 19·0	0·17	......	7
3609	ρ Leonis	......	(4·0)	10 25 26·18	0·17	79 58 ...	......	7	......

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Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations.	
No. in B. A. C.	Name or Description.			h. m. s.		° ′ ″		R. A.	N. P. D.
3662	……	……	7·8	10 34 …	……	78 31 47·4	0·20	……	3
3708	l Leonis……	(6·0)	……	10 41 53·75	0·18	78 43 …	……	5	……
3726	……	……	6·4	10 45 …	……	68 13 55·8	0·19	……	8
3760	……	……	8·0	10 56 …	……	81 39 50·3	0·19	……	7
3768	χ Leonis……	(4·5)	……	10 57 47·60	0·21	81 51 …	……	4	……
3821	……	……	6·2	11 3 …	……	20 58 9·5	0·20	……	5
3834	δ Leonis……	……	2·0	11 [illegible] 39·50	0·18	68 42 36·2	0·16	11	1
3836	……	……	7·7	11 6 …	……	86 58 5·5	0·19	……	4
3869	……	……	6·6	11 15 …	……	71 47 42·9	0·21	……	8
3946	υ Leonis……	(4·5)	……	11 29 46·84	0·20	90 3 …	……	6	……
3995	β Leonis……	(2·5)	……	11 41 54·96	0·20	74 39 …	……	11	……
3996	……	……	6·7	11 42 …	……	84 1 57·2	0·19	……	6
4005	……	……	6·0	11 44 …	……	76 56 35·4	0·22	……	1
4010	……	……	6·5	11 45 …	……	51 16 38·8	0·20	……	2
4111	(Middle star)……	……	7·3	12 5 …	……	11 46 49·1	0·21	……	6
4145	η Virginis……	(3·5)	……	12 12 44·65	0·22	89 [illegible] …	……	4	……
4153	……	……	6·4	12 13 …	……	62 35 55·3	0·23	……	6
4199	……	……	7·4	12 21 …	……	63 18 44·7	0·22	……	5
4205	……	……	6·8	12 22 …	……	62 59 50·7	[illegible]·23	……	4
4231	……	……	8·5	[illegible] 26 …	……	[illegible] 46 41·7	0·22	……	2
4244	(a) ……	……	8·0	12 28 …	……	52 48 9·6	0·21	……	2
4364	……	……	7·5	12 55 …	……	67 58 30·4	0·24	……	2
4401	θ Virginis……	(4·5)	……	13 2 42·22	0·24	94 47 …	……	2	……
4421	β Comæ……	……	5·3	13 5 …	……	61 24 38·8	0·24	……	4
4457	……	……	6·5	13 13 …	……	54 8 7·8	0·24	……	3
4470	……	……	6·0	13 15 …	……	87 10 32·4	0·39	……	4
4503	……	……	7·7	13 22 …	……	85 24 8·6	0·24	……	3
4532	ζ Virginis……	(4·0)	……	13 27 33·68	0·29	89 53 …	……	3	……
4552	……	……	5·0	13 31 …	……	52 59 30·2	0·23	……	1
4555	……	……	6·0	13 32 …	……	36 41 32·4	0·24	……	2
4575	……	……	6·0	13 37 …	……	66 35 32·2	0·25	……	1
4610	……	……	6·5	13 42 …	……	58 6 44·7	0·27	……	4
4621	……	……	6·0	13 43 …	……	70 40 23·4	0·33	……	1
4627	……	……	8·0	13 45 …	……	54 31 56·6	0·25	……	1
4648	η Bootis……	(3·0)	……	13 48 1·13	0·31	70 54 …	……	4	……
4652	……	……	6·8	13 50 …	……	57 16 56·8	0·28	……	3
4678	……	……	8·0	13 56 …	……	57 39 47·1	0·34	……	2
4672	τ Virginis……	(4·5)	……	13 54 31·38	0·37	87 46 …	……	1	……
4694	……	……	7·0	14 0 …	……	58 28 43·4	0·26	……	1
4723	……	……	8·0	14 8 …	……	60 14 17·3	0·35	……	1
4729	α Bootis……	……	1·0	14 9 16·63	0·37	70 5 13·8	0·34	3	3
4737	……	……	6·5	14 11 …	……	74 5 13·0	0·33	……	1
4738	……	……	9·0	14 11 …	……	49 36 16·6	0·26	……	1
4756	……	……	6·0	14 14 …	……	37 19 14·3	0·36	……	2
4797	……	……	6·0	14 23 …	……	53 10 25·6	0·32	……	1
4806	ρ Bootis……	(4·0)	……	14 25 47·75	0·36	59 1 …	……	6	……
4809	……	……	6·0	14 26 …	……	62 42 4·6	0·34	……	1
4820	……	……	7·5	14 28 …	……	56 50 59·7	0·34	……	2
4876	ε Bootis……	……	3·0	14 38 52·35	0·38	62 20 0·0	0·34	5	4
4942	……	……	6·0	14 54 …	……	49 47 48·6	0·35	……	1
4965	……	……	6·0	14 58 …	……	44 48 26·1	0·32	……	2

(a) Called a nebula in the B. A. Catalogue.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations.	
No. in B. A. C.	Name or Description.			h m s		° ′ ″		R. A.	N. P. D.
4969	ψ Bootis	(5·0)	......	14 58 26·89	0·39	62 30 ...	......	3	......
5001	......	......	7·0	15 5 ...	......	60 14 17·2	0·34	......	2
5034	β Libræ	......	2·0	15 9 28·61	0·38	98 51 48·8	0·32	1	2
5091	......	......	6·0	15 20 ...	......	26 9 28·7	0·34	......	2
5143	α Coronæ Borealis	(2·5)	......	15 28 45·70	0·37	62 49 ...	......	6	......
5196	α Serpentis	(2·5)	......	15 37 22·44	0·37	83 8 ...	......	6	......
5284	......	......	3·0	15 50 ...	......	73 52 43·6	0·33	......	3
5414	δ Ophiuchi	(3·0)	......	16 7 0·64	0·42	93 19 49·0	0·33	8	1
5452	......	......	6·0	16 14 ...	......	68 31 35·9	0·34	......	1
5604	ζ Herculis	(3·0)	......	16 36 0·55	0·42	58 8 ...	......	9	......
5708	κ Ophiuchi	(4·0)	......	16 51 2·57	0·45	80 24 ...	......	6	......
5821	α Herculis	(3·5)	......	17 8 15·84	0·44	75 27 ...	......	9	......
5941	α Ophiuchi	(2·0)	......	17 28 26·23	0·45	77 20 ...	......	8	......
6021	μ Herculis	(4·0)	......	17 40 58·88	0·46	62 11 ...	......	7	......
6355	α Lyræ	(1·0)	......	18 32 11·91	0·53	51 21 ...	......	3	......
6429	β Lyræ	(3·0)	2·0	18 44 54·69	0·51	56 47 48·4	0·55	6	1
6527	......	......	8·0	18 59 ...	......	71 4 25·8	0·55	......	1
6528	ζ Aquilæ	(3·0)	......	18 58 58·51	0·52	76 22 ...	......	4	......
6595	ω Aquilæ	(5·0)	......	19 11 14·62	0·54	78 41 ...	......	2	......
6646	δ Aquilæ	(3·5)	......	19 18 26·27	0·54	87 10 ...	......	2	......
6735	......	......	4·0	19 33 ...	......	20 34 37·2	0·55	......	1
6772	γ Aquilæ	(3·0)	......	19 39 36·15	0·54	79 43 29·5	0·55	3	1
6802	α Aquilæ	(1·5)	......	19 43 57·03	0·53	81 31 ...	......	1	......
6833	β Aquilæ	(3·5)	......	19 48 26·09	0·53	83 56 ...	......	1	......
7256	32 Vulpeculæ	(4·5)	......	20 48 35·60	0·66	62 28 ...	......	2	......
7268	......	......	6·5	20 51 ...	......	43 7 7·1	0·66	......	1
7336	61¹ Cygni	......	7·0	21 1 ...	......	51 56 17·0	0·66	......	1
7368	ζ Cygni	(3·0)	......	21 6 58·71	0·66	60 21 ...	......	3	......
7430	(Following of two stars in the field)	......	6·5	21 17 ...	......	29 50 14·8	0·66	......	1
7478	β Aquarii	(3·0)	......	21 24 11·14	0·66	96 11 ...	......	2	......
7510	......	......	......	21 29 ...	......	10 5 12·8	0·66	......	2
7561	ε Pegasi	(2·5)	......	21 37 16·60	0·66	80 45 54·4	0·65	2	1
7569	(Larger star observed)	......	6·5	21 38 ...	......	61 53 17·2	0·68	......	2
7627	16 Pegasi	(5·5)	......	21 46 41·73	0·66	64 44 ...	......	1	......
7644	......	......	7·3	21 50 ...	......	18 10 13·4	0·67	......	4
7686	α Aquarii	(3·0)	......	21 58 35·52	0·68	91 0 ...	......	2	......
7708	......	......	7·5	22 1 ...	......	28 24 0·7	0·66	......	3
7759	......	......	(6·0)	22 8 ...	......	29 55 57·0	0·68	......	2
7773	θ Aquarii	(4·5)	......	22 9 26·56	0·69	98 29 ...	......	2	......
7779	(Smaller of two stars)	......	9·3	22 10 ...	......	17 22 48·6	0·68	......	4
7795	γ Aquarii	(3·0)	......	22 14 25·40	0·73	92 6 ...	......	1	......
7868	η Aquarii	4·0)	......	22 28 9·98	0·71	90 51 ...	......	3	......
7908	ζ Pegasi	(3·0)	......	22 34 28·75	0·69	79 53 55·0	0·69	5	6
7958	μ Pegasi	(4·0)	......	22 43 14·92	0·74	66 8 ...	......	2	......
7970	λ Aquarii	(4·0)	......	22 45 18·48	0·74	98 20 ...	......	2	......
7977	......	(7·5)	9·0	22 46 43·22	0·74	58 54 1·1	0·69	2	3
7996	......	(6·0)	7·0	22 50 25·12	0·74	86 56 17·5	0·71	2	1
8024	......	......	6·5	22 55 36·05	0·73	33 38 46·4	0·70	1	4
8034	α Pegasi	(2·0)	......	22 57 47·32	0·69	75 32 50·9	0·69	5	3
8065	......	(7·5)	9·0	23 2 13·38	0·71	88 36 53·1	0·67	3	1

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Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations.	
No. in B. A. C.	Name or Description.			h. m. s.		° ′ ″		R. A.	N. P. D.
8063	......	......	(6·3)	23 6 33·67	0·71	33 36 14·6	0·69	3	4
8091	......	(7·0)	......	23 8 8·12	0·74	62 41 27·7	0·70	1	1
8105	γ Piscium	(4·5)	......	23 9 54·44	0·70	87 29 ...	......	3	......
8135	......	(6·0)	......	23 14 7·08	0·73	46 39 ...	......	1	......
8137	......	......	7·0	23 14 ...	......	28 47 45·5	0·70	......	3
8138	......	......	7·0	23 14 ...	......	28 33 11·6	0·71	......	1
8139	......	......	6·5	23 15 ...	......	52 11 2·5	0·68	......	3
8147	......	(6·5)	......	23 15 47·42	0·73	70 12 ...	......	1	......
8169	κ Piscium	(5·5)	......	23 19 45·36	0·71	89 31 ...	......	2	......
8204	......	......	6·9	23 26 34·25	0·72	18 46 17·1	0·69	3	5
8233	ι Piscium	(4·5)	......	23 32 45·03	0·70	85 8 ...	......	9	......
8247	......	(7·5)	......	23 35 26·66	0·72	72 6 31·9	0·70	2	1
8252	(Star 8 mag. precedes 25 secs.)	......	7·0	23 36 ...	......	37 37 26·4	0·70	......	5
8269	......	(8·0)	......	23 40 35·55	0·74	86 33 ...	......	2	......
8270	......	......	8·4	23 40 39·71	0·70	86 36 1·8	0·71	2	3
8272	......	(7·0)	......	23 41 3·34	0·69	82 31 49·8	0·72	1	2
8280	......	......	6·5	23 42 ...	......	30 48 0·0	0·69	......	3
8298	......	(7·0)	......	23 45 17·24	0·71	13 10 34·0	0·68	3	1
8315	......	(7·0)	......	23 48 28·21	0·71	82 33 19·2	0·70	3	4
8331	ω Piscium	(4·5)	......	23 52 7·39	0·75	83 55 ...	......	4	......
8338	......	......	8·0	23 53 37·01	0·70	28 36 8·2	0·70	2	5
8350	......	(6·0)	......	23 54 51·90	0·71	63 39 30·9	0·73	1	1
8355	(Double, larger observed)	......	(6·0)	23 55 ...	......	24 40 50·7	0·68	......	1
8364	......	......	7·0	23 57 43·12	0·72	32 14 50·2	0·70	4	2
8372	......	(6·5)	......	23 58 57·69	0·70	32 20 38·6	0·70	2	4

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OBSERVATIONS

MADE WITH

THE TRANSIT INSTRUMENT,

AND

CALCULATION

OF

APPARENT RIGHT ASCENSIONS.

1861.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1861.
1861.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Jan. 2	1883	α Orionis	....	82 37	14·1	22·4	31·0	39·2	47 47·8	5 47 30·90	− 0·15	+ 10·47	+ 10·58	− 2·39
	2047	μ Geminorum	....	67 25	7·3	16·3	25·3	34·2	14 43·3	6 14 25·28	− 0·15	+ 10·62	+ 10·62	− 2·66
	2163	γ Geminorum	....	73 29	15·8	24·2	33·0	41·6	29 50·5	6 29 33·02	− 0·15	+ 10·59	+ 10·64	− 2·57
	2410	δ Geminorum	....	67 45	23·2	32·1	41·3	50·0	11 59·2	7 11 41·16	− 0·15	+ 10·83	+ 10·72	− 2·67
	2485	α² Geminorum	....	57 48	16·3	26·0	36·0	45·8	25 55·6	7 25 35·94	− 0·15	+ 10·68	+ 10·74	− 2·90
	2555	β Geminorum	....	61 38	21·7	31·0	40·7	50·0	36 59·5	7 36 40·58	− 0·15	+ 10·68	+ 10·75	− 2·78
	5821	α Herculis	....	75 27	48·8	57·3	6·0	14·4	8 23·3	17 8 5·96	− 0·15	+ 12·44	+ 12·44	+ 0·36
	5941	α Ophiuchi	....	77 20	59·2	7·5	16·3	24·8	28 33·4	17 28 16·24	− 0·15	+ 12·49	+ 12·49	+ 0·37
Jan. 3	1681	β Tauri	....	61 31	59·5	9·0	18·6	27·9	17 37·5	5 17 18·50	− 0·15	+ 14·78	+ 14·88	− 2·66
	1730	δ Orionis	....	90 25	25·2	33·5	42·0	50·1	24 58·6	5 24 41·88	− 0·16	+ 14·96	+ 14·90	− 2·28
	1765	ι Orionis	....	91 16	40·9	48·9	57·2	5·4	29 14·0	5 28 57·28	− 0·16	+ 14·84	+ 14·91	− 2·29
	1883	α Orionis	....	82 37	9·6	17·9	26·3	34·8	47 43·1	5 47 26·34	− 0·15	+ 15·04	+ 14·94	− 2·40
Jan. 7	2163	γ Geminorum	....	73 29	54·5	3·1	12·0	20·5	29 29·3	6 29 11·88	− 0·14	+ 31·75	+ 31·74	− 2·61
	2485	α² Geminorum	....	57 48	55·4	5·0	15·0	24·4	25 34·7	7 25 14·90	− 0·14	+ 31·79	+ 31·69	− 2·38
	2555	β Geminorum	....	61 38	0·5	9·8	19·3	28·8	36 38·5	7 36 19·38	− 0·13	+ 31·94	+ 31·91	− 2·86
	2672	6 Cancri	....	61 48	11·0	20·1	29·8	39·0	54 48·5	7 51 29·68	− 0·13	+ 31·88	+ 31·93	− 2·84
	2862	φ Cancri	....	69 4	53·0	1·6	10·8	19·4	24 28·6	8 24 10·68	− 0·13	+ 32·00	+ 32·00	− 2·62
	2971	ι Hydræ	....	83 3	38·1	46·7	55·3	3·5	39 12·1	8 38 55·20	− 0·14	+ 32·07	+ 32·02	− 2·37
Feb. 4	2410	δ Geminorum	....	67 45	40·0	48·8	57·9	6·8	11 15·9	7 10 57·88	− 0·13	+ 54·29	+ 54·44	− 2·87
	2485	α² Geminorum	....	57 48	32·8	42·3	52·5	2·1	25 12·2	7 24 52·38	− 0·11	+ 54·46	+ 54·47	− 3·16
	2522	α Canis Minoris	....	84 21	53·0	1·2	9·9	18·0	31 26·4	7 31 9·70	− 0·14	+ 54·56	+ 54·50	− 2·63
	2555	β Geminorum	....	61 38	38·1	47·3	57·1	6·5	36 16·0	7 35 57·00	− 0·12	+ 54·53	+ 54·51	− 3·08
	2971	ι Hydræ	....	83 3	16·3	24·5	33·1	41·3	38 50·0	8 38 33·04	− 0·14	+ 54·58	+ 54·60	− 2·72
Feb. 5	2485	α² Geminorum	....	57 48	31·1	40·9	51·0	0·7	25 10·6	7 24 50·86	− 0·12	+ 55·99	+ 55·99	− 3·16
	2522	α Canis Minoris	....	84 21	51·6	59·9	8·2	16·4	31 24·9	7 31 8·20	− 0·15	+ 56·07	+ 56·00	− 2·62
	2555	β Geminorum	....	61 38	36·8	46·0	55·6	5·0	36 14·5	7 35 55·58	− 0·13	+ 55·95	+ 56·00	− 3·07
	3351	ε Leonis	....	65 34	46·0	55·1	4·4	13·4	37 22·8	9 37 4·34	− 0·13	+ 56·12	+ 56·12	− 3·01
	3415	π Leonis	....	81 15	41·8	50·1	58·6	7·1	52 15·5	9 51 58·62	− 0·14	+ 56·13	+ 56·13	− 2·72
	3459	α Leonis	....	77 20	47·8	56·1	4·8	13·2	0 22·0	10 0 4·78	− 0·15	+ 56·08	+ 56·14	− 2·75
Feb. 21	2410	(a) δ Geminorum	....	67 45	51·5	0·3	9·5	18·3	10 27·2	7 10 9·36	− 0·16	+ 102·70	+ 102·70	− 2·73
	2485	α² Geminorum	....	57 48	44·5	54·1	4·0	13·8	25 23·8	7 25 4·01	− 0·15	+ 42·71	+ 42·71	− 3·03
	2522	α Canis Minoris	....	84 21	4·8	13·0	21·5	29·7	31 36·1	7 31 21·42	− 0·19	+ 42·78	+ 42·72	− 2·52
	2555	β Geminorum	....	61 38	50·0	59·2	8·9	18·1	36 27·7	7 36 8·78	− 0·15	+ 42·67	+ 42·72	− 2·97
	2672	6 Cancri	....	61 48	0·1	9·5	19·2	28·5	54 38·0	7 54 19·06	− 0·15	+ 42·72	+ 42·73	− 3·03
	2862	φ Cancri	....	69 4	42·5	51·2	0·4	9·1	24 18·2	8 24 0·28	− 0·17	+ 42·77	+ 42·75	− 2·95
Feb. 25	2672	(b) 6 Cancri	....	61 48	58·5	7·8	17·2	26·5	54 36·1	7 51 17·22	− 0·17	+ 44·58	+ 44·60	− 3·02
	2862	φ Cancri	....	69 4	40·6	49·4	58·5	7·4	24 16·3	8 23 58·41	− 0·18	+ 44·61	+ 44·63	− 2·94
	2971	ι Hydræ	....	83 3	26·4	34·6	43·1	51·2	38 59·8	8 38 43·02	− 0·20	+ 44·56	+ 44·64	− 2·72
	3331	ε Leonis	....	65 34	57·5	6·7	16·0	25·0	37 34·3	9 37 15·90	− 0·17	+ 44·73	+ 44·71	− 3·14
	3415	π Leonis	....	81 15	53·5	1·8	10·2	18·6	52 27·1	9 52 10·24	− 0·20	+ 44·71	+ 44·73	− 2·66
Feb. 26	3331	ε Leonis	....	65 34	55·8	4·7	14·1	23·0	37 32·3	9 37 13·98	− 0·19	+ 46·67	+ 46·65	− 3·14
	3415	π Leonis	....	81 15	51·5	59·8	8·4	16·8	52 25·2	9 52 8·34	− 0·22	+ 46·64	+ 46·67	− 2·87
	3459	α Leonis	....	77 20	57·4	5·8	14·4	22·9	0 31·5	10 0 14·40	− 0·22	+ 46·70	+ 46·68	− 2·92
	3523	γ¹ Leonis	....	69 25	17·0	25·9	34·9	43·6	11 52·8	10 11 34·81	− 0·21	+ 46·69	+ 46·69	− 3·05
	3609	ρ Leonis	....	79 56	29·0	37·2	45·9	54·1	25 2·8	10 24 45·80	− 0·21	+ 46·70	+ 46·70	− 2·89

(a) After this observation clock put forward 1 minute.

(b) Stars tremulous. Hazy.

Date	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to	Wires. I	II.	III	IV	V	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1 1861.
1861.				° '	s	s	s	s	m s	h m s	s	s	s	s
Feb. 27	2485	(a) α^2 Geminorum	....	57 48	38·1	48·0	57·9	7·6	25 17·5	7 24 57·82	− 0·19	+ 48·94	+ 49·00	− 3·00
	2522	α Canis Minoris	....	81 24	58·1	6·7	15·1	23·2	31 31·9	7 31 15·06	− 0·24	+ 49·16	+ 49·01	− 2·49
	2555	β Geminorum	....	61 38	43·8	53·0	2·6	11·9	36 21·5	7 36 2·56	− 0·20	+ 46·90	+ 49·02	− 2·93
	2971	ι Hydræ	....	83 3	21·8	30·1	38·6	47·0	38 55·4	8 38 38·58	− 0·24	+ 49·14	+ 49·11	− 2·72
	3331	ι Leonis	....	65 34	53·3	2·2	11·5	20·1	37 29·9	9 37 11·46	− 0·21	+ 49·21	+ 49·19	− 3·11
	3459	α Leonis	....	77 20	54·9	3·2	11·9	20·1	0 29·0	10 0 11·82	− 0·23	+ 49·20	+ 49·22	− 2·92
Feb. 28	2485	(b) α^2 Geminorum	....	57 48	35·2	45·0	55·0	4·5	25 14·4	7 24 54·82	− 0·20	+ 51·93	+ 51·95	− 2·96
	2555	β Geminorum	....	61 38	40·7	50·0	59·6	8·9	36 18·5	7 35 59·54	− 0·20	+ 51·91	+ 51·97	− 2·92
	2971	ι Hydræ	....	83 3	19·0	27·2	35·8	44·0	38 52·5	8 38 35·70	− 0·25	+ 52·02	+ 52·07	− 2·71
	3331	ι Leonis	....	65 34	50·3	59·2	8·4	17·6	37 27·0	9 37 8·50	− 0·21	+ 52·17	+ 52·17	− 3·14
	3415	π Leonis	....	81 15	46·0	54·2	2·8	11·0	52 19·8	9 52 2·76	− 0·24	+ 52·24	+ 52·20	− 2·87
	3459	α Leonis	....	77 20	52·0	0·2	9·0	17·3	0 26·1	10 0 8·92	− 0·24	+ 52·20	+ 52·22	− 2·92
June 13	3834	δ Leonis	....	68 41	38·7	47·4	56·5	5·3	6 14·4	11 5 56·16	− 0·72	+ 49·32	+ 49·23	− 2·35
	3995	β Leonis	....	74 38	54·9	3·3	12·1	20·8	41 29·4	11 41 12·10	− 0·77	+ 49·18	+ 49·22	− 2·47
	5414	δ Ophiuchi	....	93 19	2·6	10·7	19·2	27·2	6 35·9	16 6 19·12	− 0·87	+ 49·25	+ 49·20	− 3·69
	5708	κ Ophiuchi	....	80 24	3·6	12·0	20·7	29·0	50 37·4	16 50 20·54	− 0·78	+ 49·20	+ 49·19	− 3·56
	5821	α Herculis	....	75 27	16·7	25·0	33·9	42·2	7 51·0	17 7 33·76	− 0·77	+ 49·13	+ 49·19	− 3·51
	5941	α Ophiuchi	....	77 20	27·1	35·5	44·2	52·6	28 1·2	17 27 44·12	− 0·76	+ 49·14	+ 49·18	− 3·55
June 17	3459	α Leonis	....	77 20	57·2	5·1	14·2	22·6	0 31·5	10 0 14·18	− 0·79	+ 46·51	+ 46·43	− 1·94
	3834	δ Leonis	....	68 41	41·6	50·2	59·2	8·2	6 17·4	11 5 59·32	− 0·75	+ 46·45	+ 46·40	− 2·31
	3995	β Leonis	....	74 38	57·6	6·2	15·0	23·4	41 32·3	11 41 14·90	− 0·79	+ 46·35	+ 46·37	− 2·42
	4672	τ Virginis	....	87 44	35·4	13·8	52·3	0·4	54 9·0	13 53 52·18	− 0·86	+ 46·23	+ 46·30	− 3·12
	4729	α Bootis	....	70 4	19·1	27·9	37·0	45·6	8 54·7	14 8 36·86	− 0·75	+ 46·30	+ 46·28	− 3·06
June 19	5604	ζ Herculis	....	58 7	2·2	11·9	21·8	31·5	35 41·4	16 35 21·76	− 0·69	+ 45·08	+ 45·15	− 3·35
	5708	κ Ophiuchi	....	80 24	7·9	16·1	24·8	33·0	50 41·6	16 50 24·68	− 0·83	+ 45·14	+ 45·14	− 3·59
	5821	α Herculis	....	75 27	20·7	29·2	37·9	46·3	7 55·0	17 7 37·82	− 0·81	+ 45·16	+ 45·14	− 3·56
	5941	α Ophiuchi	....	77 20	31·1	39·5	48·3	56·8	28 5·1	17 27 48·16	− 0·81	+ 45·20	+ 45·13	− 3·60
	6021	μ Herculis	....	62 11	1·5	10·6	20·2	29·6	40 39·0	17 40 20·18	− 0·72	+ 45·13	+ 45·12	− 3·41
June 24	4648	ε Bootis	....	70 53	7·2	15·8	24·9	33·3	47 42·5	13 47 24·74	− 0·79	+ 43·00	+ 42·90	− 2·95
	5604	ζ Herculis	....	58 7	4·4	14·1	24·1	33·8	35 43·8	16 35 24·01	− 0·70	+ 42·80	+ 42·85	− 3·31
	5941	(c) α Ophiuchi	....	77 20	33·5	42·0	50·6	59·0	28 7·7	17 27 50·56	− 0·82	+ 42·84	+ 42·84	− 3·63
	6021	μ Herculis	....	62 11	3·9	13·0	22·6	31·9	40 41·4	17 40 22·56	− 0·73	+ 42·76	+ 42·83	− 3·14
June 25	5034	β Libræ	....	98 51	37·1	45·4	54·0	2·2	9 11·0	15 8 53·94	− 0·97	+ 42·43	+ 42·39	− 3·57
	5143	α Coronæ Borealis	....	62 48	51·0	0·2	9·9	19·1	28 28·8	15 28 9·60	− 0·74	+ 42·42	+ 42·38	− 3·25
	6429	β Lyræ	....	56 48	59·0	8·6	18·9	28·6	44 38·8	18 44 18·78	− 0·70	+ 42·20	+ 42·30	− 3·40
	6528	ζ Aquilæ	....	76 21	6·2	14·8	23·5	32·0	58 40·4	18 58 23·38	− 0·81	+ 42·29	+ 42·29	− 3·62
July 2	6429	β Lyræ	....	56 48	1·0	11·0	21·0	30·6	44 40·3	18 41 20·90	− 0·69	+ 40·13	+ 40·25	− 3·47
	6528	ζ Aquilæ	....	76 21	8·4	16·8	25·5	34·0	58 42·8	18 58 25·50	− 0·79	+ 40·24	+ 40·25	− 3·71
	6646	δ Aquilæ	....	87 10	37·1	45·3	53·9	2·1	18 10·5	19 17 53·78	− 0·86	+ 40·30	+ 40·24	− 3·66
	6772	γ Aquilæ	....	79 41	46·5	54·8	3·3	11·8	39 20·3	19 39 3·34	− 0·81	+ 40·25	+ 40·24	− 3·74
	6802	α Aquilæ	....	81 31	7·5	15·9	24·5	32·8	43 41·3	19 43 21·40	− 0·83	+ 40·25	+ 40·23	− 3·77
	6833	β Aquilæ	....	83 57	36·9	45·0	53·3	1·8	48 10·3	19 47 53·46	− 0·85	+ 40·28	+ 40·23	− 3·78

(a) Night cloudy. (b) Stars tremulous. (c) Faint.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance &c.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock Interpolated.	Correction to Mean R.A., Jan. 1, 1861.
1861.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
July 3	5414	δ Ophiuchi	....	93 19	11·8	20·0	28·4	36·8	6 45·2	16 6 28·44	− 0·89	+ 39·97	+ 39·93	− 3·71
	6021	μ Herculis	....	62 11	6·9	16·0	25·6	34·9	40 44·3	17 40 25·54	− 0·72	+ 39·83	+ 39·89	− 3·47
	6429	β Lyræ	....	56 48	1·3	11·1	21·3	31·1	44 41·3	18 41 21·22	− 0·69	+ 39·82	+ 39·88	− 3·48
	6772	γ Aquilæ	....	79 44	46·9	55·2	3·8	12·1	39 20·6	19 39 3·72	− 0·61	+ 39·88	+ 39·87	− 3·75
	6802	α Aquilæ	....	81 31	8·0	16·1	24·7	33·0	43 41·6	19 43 24·68	− 0·82	+ 39·97	+ 39·87	− 3·78
	6833	β Aquilæ	....	83 57	37·1	45·4	54·0	2·2	48 10·8	19 47 53·90	− 0·84	+ 39·84	+ 39·86	− 3·79
July 6	5821	α Herculis	....	75 27	25·1	33·4	42·3	50·9	7 59·5	17 7 42·24	− 0·78	+ 40·75	+ 40·73	− 3·60
	5941	α Ophiuchi	....	77 20	35·5	44·0	52·8	1·2	28 10·0	17 27 52·70	− 0·79	+ 40·71	+ 40·72	− 3·67
	6021	μ Herculis	....	62 11	5·9	15·2	24·9	34·0	40 43·8	17 40 24·76	− 0·71	....	+ 40·71	− 3·47
	6281	δ Ursæ Minoris	....	3 24	54·0	13·0	34·5	53·5	21 18·0	18 16 34·60	+ 1·79	....	+ 40·68	− 5·83
	6355	α Lyræ	....	51 21	16·0	26·6	37·3	48·0	31 58·8	18 31 37·34	− 0·65	+ 40·69	+ 40·66	− 3·44
	6429	β Lyræ	....	56 48	0·8	10·4	20·5	30·1	44 40·5	18 44 20·46	− 0·68	+ 40·59	+ 40·65	− 3·50
July 8	5414	δ Ophiuchi	....	93 19	11·9	20·0	28·4	36·6	6 45·2	16 6 28·42	− 0·93	+ 40·02	+ 40·02	− 3·70
	5821	α Herculis	....	75 27	26·0	34·4	43·1	51·5	8 0·3	17 7 43·06	− 0·82	+ 39·97	+ 39·99	− 3·60
	5941	α Ophiuchi	....	77 20	36·5	44·8	53·5	2·0	28 10·5	17 27 53·46	− 0·83	+ 40·00	+ 39·90	− 3·68
	6021	μ Herculis	....	62 11	6·7	15·8	25·6	34·9	40 44·3	17 40 25·46	− 0·74	+ 39·93	+ 39·98	− 3·47
	6281	δ Ursæ Minoris	....	3 24	53·0	13·0	35·0	54·5	21 17·0	18 16 34·50	+ 2·31	....	+ 39·96	− 5·54
	6528	ζ Aquilæ	....	76 21	8·8	17·3	26·0	34·5	58 43·0	18 58 25·92	− 0·82	....	+ 39·94	− 3·77
	6646	δ Aquilæ	....	87 10	37·9	45·6	54·3	2·5	18 11·0	19 17 54·21	− 0·89	+ 39·95	+ 39·92	− 3·96
	7256	32 Vulpeculæ	....	62 30	43·8	53·0	2·7	11·9	48 21·6	20 48 2·60	− 0·74	+ 39·84	+ 39·89	− 3·53
July 10	6528	ζ Aquilæ	....	76 21	9·6	17·8	26·6	35·0	58 43·7	18 58 25·51	− 0·81	+ 39·30	+ 39·33	− 3·79
	6595	ω Aquilæ	....	78 40	25·9	34·1	43·0	51·3	10 59·9	19 10 42·84	− 0·82	+ 39·25	+ 39·33	− 3·82
	6646	δ Aquilæ	....	87 10	36·2	46·4	54·9	3·0	18 11·6	19 17 54·82	− 0·87	+ 39·37	+ 39·33	− 3·98
	6772	γ Aquilæ	....	79 44	47·5	55·8	4·3	12·8	39 21·2	19 39 4·32	− 0·83	+ 39·30	+ 39·33	− 3·84
July 18	6021	μ Herculis	....	62 11	12·5	21·6	31·2	40·4	40 50·0	17 40 31·14	− 0·73	+ 34·21	+ 34·14	− 3·44
	6281	(a) δ Ursæ Minoris	....	3 24	58·5	17·0	41·0	57·5	....	18 16 39·21	+ 1·63	....	+ 34·12	− 3·73
	6429	β Lyræ	....	56 48	7·1	17·0	27·4	37·0	44 47·1	18 44 27·06	− 0·70	+ 34·05	+ 34·10	− 3·54
	6528	ζ Aquilæ	....	76 21	14·8	23·1	31·8	40·3	58 49·0	18 58 31·60	− 0·80	+ 34·07	+ 34·10	− 3·83
	6646	δ Aquilæ	....	87 10	43·6	51·8	0·2	8·4	18 16·9	19 18 0·15	− 0·86	....	+ 34·09	− 4·04
	6772	γ Aquilæ	....	79 44	52·9	1·1	9·7	18·0	39 26·8	19 39 9·70	− 0·82	+ 34·08	+ 34·08	− 3·92
	6802	α Aquilæ	....	81 31	14·0	22·2	30·8	39·1	43 47·6	19 43 30·74	− 0·83	+ 34·10	+ 34·08	− 3·96
	6833	β Aquilæ	....	83 57	43·1	51·3	59·9	8·1	48 16·8	19 47 59·84	− 0·84	+ 34·10	+ 34·07	− 3·99
July 23	4729	α Bootis	....	70 4	33·5	42·4	51·3	0·0	9 9·1	14 8 51·26	− 0·78	+ 31·53	+ 31·50	− 2·66
	6429	β Lyræ	....	56 48	9·9	19·5	29·9	39·6	44 49·8	18 44 29·74	− 0·71	+ 31·37	+ 31·46	− 3·53
	6528	ζ Aquilæ	....	76 21	17·3	25·8	34·5	43·0	58 51·7	18 58 34·46	− 0·80	+ 31·42	+ 31·45	− 3·84
	6595	ω Aquilæ	....	78 40	33·6	42·1	50·9	59·1	11 7·8	19 10 50·74	− 0·81	+ 31·42	+ 31·44	− 3·90
	6646	δ Aquilæ	....	87 10	46·2	54·4	3·0	11·2	18 19·6	19 18 2·88	− 0·86	+ 31·39	+ 31·43	− 4·07
	6772	γ Aquilæ	....	79 44	55·5	3·7	12·3	20·7	39 29·2	19 39 12·28	− 0·82	+ 31·53	+ 31·42	− 3·95
July 26	6281	δ Ursæ Minoris	....	3 24	59·5	18·5	42·0	0·0	21 23·0	18 16 40·60	+ 1·49	....	+ 30·95	− 1·67
	6429	β Lyræ	....	56 48	10·2	20·0	30·2	40·0	44 50·1	18 44 30·10	− 0·71	+ 31·00	+ 30·94	− 3·52
	6528	ζ Aquilæ	....	76 21	18·0	26·2	35·0	43·3	58 52·1	18 58 34·92	− 0·80	+ 30·97	+ 30·93	− 3·85
	6646	δ Aquilæ	....	87 10	46·7	54·8	3·4	11·6	18 20·0	19 18 3·30	− 0·87	....	+ 30·92	− 4·08
	7256	32 Vulpeculæ	....	62 30	59·0	2·4	11·8	21·1	48 30·8	20 48 11·82	− 0·74	+ 30·68	+ 30·90	− 3·79
	7368	ζ Cygni	....	60 22	15·8	25·3	35·0	44·4	6 54·2	21 6 34·94	− 0·72	+ 30·84	+ 30·89	− 3·78

(a) Cloudy.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1861.
1861				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
July 27	6355	α Lyræ	....	51 21	26·1	36·5	17·3	58·0	32 8·8	18 31 47·34	– 0·67	+ 30·66	+ 30·64	– 3·41
	6429	β Lyræ	....	56 48	10·8	20·4	30·6	40·2	44 50·6	18 44 30·52	– 0·69	+ 30·55	+ 30·64	– 3·51
	6528	ζ Aquilæ	....	76 21	18·1	26·6	35·2	43·8	58 52·5	18 58 35·21	– 0·78	+ 30·63	+ 30·63	– 3·85
	6595	ϖ Aquilæ	....	78 40	34·8	43·0	51·6	0·0	11 8·7	19 10 51·62	– 0·80	+ 30·53	+ 30·63	– 3·90
	6646	δ Aquilæ	....	87 10	47·0	55·2	3·6	11·9	18 20·3	19 18 3·60	– 0·85	+ 30·68	+ 30·63	– 4·09
	6772	γ Aquilæ	....	79 14	56·4	4·7	13·2	21·6	39 30·1	19 39 13·20	– 0·81	+ 30·62	+ 30·62	– 3·97
	6802	α Aquilæ	....	81 31	17·2	25·6	34·2	42·5	43 51·1	19 43 34·12	– 0·81	+ 30·76	+ 30·62	– 4·02
	6833	β Aquilæ	....	83 57	46·8	54·8	3·1	11·7	48 20·2	19 48 3·38	– 0·82	+ 30·60	+ 30·62	– 4·05
July 28	6281	δ Ursæ Minoris	....	3 21	0·0	20·5	41·5	1·0	21 23·5	18 16 41·30	+ 1·05	....	+ 30·28	– 1·36
	6355	α Lyræ	....	51 21	26·3	36·9	47·7	58·2	32 8·9	18 31 47·60	– 0·66	+ 30·40	+ 30·27	– 3·40
	6429	β Lyræ	....	56 48	11·0	20·8	30·8	40·7	44 50·8	18 44 30·82	0·69	+ 30·25	+ 30·26	– 3·51
	6528	ζ Aquilæ	....	76 21	18·5	26·9	35·6	44·1	58 52·9	18 58 35·60	– 0·76	+ 30·25	+ 30·26	– 3·85
	6595	ϖ Aquilæ	....	78 40	35·0	43·1	52·2	0·4	11 9·0	19 10 52·00	– 0·78	+ 30·14	+ 30·25	– 3·91
	6646	δ Aquilæ	....	87 10	47·1	55·7	4·1	12·2	18 20·9	19 18 4·06	– 0·83	....	+ 30·25	– 4·09
Aug. 5	7256	32 Vulpeculæ	....	62 30	55·0	4·2	14·0	23·4	48 32·7	20 48 13·80	– 0·71	+ 28·95	+ 28·97	– 3·87
	7368	ζ Cygni	....	60 22	17·9	27·2	36·9	46·2	5 56·0	21 6 36·84	– 0·69	+ 29·01	+ 28·97	– 3·88
	7478	β Aquarii	....	96 12	33·8	42·0	50·6	58·9	24 7·2	21 23 50·50	– 0·86	+ 29·00	+ 28·97	– 4·32
	7688	α Aquarii	....	91 1	58·0	6·3	14·8	22·9	58 31·4	21 58 14·68	– 0·84	+ 28·91	+ 28·97	– 4·18
	7773	θ Aquarii	....	98 31	49·2	57·3	6·0	14·2	9 22·6	22 9 5·86	– 0·88	+ 29·04	+ 28·97	– 4·27
	7868	η Aquarii	....	90 53	32·0	40·2	48·9	57·2	28 5·6	22 27 48·78	– 0·84	+ 28·90	+ 28·97	– 4·12
Aug. 8	6772	γ Aquilæ	....	79 14	58·0	6·3	15·1	23·5	39 32·0	19 39 14·98	0·79	+ 28·84	+ 28·88	– 3·99
	6802	α Aquilæ	....	81 31	19·1	27·5	36·0	44·2	43 52·9	19 43 35·94	– 0·80	+ 28·96	+ 28·88	– 4·05
	6833	β Aquilæ	....	83 57	48·3	56·6	5·1	13·5	48 22·0	19 48 5·10	– 0·81	+ 28·91	+ 28·88	– 4·09
	7256	32 Vulpeculæ	....	62 30	55·2	4·1	14·0	23·1	48 32·9	20 48 13·92	– 0·72	+ 28·85	+ 28·88	– 3·88
	7368	ζ Cygni	....	60 22	17·9	27·2	37·1	46·6	6 56·2	21 6 37·00	– 0·70	+ 28·88	+ 28·88	– 3·90
	7478	β Aquarii	....	96 12	34·0	42·2	50·9	59·0	24 7·5	21 23 50·72	– 0·87	+ 28·83	+ 28·88	– 4·36
Aug. 9	7368	ζ Cygni	....	60 22	18·0	27·5	37·3	46·7	6 56·3	21 6 37·16	– 0·69	+ 28·72	+ 28·74	– 3·91
	7478	β Aquarii	....	96 12	34·2	42·3	50·9	59·1	24 7·8	21 23 50·86	– 0·86	+ 28·69	+ 28·74	– 4·37
	7627	16 Pegasi	....	64 46	2·0	10·9	20·5	29·4	46 39·0	21 46 20·36	– 0·73	+ 28·70	+ 28·74	– 3·99
	7773	θ Aquarii	....	98 31	49·5	57·8	6·2	14·6	9 23·1	22 9 6·24	– 0·87	+ 28·71	+ 28·74	– 4·33
	7868	η Aquarii	....	90 53	32·2	40·4	49·0	57·2	28 5·7	22 27 48·90	– 0·84	+ 28·85	+ 28·74	– 4·19
	7908	ζ Pegasi	....	79 55	51·0	59·3	7·9	16·2	34 24·8	22 34 7·61	– 0·79	+ 28·80	+ 28·74	– 4·06
Sept. 11	7688	α Aquarii	....	91 1	50·6	58·5	7·1	15·3	59 23·8	21 59 7·06	– 0·76	– 23·33	– 23·34	– 4·40
	7868	η Aquarii	....	90 53	24·7	33·0	41·3	49·5	28 58·0	22 28 41·30	– 0·76	– 23·38	– 23·34	– 4·44
	7908	ζ Pegasi	....	79 55	43·4	51·6	0·2	8·6	35 17·0	22 35 0·16	– 0·71	– 23·34	– 23·34	– 4·34
	8034	α Pegasi	....	75 35	1·8	10·4	18·8	27·3	58 36·0	22 58 18·80	– 0·69	– 23·43	– 23·34	– 4·36
	8105	γ Piscium	....	87 32	9·5	17·6	26·1	34·4	10 42·9	23 10 26·10	– 0·74	– 23·32	– 23·34	– 4·46
	8169	κ Piscium	....	89 31	0·2	8·5	17·0	25·2	20 33·5	23 20 16·88	– 0·76	– 23·27	– 23·34	– 4·45
	8233	ι Piscium	....	85 10	0·0	8·2	16·6	24·9	33 33·5	23 33 16·64	– 0·74	– 23·34	– 23·34	– 4·44
Sept. 12	4729	α Bootis	....	70 4	27·7	36·2	45·5	54·0	10 3·2	14 9 45·32	– 0·65	– 23·35	– 23·37	– 1·97
	4876	ε Bootis	....	62 19	2·0	11·4	21·1	30·1	39 39·9	14 39 20·90	– 0·63	– 23·37	– 23·37	– 1·90
	5143	α Coronæ Borealis	....	62 48	55·4	4·7	14·4	23·7	29 33·2	15 29 14·28	– 0·63	– 23·56	– 23·37	– 2·06
	6528	ζ Aquilæ	....	76 21	11·8	20·1	28·8	37·4	59 46·0	18 59 28·76	– 0·67	– 23·42	– 23·43	– 3·43
	7688	α Aquarii	....	91 1	50·7	58·8	7·1	15·1	59 23·9	21 59 7·18	– 0·74	– 23·47	– 23·43	– 4·40
	8034	α Pegasi	....	75 35	1·7	10·4	18·9	27·2	58 36·0	22 58 18·78	– 0·67	– 23·43	– 23·43	– 4·36

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1861.
1861.				° ′	s	s	s	s	m s	h m s	s	s	s	s
Sept. 16	4729	α Bootis	....	70 4	28·4	37·0	46·0	54·7	10 3·8	14 9 45·98	− 0·65	− 24·06	− 24·00	− 1·92
	5143	α Coronæ Borealis	....	62 48	56·0	5·4	14·9	24·1	29 33·7	15 29 14·82	− 0·63	− 23·97	− 24·00	− 1·99
	7688	α Aquarii	....	91 1	51·0	59·3	7·7	16·0	59 24·1	21 59 7·68	− 0·73	− 23·99	− 24·00	− 4·39
	7868	η Aquarii	....	90 53	25·2	33·4	42·0	50·4	28 58·6	22 28 41·86	− 0·73	− 23·97	− 24·00	− 4·44
	7908	ζ Pegasi	....	79 55	44·0	52·3	0·9	9·3	35 17·8	22 35 0·86	− 0·69	− 24·05	− 24·00	− 4·35
	8034	α Pegasi	....	75 35	2·2	10·6	19·5	27·9	58 36·4	22 58 19·32	− 0·67	− 23·96	− 24·00	− 4·37
Sept. 26	6021	μ Herculis	....	62 11	11·0	20·2	29·8	39·0	40 48·6	17 40 29·72	− 0·59	+ 34·36	+ 34·48	− 2·31
	7627	16 Pegasi	....	64 46	55·9	4·8	14·1	23·4	46 32·7	21 46 14·18	− 0·60	+ 34·72	+ 34·70	− 3·86
	7868	η Aquarii	....	90 53	26·5	31·7	43·3	51·4	27 59·9	22 27 13·16	− 0·70	+ 34·68	+ 34·73	− 4·42
	8034	α Pegasi	....	75 35	3·4	11·8	20·5	29·0	57 37·9	22 57 20·52	− 0·61	+ 34·81	+ 34·76	− 4·37
	8105	γ Piscium	....	87 32	11·3	19·5	28·0	36·0	9 44·7	23 9 27·99	− 0·69	+ 34·87	+ 34·78	− 4·50
Sept. 29	7688	α Aquarii	....	91 1	49·0	57·2	5·6	13·9	58 22·1	21 58 5·56	− 0·70	+ 38·02	+ 38·00	− 4·31
	7773	θ Aquarii	....	98 31	40·1	48·3	57·0	5·2	9 13·9	22 8 56·90	− 0·73	+ 38·04	+ 38·01	− 4·46
	7868	η Aquarii	....	90 53	23·2	31·4	40·0	48·2	27 56·6	22 27 39·88	− 0·70	+ 37·94	+ 38·03	− 4·40
	7908	ζ Pegasi	....	79 55	41·9	50·2	58·7	7·1	34 15·6	22 33 58·70	− 0·65	+ 38·03	+ 38·03	− 4·31
	8034	α Pegasi	....	75 35	0·1	8·4	17·3	25·9	57 31·4	22 57 17·22	− 0·63	+ 38·10	+ 38·05	− 4·37
Oct. 1	8233	ι Piscium	....	85 10	56·1	4·3	12·5	21·0	32 29·5	23 32 12·74	− 0·66	+ 40·56	+ 40·62	− 4·52
	8331	ω Piscium	....	83 56	18·1	26·5	35·3	43·5	56 52·0	23 56 35·08	− 0·65	+ 40·61	+ 40·63	− 4·54
	4	α Andromedæ	....	61 43	16·2	27·5	37·1	46·5	0 56·1	0 0 37·08	− 0·56	+ 40·66	+ 40·63	− 4·66
	26	γ Pegasi	....	75 37	12·2	20·6	29·2	38·0	5 46·8	0 5 29·36	− 0·61	+ 40·70	+ 40·64	− 4·58
Oct. 2	8169	κ Piscium	....	89 31	55·1	3·1	11·8	20·1	19 28·5	23 19 11·78	− 0·68	+ 41·80	+ 41·67	− 4·50
	8233	ι Piscium	....	85 10	51·8	3·0	11·6	19·8	32 28·0	23 32 11·44	− 0·66	+ 41·86	+ 41·88	− 4·52
	8331	ω Piscium	....	83 56	17·1	25·4	34·0	42·2	51 50·7	23 51 33·88	− 0·65	+ 41·81	+ 41·90	− 4·54
	4	α Andromedæ	....	61 43	16·8	26·2	35·9	45·1	0 54·8	0 0 35·76	− 0·56	+ 41·98	+ 41·91	− 4·68
	26	γ Pegasi	....	75 37	11·0	19·5	28·2	36·7	5 45·1	0 5 28·16	− 0·61	+ 41·90	+ 41·91	− 4·58
	453	η Piscium	....	75 25	9·2	17·5	26·3	35·1	23 43·6	1 23 26·34	− 0·61	+ 41·90	+ 41·96	− 4·70
	577	β Arietis	....	69 54	3·8	12·5	21·6	30·4	46 39·1	1 46 21·51	− 0·58	+ 41·86	+ 41·97	− 4·81
	648	α Arietis	....	67 14	26·1	34·5	44·2	53·0	59 2·2	1 58 44·06	− 0·58	+ 42·04	+ 41·98	− 4·88
	760	ξ² Ceti	....	82 12	52·6	1·0	9·6	18·0	20 26·1	2 20 9·52	− 0·61	+ 42·01	+ 42·00	− 4·57
Oct. 3	8105	γ Piscium	....	87 32	3·0	11·3	19·8	27·9	9 36·1	23 9 19·68	− 0·66	+ 43·05	+ 43·12	− 4·49
	8169	κ Piscium	....	89 31	53·9	2·0	10·1	18·6	19 27·1	23 19 10·10	− 0·67	+ 43·17	+ 43·14	− 4·50
	8233	ι Piscium	....	85 10	53·5	1·7	10·2	18·3	32 26·9	23 32 10·12	− 0·65	+ 43·16	+ 43·15	− 4·51
	760	ξ² Ceti	....	82 12	51·7	59·8	8·5	16·7	20 25·1	2 20 8·36	− 0·63	+ 43·18	+ 43·25	− 4·59
Oct. 5	8331	ω Piscium	....	83 56	13·2	21·5	30·0	38·2	51 46·9	23 51 29·96	− 0·65	+ 45·74	+ 45·69	− 4·54
	4	α Andromedæ	....	61 43	13·1	22·2	32·1	41·3	0 51·0	0 0 31·94	− 0·56	+ 45·60	+ 45·70	− 4·66
	26	γ Pegasi	....	75 37	7·2	15·8	24·6	33·0	5 41·6	0 5 24·18	− 0·60	+ 45·58	+ 45·70	− 4·59
	112	12 Ceti	....	94 46	59·8	8·0	16·2	24·5	22 33·0	0 22 16·30	− 0·69	+ 45·69	+ 45·71	− 4·58
Oct. 9	112	(a) 12 Ceti	....	94 46	55·0	3·2	11·8	20·0	22 28·5	0 22 11·70	− 0·68	+ 50·30	+ 50·33	− 4·60
	360	α Ursæ Minoris	....	1 26	24·5	57·0	37·0	7·0	19 47·5	1 8 34·60	+ 2·81	....	+ 50·38	− 66·49
	420	δ¹ Ceti	....	98 56	2·5	10·9	19·4	27·9	16 36·3	1 16 19·40	− 0·70	....	+ 50·39	− 4·59
	453	η Piscium	....	75 25	0·9	9·2	18·0	26·4	23 35·3	1 23 17·96	− 0·59	+ 50·34	+ 50·40	− 4·78
	577	β Arietis	....	69 54	55·5	4·0	13·1	21·8	46 31·0	1 46 13·08	− 0·56	+ 50·39	+ 50·40	− 4·90
	648	α Arietis	....	67 14	17·9	26·5	35·8	44·6	58 54·0	1 58 35·76	− 0·55	+ 50·41	+ 50·41	− 4·98
	919	α Ceti	....	86 29	59·0	7·2	15·8	24·0	54 32·2	2 54 15·64	− 0·63	+ 50·54	+ 50·46	− 4·57

(a) Definition bad. Stars faint, &c.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1861.
1861.				° ′	s	s	s	s	m s	h m s	s	s	s	s
Oct. 15	4	α Andromedæ	....	61 43	0·5	9·9	19·5	29·0	0 38·4	0 0 19·46	− 0·57	+ 58·29	+ 58·29	− 4·66
	26	γ Pegasi	....	75 37	51·8	3·1	11·9	20·4	5 29·0	0 5 11·84	− 0·64	+ 58·26	+ 58·30	− 4·59
	288	ι Piscium	....	82 51	34·0	42·3	51·0	59·1	55 7·8	0 54 50·84	− 0·68	+ 58·46	+ 58·35	− 4·69
	360	α Ursæ Minoris	....	1 26	15·5	47·0	27·0	57·5	19 37·0	1 8 24·80	+ 5·14	....	+ 58·36	− 66·94
	420	θ¹ Ceti	....	98 56	54·8	3·0	11·5	19·9	16 28·2	1 16 11·48	− 0·77	....	+ 58·37	− 4·62
	837	γ Ceti	....	87 23	56·1	4·5	13·0	21·2	35 29·8	2 35 12·98	− 0·71	+ 58·45	+ 58·43	− 4·67
Oct. 16	112	12 Ceti	....	94 46	45·9	54·0	2·5	10·7	22 19·0	0 22 2·42	− 0·70	+ 59·61	+ 59·61	− 4·61
	288	ι Piscium	....	82 51	32·9	41·2	49·7	58·0	55 6·4	0 54 49·61	− 0·64	+ 59·62	+ 59·62	− 4·69
	360	α Ursæ Minoris	....	1 26	11·5	46·5	28·0	55·0	19 38·0	1 8 24·40	+ 4·04	....	+ 59·63	− 66·97
	420	θ Ceti	....	98 56	53·2	1·5	10·2	18·5	16 27·2	1 16 10·12	− 0·72	....	+ 59·63	− 4·63
	453	η Piscium	....	75 25	51·6	0·1	8·8	17·2	23 26·0	1 23 8·74	− 0·61	+ 59·63	+ 59·64	− 4·83
	837	γ Ceti	....	87 23	55·1	3·4	12·0	20·0	35 28·7	2 35 11·84	− 0·67	+ 59·56	+ 59·69	− 4·68
	919	α Ceti	....	86 29	49·9	58·1	6·5	14·9	54 23·3	2 54 6·54	− 0·66	+ 59·78	+ 59·71	− 4·68
Oct. 17	112	12 Ceti	....	94 46	44·8	53·0	1·5	9·8	22 18·1	0 22 1·44	− 0·68	+ 60·57	+ 60·63	− 4·61
	288	ι Piscium	....	82 51	31·9	40·0	48·4	56·9	55 5·5	0 54 48·54	− 0·63	+ 60·72	+ 60·66	− 4·70
	360	α Ursæ Minoris	....	1 26	15·0	41·5	26·0	55·0	19 39·5	1 8 24·00	+ 3·61	....	+ 60·68	− 66·99
	420	θ Ceti	....	98 56	52·2	0·6	9·2	17·4	16 26·0	1 16 9·08	− 0·70	....	+ 60·69	− 4·63
	453	η Piscium	....	75 25	50·5	59·0	7·8	16·2	23 25·0	1 23 7·70	− 0·60	+ 60·67	+ 60·70	− 4·84
	648	α Arietis	....	67 11	7·6	16·3	25·6	34·3	58 43·5	1 58 25·46	− 0·55	+ 60·82	+ 60·72	− 5·09
	837	γ Ceti	....	87 23	51·1	2·4	10·9	19·0	35 27·5	2 35 10·78	− 0·65	+ 60·62	+ 60·74	− 4·70
	919	α Ceti	....	86 29	48·9	57·1	5·6	13·9	54 22·4	2 54 5·58	− 0·65	+ 60·74	+ 60·75	− 4·69
	986	δ Arietis	....	70 50	28·1	37·1	46·0	54·7	3 3·7	3 2 45·98	− 0·57	+ 60·78	+ 60·76	− 5·05
Oct. 18	704	67 Ceti	....	97 6	50·4	58·5	7·0	15·3	9 24·0	2 9 7·01	− 0·68	+ 61·29	+ 61·22	− 4·62
	760	ξ² Ceti	....	82 12	33·8	42·0	50·6	58·9	20 7·5	2 19 50·56	− 0·61	+ 61·18	+ 61·23	− 4·81
	837	(a) γ Ceti	....	87 23	53·7	1·9	10·3	18·6	35 27·1	2 35 10·32	− 0·64	+ 61·08	+ 61·24	− 4·71
	919	α Ceti	....	86 29	48·3	56·6	5·0	13·2	54 21·8	2 54 4·98	− 0·64	+ 61·35	+ 61·25	− 4·71
	986	δ Arietis	....	70 50	28·0	36·5	45·6	54·2	3 3·1	3 2 45·48	− 0·56	+ 61·29	+ 61·26	− 5·07
Oct. 25	5941	α Ophiuchi	....	77 20	16·8	25·2	34·0	42·3	27 51·0	17 27 33·86	− 0·56	+ 57·92	+ 57·92	− 2·27
	376	....	7·0	17 53	44·8	11·2	39·0	5·6	8 33·0	1 7 38·72	− 0·09	....	+ 57·92	− 8·51
	403	....	7·5	17 55	59·4	25·0	53·1	20·2	13 47·8	1 12 53·16	− 0·10	....	+ 57·92	− 8·64
	420	θ Ceti	....	98 56	55·2	3·4	11·9	20·3	16 28·9	1 16 11·94	− 0·69	+ 57·97	+ 57·92	− 4·66
	453	η Piscium	....	75 25	53·4	1·9	10·5	19·0	23 27·8	1 23 10·52	− 0·56	+ 57·85	+ 57·92	− 4·88
	482	....	6·0	32 46	42·1	57·4	13·0	28·2	28 43·9	1 28 12·92	− 0·30	....	+ 57·92	− 6·53
	516	....	6·0	55 29	49·8	59·7	10·0	19·9	33 30·2	1 33 9·92	− 0·46	....	+ 57·92	− 5·35
	538	....	8·0	73 19	53·2	1·7	10·5	19·2	38 27·9	1 38 10·50	− 0·55	....	+ 57·92	− 4·96
	547	(b)	....	42 50	22·8	34·8	47·3	59·3	40 11·8	1 39 47·20	− 0·40	....	+ 57·92	− 5·93
	562	....	7·0	39 15	41·0	54·0	7·6	20·3	43 34·0	1 43 7·38	− 0·36	....	+ 57·92	− 6·18
	577	β Arietis	....	69 51	48·1	56·9	5·4	14·2	46 23·5	1 46 5·72	− 0·53	+ 57·87	+ 57·92	− 5·05
	837	γ Ceti	....	87 23	57·0	5·2	13·5	21·7	35 30·2	2 35 13·52	− 0·62	+ 57·94	+ 57·92	− 4·79
	881	ε Arietis	7·0	75 31	40·0	48·4	57·1	5·4	43 14·3	2 42 57·04	− 0·56	....	+ 57·92	− 5·04
	891	....	8·5	84 7	9·5	17·8	26·2	34·4	44 43·0	2 44 26·18	− 0·60	....	+ 57·92	− 4·86
	920	(a)	....	68 58	45·3	54·0	3·3	12·1	50 21·0	2 50 3·14	− 0·53	....	+ 57·92	− 5·21
	949	α Ceti	....	86 29	51·8	0·0	8·4	16·5	54 25·0	2 54 8·34	− 0·62	+ 58·07	+ 57·92	− 4·81
	986	δ Arietis	....	70 50	31·1	40·0	49·0	57·4	3 6·6	3 2 48·82	− 0·54	+ 58·04	+ 57·92	− 5·18
	1166	η Tauri	....	66 21	3·3	12·4	21·6	30·3	38 39·8	3 38 21·48	− 0·52	+ 57·95	+ 57·92	− 5·31
Oct. 28	5821	α Herculis	....	75 27	7·4	16·0	24·8	33·2	7 42·0	17 7 24·68	− 0·55	+ 56·57	+ 56·62	− 2·09
	5941	α Ophiuchi	....	77 20	17·9	26·3	35·2	43·8	27 52·2	17 27 35·08	− 0·55	+ 56·65	+ 56·62	− 2·23

(a) Very faint. (b) Double, magnitudes 9th and 10th.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1861.
1861.				° ′	s.	s.	s.	s.	m s	h m s	s.	s.	s.	s.
Oct. 28	704	(a) 67 Ceti	....	97 6	55·2	3·4	12·0	20·3	9 28·9	2 9 11·96	– 0·67	+ 56·45	+ 56·56	– 4·71
	760	ξ² Ceti	....	82 12	38·5	46·9	55·4	3·8	20 12·4	2 19 55·31	– 0·59	+ 56·48	+ 56·55	– 4·91
	837	γ Ceti	....	87 23	58·4	6·2	15·0	23·1	35 31·6	2 35 14·86	– 0·62	+ 56·64	+ 56·55	– 4·63
	986	δ Arietis	....	70 50	32·6	41·4	50·4	59·[illegible]	3 8·0	3 2 50·28	– 0·53	+ 56·61	+ 56·57	– 5·22
	1166	η Tauri	....	66 21	4·9	13·7	23·0	31·9	38 41·1	3 38 22·92	– 0·51	+ 56·56	+ 56·58	– 5·37
Oct. 29	453	η Piscium	....	75 25	55·3	3·8	12·4	21·0	23 29·9	1 23 12·18	– 0·55	+ 55·90	+ 55·99	– 4·90
	648	α Arietis	....	67 14	12·3	21·2	30·3	39·1	58 48·4	1 58 30·26	– 0·51	+ 56·09	+ 55·98	– 5·20
	949	α Ceti	....	86 29	53·9	2·0	10·5	18·7	54 27·2	2 54 10·46	– 0·62	+ 56·00	+ 55·95	– 4·86
	986	δ Arietis	....	70 50	33·4	42·0	51·0	59·8	3 8·7	3 2 50·98	– 0·53	+ 55·92	+ 55·94	– 5·23
	1166	η Tauri	....	66 21	5·6	14·3	23·8	32·5	38 42·0	3 38 23·64	– 0·51	+ 55·86	+ 55·93	– 5·39
Oct. 30	518	ν Piscium	....	85 15	5·4	13·7	22·1	30·3	33 39·0	1 33 22·10	– 0·60	+ 55·27	+ 55·36	– 4·60
	648	α Arietis	....	67 14	13·0	21·9	31·0	40·0	58 48·9	1 58 30·96	– 0·50	+ 55·38	+ 55·35	– 5·20
	704	67 Ceti	....	97 6	56·3	4·6	13·1	21·4	9 30·0	2 9 13·08	– 0·67	+ 55·34	+ 55·34	– 4·72
	760	ξ² Ceti	....	82 12	39·8	48·1	56·5	4·9	20 13·3	2 19 56·52	– 0·58	+ 55·31	+ 55·33	– 4·93
	793	....	....	83 49	21·2	29·5	38·0	46·3	27 54·8	2 27 37·96	– 0·59	....	+ 55·33	– 4·91
	822	....	....	47 56	7·0	18·0	29·1	40·4	32 51·9	2 32 29·28	– 0·40	....	+ 55·33	– 6·04
	837	γ Ceti	....	87 23	59·4	7·8	16·2	24·4	35 33·0	2 35 16·16	– 0·61	+ 55·35	+ 55·33	– 4·85
	986	δ Arietis	....	70 50	34·0	42·7	51·8	0·2	3 9·2	3 2 51·58	– 0·52	+ 55·33	+ 55·31	– 5·25
Nov. 5	453	η Piscium	....	75 25	0·5	9·0	17·9	26·2	23 34·9	1 23 17·70	– 0·54	+ 50·69	+ 50·82	– 4·92
	472	....	7·0	89 17	36·9	45·2	53·6	1·9	27 10·4	1 26 53·60	– 0·63	....	+ 50·82	– 4·76
	516	....	5·0	55 29	57·0	6·9	17·1	27·1	33 37·5	1 33 17·12	– 0·42	....	+ 50·81	– 5·40
	538	....	6·0	73 19	0·4	9·0	17·9	26·2	38 35·3	1 38 17·76	– 0·53	....	+ 50·81	– 5·00
	577	β Arietis	....	69 54	55·1	3·9	13·0	21·6	46 30·4	1 46 12·80	– 0·51	+ 50·82	+ 50·90	– 5·10
	647	....	6·0	64 59	53·7	2·7	12·0	21·0	58 30·3	1 56 11·94	– [illegible]·48	....	+ 50·80	– 5·27
	891	(b)	....	84 7	17·0	25·2	33·6	42·0	44 50·4	2 44 33·64	– 0·58	....	+ 50·78	– 4·07
	920	....	7·0	68 58	52·8	1·5	10·6	19·4	50 26·4	2 50 10·54	– 0·51	....	+ 50·78	– 5·34
	949	α Ceti	....	86 29	59·0	7·2	15·7	21·0	54 32·2	2 54 15·62	– 0·61	+ 50·90	+ 50·78	– 4·93
	1055	....	7·0	68 29	27·4	36·3	45·4	54·2	16 3·3	3 15 45·32	– 0·50	....	+ 50·76	– 5·41
	1087	....	5·0	77 34	10·0	18·4	27·2	35·5	22 44·2	3 22 27·06	– 0·55	....	+ 50·75	– 5·15
	1101	....	7·0	58 48	56·2	5·2	15·1	24·8	26 34·9	3 26 15·24	– 0·45	....	+ 50·75	– 5·79
	1126	11 Tauri	....	65 9	25·6	31·6	43·9	53·0	32 2·2	3 31 43·86	– 0·48	....	+ 50·75	– 5·51
	1166	η Tauri	....	66 21	10·8	19·6	28·9	37·9	38 17·1	3 38 26·90	– 0·49	+ 50·70	+ 50·74	– 5·51
	1420	α Tauri	....	73 48	54·6	3·0	11·9	20·5	27 29·3	4 27 11·86	– 0·54	+ 50·80	+ 50·72	– 5·25
Nov. 6	648	α Arietis	....	67 14	18·3	27·1	36·5	45·2	58 54·5	1 58 36·32	– 0·48	+ 50·04	+ 50·02	– 5·24
	704	67 Ceti	....	97 6	1·6	10·0	18·3	26·8	9 35·2	2 9 18·38	– 0·66	+ 50·06	+ 50·01	– 4·75
	837	γ Ceti	....	87 23	4·9	13·1	21·6	29·8	35 36·2	2 35 21·52	– 0·60	+ 50·04	+ 50·00	– 4·91
	1166	η Tauri	....	66 21	11·8	20·5	29·8	38·8	38 47·9	3 38 29·76	– 0·48	+ 49·84	+ 49·98	– 5·52
	1376	ι Tauri	....	71 9	28·7	37·2	46·3	54·9	20 4·0	4 19 46·22	– 0·51	+ 49·85	+ 49·96	– 5·37
	1420	α Tauri	....	73 48	55·2	4·0	12·7	21·0	27 36·0	4 27 12·58	– 0·53	+ 50·09	+ 49·96	– 5·27
Nov. 8	360	(c) α Ursæ Minoris	....	1 26	19·0	52·0	32·0	2·5	19 48·5	1 8 30·80	+ 6·29	....	+ 48·14	– 63·90
	420	θ Ceti	....	98 56	4·9	13·1	21·8	30·0	16 38·6	1 16 21·68	– 0·68	....	+ 48·14	– 4·67
	453	η Piscium	....	75 25	3·0	11·4	20·2	28·9	23 37·6	1 23 20·22	– 0·54	+ 48·17	+ 48·14	– 4·92
	482	....	6·0	32 46	51·9	7·0	22·9	37·0	28 53·6	1 28 22·66	– 0·23	....	+ 48·13	– 6·55
	516	....	6·0	55 29	59·8	9·3	19·6	29·9	33 40·1	1 33 19·78	– 0·41	....	+ 48·13	– 5·40
	538	....	7·0	73 19	3·0	11·5	20·2	29·0	38 37·9	1 38 20·32	– 0·53	....	+ 48·13	– 5·01
	577	β Arietis	....	69 54	57·9	6·4	15·6	24·2	46 33·2	1 46 15·46	– 0·51	+ 48·17	+ 48·13	– 5·11

(a) Definition bad all night. (b) Double, magnitudes 9th and 10th. (c) Very unsteady.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R. A. Jan. 1, 1861
1861.				° ′	s	s	s	s	m. s	h. m. s	s	s	s	s
Nov. 8	588	....	5·0	26 5	7·6	26·0	15·5	34·0	49 53·5	1 49 15·32	− 0·14	....	+48·12	− 7·67
	620	....	7·0	25 36	56·9	16·0	35·8	54·8	51 11·5	1 53 35·60	− 0·14	....	+48·12	− 7·84
	647	....	....	64 59	56·3	5·2	14·6	23·5	58 32·3	1 58 14·50	− 0·48	....	+48·12	− 5·28
	822	(a)	....	47 56	14·2	25·1	36·8	47·8	32 59·4	2 32 36·66	− 0·37	....	+48·11	− 6·14
	837	γ Ceti	....	87 23	6·9	15·0	23·4	31·6	35 40·2	2 35 23·42	− 0·61	+48·16	+48·11	− 4·92
	881	ε Arietis	6·0	75 31	50·0	58·2	7·1	15·5	43 21·2	2 43 7·00	− 0·54	....	+48·11	− 5·18
	949	α Ceti	....	86 29	1·7	10·0	18·4	26·6	54 35·1	2 54 18·36	− 0·60	+48·18	+48·11	− 4·96
	1087	f Tauri	....	77 34	12·9	21·2	29·9	38·2	22 47·0	3 22 29·84	− 0·55	....	+48·09	− 5·19
	1166	η Tauri	....	66 21	13·5	22·3	31·8	40·8	38 50·0	3 38 31·68	− 0·48	+47·95	+48·07	− 5·55
	1282	....	7·5	41 17	19·5	32·0	44·9	57·6	3 10·2	4 2 44·84	− 0·32	....	+48·05	− 7·05
	1309	o^2 Eridani	5·0	97 53	52·9	1·1	9·7	17·9	8 26·5	4 9 0·62	− 0·58	....	+48·05	− 4·68
	1328	γ Tauri	4·0	74 44	53·8	2·2	11·0	19·5	11 28·2	4 11 10·94	− 0·51	....	+48·04	− 5·28
	1351	....	8·0	73 43	30·7	39·2	48·0	56·5	15 5·4	4 14 47·96	− 0·53	....	+48·04	− 5·31
	1376	ε Tauri	....	71 9	30·5	39·2	48·1	56·8	20 5·8	4 19 48·08	− 0·52	+48·04	+48·03	− 5·41
	1420	α Tauri	....	73 45	37·3	5·9	14·5	23·1	27 32·1	4 27 14·58	− 0·53	+48·13	+48·03	− 5·31
Nov. 9	577	(b) β Arietis	....	69 54	58·8	7·5	16·3	25·0	46 34·1	1 46 16·34	− 0·50	+47·28	+47·34	− 5·11
	648	α Arietis	....	67 11	21·2	30·0	39·1	48·0	58 57·0	1 58 39·06	− 0·48	+47·32	+47·34	− 5·26
	701	67 Ceti	....	97 6	4·5	12·8	21·1	29·5	9 38·0	2 9 21·18	− 0·66	+47·27	+47·33	− 4·76
	760	ξ^2 Ceti	....	82 12	47·9	56·1	4·6	13·0	20 21·2	2 20 4·56	− 0·57	+47·33	+47·33	− 5·00
	837	γ Ceti	....	87 23	7·5	15·7	24·2	32·3	35 41·0	2 35 24·14	− 0·60	+47·44	+47·32	− 4·93
Nov. 14	1520	ι Aurigæ	....	57 4	1·2	11·0	21·0	30·7	47 40·9	4 47 20·96	− 0·39	+42·28	+42·35	− 6·11
	1623	β Orionis	....	98 22	57·7	6·0	14·6	22·9	7 31·4	5 7 14·52	− 0·62	+42·30	+42·34	− 4·66
	1681	β Tauri	....	61 31	35·5	44·8	54·4	3·7	17 13·5	5 16 54·38	− 0·41	+42·37	+42·34	− 5·87
	1730	δ Orionis	....	90 25	0·9	9·0	17·5	25·8	24 34·1	5 24 17·16	− 0·57	+42·33	+42·33	− 4·82
	1765	ε Orionis	....	91 18	16·0	24·3	32·8	40·9	28 49·2	5 28 32·64	− 0·58	+42·40	+42·33	− 4·79
Nov. 15	949	α Ceti	....	86 29	8·2	16·7	25·1	33·2	54 41·9	2 54 25·02	− 0·55	+41·52	+41·51	− 5·01
	986	δ Arietis	....	70 30	48·0	56·7	5·5	14·3	3 23·3	3 3 5·56	− 0·46	+41·16	+41·49	− 5·42
	1376	ε Tauri	....	71 9	37·1	45·9	54·9	3·7	20 12·5	4 19 54·82	− 0·46	+41·36	+41·44	− 5·53
	1420	α Tauri	....	73 48	4·2	12·6	21·4	30·0	27 38·6	4 27 21·36	− 0·48	+41·42	+41·44	− 5·43
	1520	ι Aurigæ	....	57 4	2·0	11·9	22·0	31·8	47 41·8	4 47 21·90	− 0·39	+41·36	+41·43	− 6·13
	1623	β Orionis	....	98 22	58·7	6·9	15·3	23·6	7 32·1	5 7 15·32	− 0·62	+41·52	+41·42	− 4·68
	1681	β Tauri	....	61 31	36·6	45·8	55·2	4·7	17 14·2	5 16 55·30	− 0·41	+41·47	+41·41	− 5·89
Nov. 22	5821	α Herculis	....	75 27	28·8	37·2	46·0	54·4	8 3·2	17 7 45·92	− 0·45	+35·13	+35·20	− 1·99
	6355	α Lyræ	....	51 21	18·8	29·2	40·1	50·7	32 1·6	18 31 40·08	− 0·32	+35·25	+35·18	− 1·07
	6528	ζ Aquilæ	....	76 21	11·8	20·1	29·0	37·3	58 46·0	18 58 28·84	− 0·44	+35·16	+35·18	− 2·32
	6646	δ Aquilæ	....	87 10	40·9	49·1	57·5	5·7	18 14·1	19 17 57·46	− 0·51	+35·14	+35·17	− 2·75
	6772	γ Aquilæ	....	79 44	50·0	58·4	7·0	15·2	39 24·0	19 39 6·92	− 0·46	+35·21	+35·16	− 2·64
	760	ξ^2 Ceti	....	82 12	0·1	8·3	16·9	25·2	20 33·9	2 20 16·88	− 0·48	+34·96	+34·96	− 5·04
	764	....	6·0	81 5	24·0	32·2	40·8	49·1	21 57·8	2 21 40·78	− 0·47	....	+34·96	− 5·06
	776	....	6·0	88 23	32·8	41·0	49·4	57·6	24 5·9	2 23 49·34	− 0·51	....	+34·96	− 4·94
	793	....	6·5	83 49	41·6	49·9	58·4	6·8	28 15·1	2 27 58·36	− 0·49	....	+34·96	− 5·03
	822	(c)	....	47 56	27·8	38·7	50·0	1·0	33 12·4	2 32 49·98	− 0·31	....	+34·95	− 6·22
	837	γ Ceti	....	87 23	19·9	28·1	36·8	44·9	35 53·3	2 35 36·60	− 0·51	+34·94	+34·95	− 4·98
	881	ε Arietis	6·0	75 31	3·0	11·5	20·2	28·8	43 37·4	2 43 20·18	− 0·44	....	+34·95	− 5·27
	891	(c)	....	84 7	32·7	40·9	49·4	57·7	45 6·1	2 44 49·36	− 0·49	....	+34·95	− 5·08
	920	....	7·0	68 58	8·5	17·3	26·3	35·2	50 44·5	2 50 26·36	− 0·41	....	+34·94	− 5·47
	949	α Ceti	....	86 29	14·9	23·2	31·5	39·9	54 48·2	2 54 31·54	− 0·50	+34·99	+34·94	− 5·05

(a) Cluster. Observed following of two brightest stars, which was apparently double. (b) Definition bad. (c) Double.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock Interpolated.	Correction to Mean R.A. Jan. 1, 1861.
1861.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Nov. 22	1623	β Orionis	....	98 22	5·2	13·4	22·1	30·4	7 39·0	5 7 22·02	− 0·56	+ 34·89	+ 34·90	− 4·81
	1765	ε Orionis	....	91 18	23·5	31·7	40·2	48·5	28 57·1	5 28 40·20	− 0·54	+ 34·96	+ 34·89	− 4·95
Nov. 26	1166	η Tauri	....	66 21	30·3	39·4	48·5	57·6	39 6·8	3 38 48·52	− 0·38	+ 31·23	+ 31·27	− 5·77
	1420	α Tauri	....	73 48	14·2	23·0	31·8	40·2	27 49·1	4 27 31·66	− 0·42	+ 31·23	+ 31·26	− 5·60
	1520	ι Aurigæ	....	57 4	12·3	22·2	32·3	42·0	47 52·1	4 47 32·18	− 0·33	+ 31·24	+ 31·26	− 6·35
	1623	β Orionis	....	98 22	8·7	17·1	25·6	34·0	7 42·5	5 7 25·58	− 0·55	+ 31·38	+ 31·25	− 4·87
	1681	β Tauri	....	61 31	47·0	56·0	5·8	15·0	17 24·8	5 17 6·72	− 0·35	+ 31·24	+ 31·24	− 6·14
	1730	δ Orionis	....	90 25	12·1	20·3	28·9	37·0	24 45·5	5 24 28·76	− 0·50	+ 31·19	+ 31·24	− 5·05
	1765	ε Orionis	....	91 18	27·2	35·5	44·0	52·2	29 0·6	5 28 43·90	− 0·51	+ 31·30	+ 31·23	− 5·02
Nov. 27	1166	η Tauri	....	66 21	31·0	40·0	49·3	58·2	39 7·4	3 38 49·15	− 0·38	+ 30·58	+ 30·60	− 5·78
	1420	α Tauri	....	73 48	15·0	23·5	32·3	41·0	27 49·8	4 27 32·32	− 0·42	+ 30·58	+ 30·58	− 5·61
	1681	β Tauri	....	61 31	47·6	56·9	6·5	15·8	17 25·4	5 17 6·44	− 0·35	+ 30·54	+ 30·56	− 6·16
	1730	δ Orionis	....	90 25	12·9	21·0	29·4	37·6	24 45·9	5 24 29·36	− 0·60	+ 30·61	+ 30·56	− 5·07
	1765	ε Orionis	....	91 18	28·0	36·2	44·6	53·0	29 1·5	5 28 44·66	− 0·50	+ 30·55	+ 30·55	− 5·04
	1883	α Orionis	....	82 37	57·2	5·4	14·0	22·2	47 30·8	5 47 13·92	− 0·46	+ 30·64	+ 30·54	− 5·27
Dec. 5	1376	ε Tauri	....	71 9	53·5	1·9	11·0	19·6	20 28·5	4 20 10·90	− 0·36	+ 25·44	+ 25·46	− 5·79
	1420	α Tauri	....	73 48	20·1	28·9	37·4	45·9	27 55·0	4 27 37·46	− 0·38	+ 25·49	+ 25·46	− 5·70
	1520	ι Aurigæ	....	57 4	18·2	28·1	38·2	48·0	47 58·1	4 47 38·12	− 0·29	+ 25·40	+ 25·45	− 6·49
	1681	β Tauri	....	61 31	53·0	2·1	11·9	20·9	17 30·7	5 17 11·72	− 0·31	+ 25·36	+ 25·43	− 6·30
	1730	δ Orionis	....	90 25	18·0	26·1	34·7	42·9	24 51·2	5 24 34·58	− 0·45	+ 25·47	+ 25·43	− 5·20
	1765	ε Orionis	....	91 18	33·4	41·5	49·9	58·1	29 6·8	5 28 49·94	− 0·45	+ 25·35	+ 25·43	− 5·17
	1883	α Orionis	....	82 37	2·5	10·6	19·2	27·5	47 36·0	5 47 19·16	− 0·41	+ 25·49	+ 25·42	− 5·41
	6281	δ Ursæ Minoris S. P.	....	3 24	15·5	43·0	0·5	25·0	20 41·5	6 16 1·70	− 1·12	....	+ 25·40	+ 46·00
	2163	γ Geminorum	....	73 20	4·2	12·5	21·7	30·0	29 39·0	6 29 21·48	− 0·37	....	+ 25·39	− 5·67
Dec. 9	1376	ε Tauri	....	71 9	57·0	5·5	14·5	23·0	20 32·1	4 20 14·42	− 0·32	+ 21·91	+ 21·97	− 5·82
	1420	α Tauri	....	73 48	23·8	32·1	41·0	49·4	27 58·2	4 27 40·90	− 0·33	+ 22·04	+ 21·96	− 5·74
	1520	ι Aurigæ	....	57 4	21·8	31·4	41·7	51·5	48 1·5	4 47 41·58	− 0·25	+ 21·95	+ 21·96	− 6·54
	1681	β Tauri	....	61 31	56·3	5·6	15·3	24·6	17 34·2	5 17 15·20	− 0·28	+ 21·92	+ 21·95	− 6·37
	1883	α Orionis	....	82 37	6·0	14·2	22·8	31·0	47 39·5	5 47 22·70	− 0·38	+ 21·99	+ 21·94	− 5·48
Dec. 10	1376	ε Tauri	....	71 9	57·8	6·3	15·1	23·9	20 32·9	4 20 15·20	− 0·32	+ 21·14	+ 21·21	− 5·83
	1420	α Tauri	....	73 48	24·4	33·0	41·8	50·1	27 59·0	4 27 41·66	− 0·33	+ 21·28	+ 21·20	− 5·74
	1520	ι Aurigæ	....	57 4	22·6	32·2	42·4	52·2	48 2·3	4 47 42·34	− 0·25	+ 21·20	+ 21·20	− 6·55
	1681	β Tauri	....	61 31	57·1	6·5	16·0	25·5	17 35·0	5 17 16·02	− 0·28	+ 21·11	+ 21·19	− 6·38
	2410	δ Geminorum	....	67 45	16·2	25·0	34·2	43·0	11 52·3	7 11 34·14	− 0·30	+ 21·21	+ 21·15	− 5·86
Dec. 14	1420	α Tauri	....	73 48	26·8	35·4	44·1	52·8	28 1·8	4 27 44·18	− 0·33	+ 18·80	+ 18·86	− 5·78
	1623	β Orionis	....	98 22	21·6	29·8	38·3	46·5	7 55·1	5 7 38·26	− 0·44	+ 18·80	+ 18·85	− 5·08
	1681	β Tauri	....	61 31	59·2	8·7	18·4	27·8	17 37·3	5 17 18·28	− 0·27	+ 18·89	+ 18·84	− 6·43
	1730	δ Orionis	....	90 25	24·6	32·8	41·4	49·5	24 57·9	5 24 41·24	− 0·40	+ 18·87	+ 18·83	− 5·31
	1765	ε Orionis	....	91 18	39·9	48·1	56·5	4·8	29 13·2	5 28 56·50	− 0·40	+ 18·85	+ 18·83	− 5·28
Dec. 16	518	ι Piscium	....	85 15	41·4	49·8	58·1	6·4	34 14·9	1 33 58·12	− 0·37	+ 18·90	+ 18·92	− 4·68
	577	β Arietis	....	69 54	26·7	35·3	44·5	53·2	47 2·2	1 46 44·38	− 0·30	+ 18·95	+ 18·94	− 5·02
	643	α Arietis	....	67 14	49·1	58·0	7·2	16·0	59 25·3	1 59 7·12	− 0·29	+ 19·00	+ 18·96	− 5·19
	1623	β Orionis	....	98 22	21·0	29·2	37·7	46·0	7 54·5	5 7 37·68	− 0·44	+ 19·40	+ 19·49	− 5·10
	1656	....	6·0	81 43	39·5	47·6	56·0	4·4	14 13·0	5 13 56·10	− 0·35	....	+ 19·50	− 5·60

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance sut. ° ′	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1. 1861.
					s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
1861. Dec. 16	1696 (a)	....	6·5	87 12	44·7	52·9	1·2	9·4	19 18·0	5 19 1·24	− 0·38	....	+ 19·51	− 5·42
	1730	δ Orionis..............	....	90 25	24·0	32·3	40·6	48·6	21 57·2	5 24 40·58	− 0·40	+ 19·55	+ 19·51	− 5·33
	1751	....	5·0	24 23	42·5	2·1	22·8	43·0	29 3·5	5 28 22·84	− 0·04	....	+ 19·52	− 11·05
	1813	....	6·0	21 35	6·3	28·5	51·8	11·0	38 37·0	5 37 51·52	− 0·04	....	+ 19·53	− 12·04
	1883	α Orionis..............	....	82 37	8·5	16·6	25·2	33·5	47 42·2	5 47 25·20	− 0·37	+ 19·59	+ 19·54	− 5·59
	1938	1 Geminorum..............	5·0	66 44	9·0	17·9	27·3	36·0	55 45·5	5 55 27·14	− 0·29	....	+ 19·55	− 6·21
	1962 (b)	....	9·0	65 45	58·6	7·8	17·0	26·0	0 35·5	6 0 16·98	− 0·30	....	+ 19·56	− 6·25
	2002	η Geminorum..............	4·0	67 27	58·4	7·1	16·3	25·0	6 34·2	6 6 16·20	− 0·29	....	+ 19·57	− 6·17
	2022	....	6·0	60 1	56·5	4·8	13·4	21·7	9 30·3	6 9 13·34	− 0·35	....	+ 19·58	− 5·66
	6281	δ Ursæ Minoris S. P.....	....	3 24	23·5	46·5	4·0	27·0	20 46·0	6 16 5·40	− 1·28	....	+ 19·59	+ 47·86
	2163	γ Geminorum..............	....	73 29	10·1	18·4	27·6	36·0	29 44·9	6 29 27·40	− 0·32	....	+ 19·61	− 5·89
	2238	....	6·0	66 14	2·2	11·3	20·6	29·6	43 38·8	6 43 20·50	− 0·30	....	+ 19·63	− 6·17
Dec. 17	1166	η Tauri..............	....	66 21	40·1	49·0	58·3	7·1	39 16·4	3 38 58·18	− 0·33	+ 21·63	+ 21·58	− 5·88
	1282	....	7·0	41 17	46·5	58·9	11·8	24·0	3 36·9	4 3 11·62	− 0·18	....	+ 21·59	− 7·56
	1328	γ Tauri..............	4·0	74 44	20·5	29·0	37·7	46·1	11 55·0	4 11 37·66	− 0·36	....	+ 21·59	− 5·70
	1351	....	9·0	73 43	57·4	5·8	14·8	23·1	15 32·1	4 15 14·64	− 0·36	....	+ 21·60	− 5·75
	1376	ε Tauri..............	....	71 9	57·2	6·0	15·0	23·7	20 32·8	4 20 14·94	− 0·35	+ 21·48	+ 21·60	− 5·88
	1420	α Tauri..............	....	73 48	24·0	32·5	41·4	50·0	27 58·9	4 27 41·36	− 0·36	+ 21·67	+ 21·61	− 5·80
	1520 (c)	ι Aurigæ..............	....	57 4	22·0	32·0	42·1	52·0	48 2·0	4 47 42·02	− 0·27	+ 21·62	+ 21·62	− 6·63
	6281	δ Ursæ Minoris S. P.....	....	3 24	21·0	41·5	3·0	26·5	20 44·0	6 16 3·80	− 1·60	....	+ 21·68	+ 47·98
	2163	γ Geminorum..............	....	73 29	8·0	16·5	25·4	33·9	29 42·9	6 29 25·34	− 0·36	....	+ 21·69	− 5·91
	2184	....	6·0	73 26	47·9	56·1	5·3	13·8	33 22·6	6 33 5·20	− 0·35	....	+ 21·70	− 5·89
	2238	....	6·0	66 14	0·0	9·2	18·5	27·2	43 36·7	6 43 18·32	− 0·33	....	+ 21·71	− 6·19
	2410	δ Geminorum..............	....	67 45	15·8	21·5	33·9	42·6	11 51·8	7 11 33·72	− 0·32	+ 21·82	+ 21·74	− 6·05
	2162	β Canis Minoris..........	....	81 25	4·1	12·3	21·0	29·1	19 37·8	7 19 20·86	− 0·39	....	+ 21·75	− 5·50
	2485	α² Geminorum..............	....	57 48	9·0	18·6	28·8	38·1	25 46·3	7 25 28·56	− 0·27	+ 21·75	+ 21·76	− 6·47
	2555	β Geminorum..............	....	61 38	14·1	23·5	33·0	42·4	36 52·0	7 36 33·00	− 0·29	+ 21·80	+ 21·77	− 6·18
Dec. 19	1166 (d)	η Tauri..............	....	66 21	38·0	46·9	56·3	5·2	39 14·1	3 38 56·16	− 0·30	+ 23·62	+ 23·66	− 5·88
	1351	....	8·0	73 43	55·3	3·8	12·9	21·2	15 30·0	4 15 12·64	− 0·33	....	+ 23·66	− 5·76
	1376	ε Tauri..............	....	71 9	55·1	4·0	12·9	21·5	20 30·5	4 20 12·80	− 0·32	+ 23·59	+ 23·65	− 5·88
	1420	α Tauri..............	....	73 48	21·6	30·2	39·2	48·0	27 56·0	4 27 39·18	− 0·33	+ 23·83	+ 23·65	− 5·81
	1626	....	7·0	49 42	20·4	31·0	42·2	53·0	9 4·0	5 8 42·12	− 0·21	....	+ 23·63	− 7·21
	1656	....	7·0	81 43	35·0	43·5	52·0	0·4	14 8·9	5 13 51·96	− 0·37	....	+ 23·62	− 5·62
	1681	β Tauri..............	....	61 31	54·8	4·0	13·7	23·0	17 32·5	5 17 13·60	− 0·27	+ 23·63	+ 23·62	− 6·49
	1696 (a)	....	8·0	87 12	40·4	48·6	57·0	5·2	19 13·9	5 18 57·02	− 0·38	....	+ 23·61	− 5·45
	1751	....	....	21 23	38·5	58·3	18·9	38·6	28 59·6	5 28 18·78	− 0·04	....	+ 23·60	− 11·10
	6281	δ Ursæ Minoris S. P.....	....	3 24	18·5	42·0	0·0	25·0	20 42·0	6 16 1·10	− 1·36	....	+ 23·58	+ 48·22
	2163	γ Geminorum..............	....	73 29	6·0	14·5	23·5	32·0	29 41·0	6 29 23·40	− 0·33	....	+ 33·57	− 5·94
	2238	....	6·0	66 14	58·2	7·4	16·6	25·4	43 34·9	6 43 16·50	− 0·30	....	+ 23·57	− 6·23
	2410	δ Geminorum..............	....	67 45	14·0	22·8	32·0	40·9	11 50·0	7 11 31·94	− 0·30	+ 23·62	+ 23·55	− 6·09
	2485	α² Geminorum..............	....	57 48	7·5	17·0	27·0	36·7	25 46·3	7 25 26·90	− 0·25	+ 23·44	+ 23·54	− 6·52
	2522	α Canis Minoris..........	....	84 24	26·9	35·1	43·6	52·0	32 0·4	7 31 43·60	− 0·37	+ 23·63	+ 23·54	− 5·37
	2555	β Geminorum..............	....	61 38	12·5	21·8	31·3	40·6	36 50·3	7 36 31·30	− 0·27	+ 23·53	+ 23·53	− 6·23
Dec. 20	1376	ε Tauri..............	....	71 9	55·6	4·4	13·3	22·0	20 31·0	4 20 13·26	− 0·27	+ 23·09	+ 23·03	− 5·89
	1420	α Tauri..............	....	73 48	22·9	31·1	40·0	48·7	27 57·2	4 27 39·98	− 0·27	+ 22·97	+ 23·03	− 5·81
	1434	....	5·0	77 47	49·6	57·9	6·5	14·9	30 23·5	4 30 6·48	− 0·30	....	+ 23·03	− 5·67
	1463	....	7·5	66 39	44·4	53·4	2·7	11·8	37 20·9	4 37 2·64	− 0·25	....	+ 23·03	− 6·12
	1491	....	5·0	81 21	28·4	37·0	45·4	53·6	43 2·0	4 42 45·20	− 0·30	....	+ 23·03	− 5·53

(a) Double. (b) A very faint star. Doubtful. Two other stars in field. (c) Faint. Cloudy.
(d) Clock beats very unequal. Observations not to be much depended on.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviation.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1861.
1861.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Dec. 20	1501	....	7·0	34 25	39·0	53·4	8·2	23·0	45 38·0	4 45 8·32	− 0·09	....	+ 23·03	− 8·73
	1520	ι Aurigæ........................	....	57 4	20·9	30·6	40·8	50·4	48 0·3	4 47 40·60	− 0·21	+ 23·00	+ 23·02	− 6·65
	1626	....	6·5	49 42	21·0	31·7	42·9	53·6	9 4·7	5 8 12·78	− 0·17	....	+ 23·02	− 7·22
	1656	....	6·0	81 43	35·7	44·0	52·5	0·8	14 9·4	5 13 52·48	− 0·31	....	+ 23·02	− 5·61
	1681	β Tauri........................	....	61 31	55·1	4·6	14·1	23·6	17 33·1	5 17 14·10	− 0·22	+ 23·08	+ 23·02	− 6·49
	1696	(a)	8·0	67 12	41·1	49·3	57·8	5·9	19 14·1	5 18 57·70	− 0·33	....	+ 23·02	− 5·46
	1730	δ Orionis........................	....	90 25	20·5	28·8	37·1	45·2	24 53·9	5 24 37·10	− 0·34	+ 23·00	+ 23·02	− 5·36
	1751	....	5·5	21 23	39·0	58·3	19·0	39·4	29 0·0	5 28 19·26	+ 0·01	....	+ 23·02	− 11·12
	1813	....	6·0	21 35	2·9	25·0	48·3	10·7	38 33·6	5 37 48·10	+ 0·03	....	+ 23·02	− 12·12
	1893	....	6·5	80 31	15·9	24·4	32·9	41·1	46 49·9	5 46 32·84	− 0·29	....	+ 23·02	− 5·70
	1907	....	6·0	77 13	30·0	38·4	47·1	55·5	51 4·2	5 50 47·04	− 0·29	....	+ 23·01	− 5·82
	1938	1 Geminorum........................	5·0	66 44	5·9	14·6	23·9	32·9	55 42·0	5 55 23·86	− 0·25	....	+ 23·01	− 6·26
	2002	η Geminorum........................	4·0	67 27	54·8	3·6	12·9	21·7	6 30·9	6 6 12·78	− 0·25	....	+ 23·01	− 6·23
	2022	....	6·0	80 1	52·9	1·3	10·0	18·2	9 26·9	6 9 9·86	− 0·29	....	+ 23·01	− 5·72
	6281	δ Ursæ Minoris S. P....	....	3 24	19·5	......	1·5	21·0	20 43·0	6 16 1·51	· 1·71	....	+ 23·01	+ 48·32
	2163	γ Geminorum........................	....	73 29	6·7	15·1	24·2	32·8	29 41·5	6 23 24·12	− 0·27	....	+ 23·01	− 5·96
	2184	....	7·0	73 26	46·6	55·1	4·0	12·5	33 21·4	6 33 3·92	− 0·27	....	+ 23·00	− 5·94
	2238	....	6·0	66 14	59·0	7·9	17·1	26·0	43 35·5	6 43 17·10	− 0·25	....	+ 23·00	− 6·24
	2292	....	7·0	79 11	43·5	52·0	0·6	9·0	53 17·5	6 53 0·52	− 0·29	....	+ 23·00	− 5·70
	2306	....	6·0	78 50	22·0	30·4	39·0	47·3	55 56·0	6 55 38·94	− 0·29	....	+ 23·00	− 5·71
	2329	(b)	8·0	74 15	41·2	50·0	58·8	7·1	0 16·0	6 59 58·62	− 0·27	....	+ 23·00	− 5·87
	2363	....	7·5	65 3	22·8	31·9	41·2	50·1	5 59·5	7 5 41·10	− 0·25	....	+ 22·99	− 6·25
	2379	....	5·0	40 17	17·1	30·0	43·0	55·7	8 8·9	7 7 43·00	− 0·12	....	+ 22·99	− 6·02
	2410	δ Geminorum........................	....	67 45	14·7	23·4	32·5	41·3	11 50·8	7 11 32·54	− 0·21	+ 22·98	+ 22·99	− 6·11
	2462	β Canis Minoris........................	....	81 25	2·9	11·0	19·8	27·9	19 36·4	7 19 19·60	− 0·30	....	+ 22·99	− 5·57
	2468	....	6·0	43 31	46·1	58·2	10·5	22·2	26 34·8	7 26 10·36	− 0·14	....	+ 22·98	− 7·59
	2522	α Canis Minoris........................	....	84 24	27·5	35·7	44·3	52·5	32 1·0	7 31 44·20	0·31	+ 22·99	+ 22·98	− 5·39
	2555	β Geminorum........................	....	61 38	13·0	22·3	31·9	41·1	36 51·0	7 36 31·86	− 0·22	+ 22·94	+ 22·97	− 6·25
Dec. 21	1420	α Tauri........................	....	73 48	22·9	31·3	40·3	48·7	27 57·5	4 27 40·14	− 0·26	+ 22·80	+ 22·62	− 5·61
	1434	....	5·0	77 47	49·6	58·0	6·6	15·0	30 23·8	4 30 6·60	− 0·28	....	+ 22·82	− 5·66
	1463	....	7·0	66 39	44·8	53·8	2·9	11·8	37 21·1	4 37 2·82	− 0·24	....	+ 22·82	− 6·13
	1501	....	7·5	34 25	38·7	53·4	8·3	22·8	45 38·0	4 45 8·21	− 0·03	....	+ 22·62	− 8·74
	1520	ι Aurigæ........................	....	57 4	21·0	30·8	40·9	50·7	48 0·5	4 47 40·78	− 0·20	+ 22·81	+ 22·62	− 6·65
	1626	....	7·0	49 42	21·2	31·0	43·0	53·7	9 5·0	5 8 42·96	− 0·17	....	+ 22·82	− 7·23
	1656	....	7·0	81 43	35·9	44·2	52·9	1·1	14 9·6	5 13 52·74	− 0·29	....	+ 22·82	− 5·63
	1681	β Tauri........................	....	61 31	55·6	4·7	14·5	23·9	17 33·3	5 17 14·40	− 0·21	+ 22·78	+ 22·82	− 6·50
	1696	(c)	8·0	87 12	41·1	49·4	58·0	6·2	19 14·3	5 18 57·84	− 0·32	....	+ 22·82	− 5·46
	1730	δ Orionis........................	....	90 25	20·7	28·9	37·3	45·5	24 53·9	5 24 37·26	− 0·32	+ 22·83	+ 22·82	− 5·37
	1751	....	5·5	24 23	39·0	58·9	19·7	39·6	29 0·0	5 28 19·44	− 0·01	....	+ 22·82	− 11·13
	1813	....	6·0	21 35	3·0	25·2	43·4	10·6	38 33·7	5 37 48·18	+ 0·02	....	+ 22·82	− 12·14
	1863	α Orionis........................	....	82 37	5·0	13·4	22·0	30·2	47 38·8	5 47 21·88	− 0·30	+ 22·69	+ 22·82	− 5·64
Dec. 23	949	α Ceti........................	....	86 29	27·4	35·5	44·1	52·4	55 1·0	2 54 44·08	− 0·27	+ 22·21	+ 22·26	− 5·04
	986	δ Arietis........................	....	70 50	7·1	16·0	24·9	33·5	3 42·4	3 3 24·78	− 0·22	+ 22·09	+ 22·26	− 5·51
	1376	(d) ε Tauri........................	....	71 9	56·6	5·4	14·1	22·8	20 31·8	4 20 14·14	− 0·22	+ 22·16	+ 22·26	− 5·89
	1420	(e) α Tauri........................	....	73 48	23·1	31·9	40·6	49·2	27 58·0	4 27 40·56	− 0·23	+ 22·32	+ 22·26	− 5·82
	1463	....	6·0	66 39	45·3	54·0	3·4	12·3	37 21·8	4 37 3·36	− 0·21	....	+ 22·26	− 6·14
	1491	....	6·0	81 21	29·1	37·5	46·1	54·2	43 3·0	4 42 45·98	− 0·25	....	+ 22·26	− 5·59
	1501	....	8·0	34 25	30·6	53·9	9·0	23·7	45 38·5	4 45 8·94	− 0·07	....	+ 22·26	− 8·74
	1520	ι Aurigæ........................	....	57 4	21·5	31·4	41·5	51·1	48 1·3	4 47 41·36	− 0·17	+ 22·21	+ 22·26	− 6·66

(a) Double. (b) Following of two stars of 7th and 8th magnitudes. (c) Double. (d) Definition very bad. Stars diffused and tremulous. (e) Evidences from the clock errors this night of either a change in the clock rate during 4 hours, or a change in the position of the Transit axis: suspect the latter.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1861.
				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
1861. Dec. 23	1626	....	7·0	49 42	21·5	32·4	43·7	54·2	9 5·2	5 8 43·40	− 0·14	....	+ 22·26	− 7·24
	1656	....	6·0	81 43	36·4	44·6	53·2	1·6	14 10·0	5 13 53·16	− 0·25	....	+ 22·26	− 5·65
	1683	....	7·0	55 44	1·1	11·0	21·3	31·4	17 41·5	5 17 21·26	− 0·16	....	+ 22·26	− 6·55
	1696	....	7·5	87 12	41·9	50·1	58·5	6·6	19 15·0	5 18 58·42	− 0·27	....	+ 22·26	− 5·48
	1730	δ Orionis..................	....	90 25	21·1	29·3	37·8	46·0	24 54·5	5 24 37·74	− 0·29	+ 22·33	+ 22·26	− 5·38
	1751	....	5·0	24 23	39·8	59·4	19·9	40·0	29 0·5	5 28 19·92	− 0·20	....	+ 22·26	− 11·16
	6281	δ Ursæ Minoris S. P.	....	3 24	19·5	38·0	1·5	25·0	20 43·5	6 16 1·50	− 1·24	....	+ 22·26	+ 48·59
	2163	γ Geminorum...............	....	73 29	7·4	16·0	24·9	33·4	29 42·2	6 29 24·78	− 0·22	....	+ 22·26	− 6·00
	2184	....	7·0	73 28	47·5	55·8	4·7	13·4	33 22·2	6 33 4·72	− 0·22	....	+ 22·26	− 5·99
	2292	....	7·0	79 11	44·4	52·8	1·4	9·6	53 18·2	6 53 1·28	− 0·25	....	+ 22·26	− 5·75
	2306	....	6·0	78 50	22·9	31·2	39·8	48·2	55 56·9	6 55 39·80	− 0·25	....	+ 22·26	− 5·76
	2363	....	7·0	65 3	23·4	32·5	42·0	51·0	6 0·3	7 5 41·84	− 0·20	....	+ 22·26	− 6·31
	2379	....	5·5	40 17	18·1	30·7	43·9	56·5	8 9·6	7 7 43·76	− 0·10	....	+ 22·26	− 8·10
	2410	δ Geminorum...............	....	67 45	15·2	24·1	33·2	42·0	11 51·4	7 11 33·18	− 0·20	+ 22·36	+ 22·26	− 6·17
	2462	β Canis Minoris............	....	81 25	3·5	11·7	20·3	28·7	19 37·0	7 19 20·24	− 0·25	....	+ 22·26	− 5·62
	2485	α² Geminorum..............	....	57 48	8·4	18·0	28·0	37·6	25 47·8	7 25 27·96	− 0·17	+ 22·39	+ 22·26	− 6·61
	2522	α Canis Minoris............	....	84 24	28·2	36·4	44·9	53·2	32 1·6	7 31 44·86	− 0·27	+ 22·35	+ 22·26	− 5·45
	2555	β Geminorum...............	....	61 38	13·8	23·0	32·7	42·0	36 51·6	7 36 32·62	− 0·18	+ 22·21	+ 22·26	− 6·32
	2672	6 Cancri....................	....	61 48	23·9	33·2	42·8	52·1	55 1·8	7 54 42·76	− 0·18	+ 22·29	+ 22·26	− 6·27
Dec. 24	1958	(a) ν Orionis..............	....	75 13	5·2	13·7	22·3	31·0	59 39·8	5 59 22·40	− 0·23	+ 21·89	+ 21·80	− 5·94
	2047	(b) μ Geminorum...........	....	67 25	59·9	8·6	17·8	26·9	14 36·0	6 14 17·84	− 0·20	+ 21·74	+ 21·80	− 6·29
	2163	γ Geminorum...............	....	73 29	8·2	16·6	25·6	34·0	29 42·5	6 29 25·38	− 0·22	+ 21·75	+ 21·80	− 6·02
	2410	δ Geminorum...............	....	67 45	15·8	25·0	33·8	42·7	11 51·6	7 11 33·78	− 0·13	+ 21·77	+ 21·80	− 6·19
	2485	α² Geminorum..............	....	57 48	8·8	18·9	28·6	38·2	25 48·2	7 25 28·54	− 0·17	+ 21·83	+ 21·80	− 6·63
Dec. 25	1520	ι Aurigæ....................	....	57 4	22·1	31·9	41·9	51·8	48 1·6	4 47 41·66	− 0·16	+ 21·71	+ 21·69	− 6·67
	1681	β Tauri......................	....	61 31	56·5	5·7	15·5	25·0	17 34·4	5 17 15·42	− 0·17	+ 21·75	+ 21·67	− 6·53
	1730	δ Orionis....................	....	90 25	22·0	30·0	38·6	46·8	24 55·0	5 24 36·48	− 0·27	+ 21·59	+ 21·67	− 5·40
	1765	ε Orionis....................	....	91 18	37·0	45·2	53·8	1·9	29 10·6	5 28 53·70	− 0·28	+ 21·63	+ 21·65	− 5·38
Dec. 26	6355	α Lyræ......................	....	51 21	32·4	42·9	53·7	4·2	32 15·1	18 31 53·66	− 0·12	+ 21·36	+ 21·32	− 0·96
	6802	α Aquilæ....................	....	81 31	24·6	33·0	41·6	50·0	43 58·6	19 43 41·56	− 0·21	+ 21·30	+ 21·32	− 2·60
	7256	32 Vulpeculæ...............	....	62 30	0·0	9·7	19·4	26·9	48 38·0	20 48 19·20	− 0·15	+ 21·30	+ 21·32	− 2·18
	7368	ζ Cygni......................	....	60 22	23·1	32·6	42·4	52·0	7 1·7	21 6 42·36	− 0·14	+ 21·30	+ 21·32	− 2·24
	7561	ε Pegasi.....................	....	80 47	46·5	54·7	3·5	11·9	37 20·6	21 37 3·44	− 0·21	+ 21·32	+ 21·32	− 3·03
	1681	β Tauri......................	....	61 31	57·0	6·2	15·9	25·1	17 34·9	5 17 15·82	− 0·15	+ 21·34	+ 21·20	− 6·54
	1696	(c)	8·0	87 12	42·8	51·1	59·6	7·7	19 16·3	5 18 59·50	− 0·24	....	+ 21·20	− 5·49
	1730	δ Orionis....................	....	90 25	22·2	30·4	39·0	47·0	24 55·5	5 24 38·82	− 0·25	+ 21·23	+ 21·20	− 5·40
	1766	....	4·5	80 48	44·2	52·5	1·0	9·3	29 18·0	5 29 1·00	− 0·21	....	+ 21·20	− 5·72
	1813	....	6·0	21 35	4·6	26·9	50·0	12·5	38 35·4	5 37 49·88	+ 0·05	....	+ 21·20	− 12·21
	1907	....	6·0	77 13	31·9	40·4	49·1	57·6	51 6·0	5 50 49·00	− 0·20	....	+ 21·20	− 5·88
	1938	1 Geminorum................	....	66 44	7·5	16·4	25·5	34·5	55 43·8	5 55 25·54	− 0·16	....	+ 21·20	− 6·33
	1962	(d)	9·0	65 45	57·2	6·0	15·4	24·4	0 33·8	6 0 15·36	− 0·16	....	+ 21·20	− 6·38
	2002	η Geminorum................	4·5	67 27	56·3	5·4	14·5	23·3	6 32·6	6 6 14·42	− 0·16	....	+ 21·20	− 6·30
	2022	....	6·0	60 1	54·9	3·0	11·9	20·0	9 28·8	6 9 11·72	− 0·21	....	+ 21·20	− 5·79
	2046	....	6·0	33 39	59·7	14·5	29·8	44·4	14 59·9	6 14 29·66	− 0·04	....	+ 21·20	− 9·22
	6281	δ Ursæ Minoris S. P.	....	3 24	20·0	......	3·0	25·5	20 43·0	6 16 2·39	− 1·23	....	+ 21·20	+ 48·60
	2163	γ Geminorum...............	....	73 29	8·6	17·0	26·0	34·5	29 43·2	6 29 25·86	− 0·19	....	+ 21·20	− 6·05

(a) Dense fog. (b) Faint. (c) Double. (d) A very small star—not nebulous. Several other small stars in field.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1861.
				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
1861 Dec. 26	2184	....	7·0	73 26	48·5	57·0	5·8	11·3	33 23·0	6 33 5·72	− 0·19	....	+ 21·20	− 6·04
	2238	....	6·0	66 14	0·8	9·8	19·0	27·8	43 37·1	6 43 18·90	− 0·16	....	+ 21·20	− 6·34
	2292	....	6·5	79 11	45·4	53·8	2·4	10·7	53 19·4	6 53 2·34	− 0·20	....	+ 21·20	− 5·80
	2329	....	7·5	74 15	43·4	51·5	0·6	9·0	0 17·9	7 0 0·48	− 0·19	....	+ 21·20	− 5·97
	2363	....	7·0	66 3	24·5	33·5	43·0	52·0	6 1·2	7 5 42·84	− 0·15	....	+ 21·20	− 6·36
	2379	....	5·5	40 17	19·0	31·8	45·0	57·4	8 10·8	7 7 44·80	− 0·06	....	+ 21·20	− 8·17
	2410	δ Geminorum	....	67 45	16·6	25·2	34·5	43·2	11 52·4	7 11 31·38	− 0·17	+ 21·19	+ 21·20	− 6·23
	2485	α² Geminorum	....	57 48	10·8	19·0	29·2	38·8	25 49·0	7 25 29·36	− 0·13	+ 21·02	+ 21·20	− 6·68
	2522	α Canis Minoris	....	84 24	29·4	37·6	46·0	54·2	32 2·9	7 31 46·02	− 0·22	+ 21·20	+ 21·20	− 5·61
	2555	β Geminorum	....	61 38	14·9	24·1	33·8	43·0	36 52·7	7 36 33·70	− 0·15	+ 21·17	+ 21·20	− 6·39
	2586	....	....	61 27	46·8	56·0	5·7	15·0	41 24·6	7 41 5·62	− 0·14	....	+ 21·20	− 6·43
	2672	6 Cancri	....	61 48	25·0	34·2	44·0	53·2	55 2·9	7 54 43·86	− 0·15	+ 21·23	+ 21·20	− 6·34
	2683	....	7·0	70 45	10·6	19·1	28·0	36·8	56 45·9	7 56 28·08	− 0·18	....	+ 21·20	− 5·96
	2737	....	7·0	71 57	37·8	46·4	55·0	3·5	3 12·4	8 2 55·02	− 0·20	....	+ 21·20	− 5·78
	2748	....	7·0	75 34	3·0	11·7	20·2	28·8	4 37·4	8 4 20·22	− 0·19	....	+ 21·20	− 5·75
	2761	....	7·0	76 31	4·9	13·4	22·0	30·4	6 39·2	8 6 21·98	− 0·20	....	+ 21·20	− 5·71
	2778	β Cancri	4·0	80 22	26·2	34·4	43·1	51·6	9 0·0	8 8 43·06	− 0·21	....	+ 21·20	− 5·58
Dec. 27	1681	β Tauri	....	61 31	57·1	6·6	16·2	25·5	17 35·0	5 17 16·08	− 0·14	+ 21·08	+ 21·02	− 6·56
	1703	....	7·0	73 41	36·5	45·0	53·9	2·4	20 11·1	5 19 53·78	− 0·19	....	+ 21·02	− 5·98
	1730	δ Orionis	....	90 25	22·5	30·8	39·2	47·1	24 55·8	5 24 39·08	− 0·24	+ 20·97	+ 21·02	− 5·41
	1766	....	6·0	80 46	44·5	52·9	1·5	9·7	29 18·1	5 29 1·34	− 0·20	....	+ 21·02	− 5·73
	1813	....	....	21 35	4·9	27·4	50·5	12·9	38 35·8	5 37 50·30	+ 0·04	....	+ 21·02	− 12·22
	1893	....	7·5	80 31	18·0	26·4	35·0	43·3	48 51·9	5 48 34·92	− 0·20	....	+ 21·02	− 5·77
	1907	....	6·0	77 13	32·3	40·6	49·3	57·8	51 6·2	5 50 49·24	− 0·19	....	+ 21·02	− 5·99
	1938	1 Geminorum	6·0	66 44	7·8	16·7	25·9	34·9	55 14·0	5 55 25·66	− 0·15	....	+ 21·02	− 6·31
	2002	η Geminorum	4·0	67 27	57·0	5·4	14·8	23·7	6 33·0	6 6 14·78	− 0·15	....	+ 21·02	− 6·32
	2022	....	6·0	80 1	56·0	3·4	12·0	20·2	9 28·8	6 9 11·88	− 0·20	....	+ 21·02	− 5·80
	2046	....	5·0	33 39	0·2	14·7	29·9	45·0	15 0·0	6 14 29·96	− 0·04	....	+ 21·02	− 9·21
	6281	δ Ursæ Minoris S. P.	....	3 24	20·5	......	3·0	25·0	20 43·0	6 16 2·39	− 1·13	....	+ 21·02	+ 49·86
	2163	γ Geminorum	....	73 29	8·8	17·3	26·0	34·8	29 43·7	6 29 26·12	− 0·19	....	+ 21·02	− 6·06
	2184	....	6·5	73 28	48·8	57·2	6·0	14·6	33 23·6	6 33 6·04	− 0·19	....	+ 21·02	− 6·05
	2292	....	7·0	79 11	45·8	54·1	2·6	11·0	53 19·7	6 53 2·64	− 0·20	....	+ 21·02	− 5·81
	2306	....	5·5	78 50	24·0	32·5	41·0	49·5	55 57·9	6 55 40·98	− 0·20	....	+ 21·02	− 5·82
	2334	....	....	39 59	40·0	53·0	6·0	18·9	1 31·8	7 1 5·94	− 0·06	....	+ 21·02	− 8·26
	2363	....	7·5	65 3	24·8	33·9	43·2	52·2	5 1·5	7 5 43·12	− 0·13	....	+ 21·02	− 6·38
	2379	....	6·0	40 17	19·6	32·0	45·0	57·7	8 19·0	7 7 44·84	− 0·06	....	+ 21·02	− 8·20
	2410	δ Geminorum	....	67 45	16·8	25·6	34·7	43·4	11 52·7	7 11 34·64	− 0·16	+ 20·94	+ 21·02	− 6·25
	2463	....	6·0	62 9	26·8	38·0	47·5	56·9	20 6·3	7 19 47·50	− 0·14	....	+ 21·02	− 6·49
	2488	....	6·0	43 31	16·5	0·5	12·7	24·7	26 36·9	7 26 12·66	− 0·08	....	+ 21·02	− 7·77
	2522	α Canis Minoris	....	84 24	29·7	37·9	46·4	54·5	32 2·9	7 31 46·28	− 0·22	+ 20·96	+ 21·02	− 5·53
	2555	β Geminorum	....	61 38	15·1	24·4	33·9	43·2	36 52·9	7 36 33·90	− 0·14	+ 20·98	+ 21·02	− 6·41
	2586	....	7·0	61 27	46·9	56·2	5·9	15·1	41 24·7	7 41 5·76	− 0·14	....	+ 21·02	− 6·43
	2672	6 Cancri	....	61 48	25·0	34·4	44·0	53·3	55 3·0	7 54 43·94	− 0·11	+ 21·17	+ 21·02	− 6·37
	2683	....	6·0	70 45	10·3	19·2	28·2	36·4	56 45·6	7 56 27·94	− 0·17	....	+ 21·02	− 5·95
	2737	....	6·0	74 57	38·0	46·6	55·4	3·9	3 12·8	8 2 55·34	− 0·19	....	+ 21·02	− 5·80
	2748	....	7·0	75 34	3·2	11·7	20·8	28·9	4 38·0	8 4 20·52	− 0·19	....	+ 21·02	− 5·77
	2761	....	....	76 31	5·0	13·4	22·5	30·8	6 39·4	8 6 22·22	− 0·19	....	+ 21·02	− 5·73
	2778	β Cancri	4·0	80 22	26·1	34·9	43·4	51·6	9 0·1	8 8 43·22	− 0·20	....	+ 21·02	− 5·60

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Date	No. in British Association Catalogue	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	Wires. II	Wires. III.	Wires. IV	Wires. V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1861
				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
1861. Dec. 28	1282		7·0	41 17	47·5	59·8	12·6	25·0	3 37·9	4 3 12·56	− 0·07	....	+ 20·63	− 7·55
	1328	γ Tauri	....	71 44	21·2	30·0	38·8	47·1	11 55·8	4 11 38·58	− 0·22	....	+ 20·63	− 5·72
	1351		8·0	73 43	58·1	6·7	15·8	24·2	15 33·0	4 15 15·56	− 0·21	....	+ 20·63	− 5·77
	1420	(a) α Tauri	....	73 48	25·0	33·5	42·4	51·0	28 0·6	4 27 42·50	− 0·21	+ 20·41	+ 20·63	− 5·83
	1434		5·0	77 47	51·8	0·0	8·9	17·0	30 25·9	4 30 8·72	− 0·22	....	+ 20·63	− 5·69
	1459		7·0	34 40	3·0	17·3	32·2	46·8	37 1·6	4 36 32·18	− 0·04	....	+ 20·63	− 8·64
	1491		6·0	81 21	30·6	39·0	47·8	55·9	43 4·4	4 42 47·54	− 0·23	....	+ 20·63	− 5·61
	1501		7·0	34 25	11·0	55·7	10·8	25·1	45 40·3	4 45 10·58	− 0·04	....	+ 20·63	− 8·75
	1520	ι Aurigæ	....	57 4	23·2	32·9	43·0	52·7	48 2·9	4 47 42·94	− 0·15	+ 20·63	+ 20·63	− 6·68
	1683		6·0	55 44	2·9	12·6	23·1	32·9	17 43·2	5 17 22·98	− 0·14	....	+ 20·63	− 6·88
	1703		7·5	73 41	36·8	45·4	54·2	2·9	20 11·7	5 19 54·20	− 0·21	....	+ 20·63	− 5·99
	1730	δ Orionis	....	90 25	22·9	31·0	39·5	47·6	24 56·0	5 24 39·40	− 0·27	− 20·68	+ 20·63	− 5·41
	1765	ε Orionis	....	91 18	38·0	46·1	54·8	2·9	29 14·3	5 28 54·62	− 0·27	+ 20·71	+ 20·63	− 5·39
	1826		7·0	80 32	43·0	51·1	59·8	8·1	39 16·8	5 38 59·76	− 0·23	....	+ 20·63	− 5·76
	1883	α Orionis	....	82 37	7·2	15·5	21·2	32·4	47 41·0	5 47 24·06	− 0·24	+ 20·71	+ 20·63	− 5·70
	1907		6·0	77 13	32·5	41·0	49·6	57·9	51 6·8	5 50 49·56	− 0·22	....	+ 20·63	− 5·90
	2022		6·0	80 1	55·5	3·8	12·4	20·6	9 29·3	6 9 12·32	− 0·23	....	+ 20·63	− 5·81
	6281	δ Ursæ Minoris S. P.	....	3 21	20·0	44·0	3·5	25·0	20 43·5	6 16 3·20	− 1·54	....	+ 20·63	+ 48·91
	2163	γ Geminorum	....	73 29	9·4	17·8	26·7	35·0	29 44·0	6 29 26·58	− 0·21	....	+ 20·63	− 6·07
Dec. 30	6355	α Lyræ	....	51 21	33·8	44·3	55·1	5·5	32 16·5	18 31 55·04	− 0·08	+ 19·97	+ 19·88	− 0·99
	6429	β Lyræ	....	56 48	18·5	28·4	38·4	48·2	44 58·6	18 44 38·42	− 0·09	+ 19·91	+ 19·88	− 1·37
	6528	ζ Aquilæ	....	76 21	26·8	35·2	44·0	52·4	59 1·1	18 58 43·90	− 0·12	+ 19·78	+ 19·88	− 2·32
	6802	α Aquilæ	....	81 31	26·2	34·4	43·0	51·2	43 59·8	19 43 42·92	− 0·15	+ 19·90	+ 19·88	− 2·62
	7368	ζ Cygni	....	60 22	24·6	34·0	13·9	53·2	7 3·0	21 6 43·74	− 0·09	+ 19·84	+ 19·88	− 2·21
	1520	ι Aurigæ	....	57 4	24·0	33·8	13·9	53·8	46 3·9	4 47 43·88	− 0·09	+ 19·63	+ 19·69	− 6·68
	1681	β Tauri	....	61 31	58·4	7·8	17·4	26·9	17 36·4	5 17 17·38	− 0·09	+ 19·74	+ 19·69	− 6·56
	1883	α Orionis	....	82 37	8·2	16·5	25·0	33·2	47 41·9	5 47 21·96	− 0·15	+ 19·73	+ 19·69	− 5·71
	2163	γ Geminorum	....	73 29	10·0	18·8	27·5	36·0	29 41·9	6 29 27·44	− 0·13	+ 19·67	+ 19·69	− 6·09
	2184		7·0	73 28	50·0	58·1	7·3	15·9	33 21·8	6 33 7·28	− 0·13	....	+ 19·69	− 6·09
	2292		6·0	79 11	47·0	55·2	3·9	12·1	53 20·0	6 53 3·82	− 0·14	....	+ 19·69	− 5·88
	2306		5·0	78 50	25·2	33·5	42·3	50·5	55 59·2	6 55 42·11	− 0·14	....	+ 19·69	− 5·66
	2334		6·0	39 59	41·4	51·2	7·6	20·4	1 33·5	7 1 7·36	− 0·01	....	+ 19·69	− 8·32
	2363		6·0	65 3	25·9	35·0	44·4	53·4	6 2·8	7 5 44·30	− 0·10	....	+ 19·69	− 6·43
	2379		5·0	40 17	20·7	33·3	46·4	59·0	8 12·4	7 7 46·30	− 0·04	....	+ 19·69	− 8·26
	2410	δ Geminorum	....	67 45	18·1	26·9	36·0	44·9	11 54·0	7 11 35·98	− 0·11	+ 19·59	+ 19·69	− 6·29
	2463		7·0	62 9	29·8	39·0	48·8	58·0	20 7·5	7 19 48·62	− 0·09	....	+ 19·69	− 6·54
	2488		6·0	43 31	49·6	1·3	14·0	25·8	26 38·0	7 26 13·74	− 0·05	....	+ 19·69	− 7·84
	2522	α Canis Minoris	....	84 24	30·9	39·1	17·6	55·8	32 4·2	7 31 47·52	− 0·16	+ 19·71	+ 19·69	− 5·58
	2555	β Geminorum	....	61 38	16·3	25·6	35·2	44·5	36 54·1	7 36 35·14	− 0·09	+ 19·74	+ 19·69	− 6·46
	2672	6 Cancri	....	61 48	26·6	35·9	45·5	54·8	55 4·3	7 54 45·42	− 0·09	+ 19·70	+ 19·69	− 6·43
	2683		7·0	70 45	11·9	20·3	29·5	38·1	56 47·2	7 56 29·40	− 0·12	....	+ 19·69	− 6·04
	2737		7·0	74 57	39·3	17·8	56·5	5·0	3 13·8	8 2 56·48	− 0·13	....	+ 19·69	− 5·86
	2748		7·0	75 34	4·5	13·1	21·6	30·1	4 39·0	8 4 21·66	− 0·13	....	+ 19·69	− 5·84
	2761		7·0	76 31	6·2	14·9	23·6	31·0	6 40·6	8 6 23·44	− 0·13	....	+ 19·69	− 5·80
	2778	β Cancri	5·0	80 22	27·6	36·0	44·8	53·0	9 1·6	8 8 44·60	− 0·14	....	+ 19·69	− 5·66
Dec. 31	1765	ε Orionis	....	91 18	39·4	47·6	56·0	4·1	29 12·7	5 28 55·96	− 0·13	+ 19·25	+ 19·28	− 5·41
	1883	α Orionis	....	82 37	8·7	16·9	25·2	33·6	47 42·1	5 47 25·30	− 0·10	+ 19·35	+ 19·23	− 5·72
	1907		7·0	77 13	33·9	42·2	51·0	59·3	51 7·8	5 50 50·84	− 0·09	....	+ 19·27	− 5·92

(a) An apparent alteration of the rate during the hours of observation; probably owing to a swerving of the instrument through temperature.

Date.	No. in British Association Catalogue.	OBJECT OBSERVED.	Magnitude observed.	North Polar Distance set to.	Wires.					Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock		Correction to Mean R.A. Jan. 1, 1861.
					I.	II.	III.	IV.	V.			observed.	interpolated.	
				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
1861. Dec. 31	2002	η Geminorum	....	67 27	58·4	7·2	16·4	25·3	6 34·4	6 6 16·34	− 0·06	....	+ 19·27	− 6·36
	2022	....	....	80 1	56·7	5·0	13·6	21·9	9 30·5	6 9 13·54	− 0·10	....	+ 19·26	− 5·81
	6281	δ Ursæ Minoris S. P.	....	3 24	21·0	44·0	3·0	25·5	20 44·0	6 16 3·50	− 0·43	....	+ 19·26	+ 49·02
	2163	γ Geminorum	....	73 29	10·5	19·1	28·0	36·4	29 45·8	6 29 27·96	− 0·08	....	+ 19·26	− 6·10
	2410	δ Geminorum	....	67 45	18·4	27·2	36·4	45·1	11 54·3	7 11 36·28	− 0·07	+ 19·27	+ 19·24	− 6·31
	2485	α² Geminorum	....	57 48	11·5	21·2	31·4	41·0	25 50·6	7 25 31·14	− 0·05	+ 19·25	+ 19·24	− 6·77
	2555	β Geminorum	....	61 38	16·8	26·0	35·7	45·1	36 54·7	7 36 35·66	− 0·05	+ 19·20	+ 19·24	− 6·48

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ROYAL OBSERVATORY, EDINBURGH.

Individual Observations of Mean Right Ascensions of the Stars observed at the Royal Observatory, Edinburgh, in the Year 1861, reduced to January 1, 1861.

B.A.C. 4, α Andromedæ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
			° ′	h. m. s.
Oct. 1	0·75	(1·0)	61 41	0 1 12·49
2	0·75			12·45
5	0·76			12·42
15	0·79	(a)		12·52

B.A.C. 26, γ Pegasi.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 1	0·75	(2·0)	7 35	0 6 4·81
2	0·75			4·88
5	0·76			4·99
15	0·79			4·91

B.A.C. 112, 12 Ceti.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 5	0·76	(6·0)	94 13	0 22 56·74
9	0·77			56·75
16	0·79			56·72
17	0·79			56·78

B.A.C. 288, ε Piscium.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 15	0·79	(4·0)	84 51	0 55 43·82
16	0·79			43·93
17	0·79			43·87

B.A.C. 376.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 25	0·81	(7·0)	17 51	1 8 28·04

B.A.C. 403.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 25	0·81	7·5	17 53	1 13 42·34

B.A.C. 420, θ Ceti.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
			° ′	h. m. s.
Oct. 9	0·77	(3·0)	98 54	1 17 4·50
15	0·79			4·46
16	0·79			4·40
17	0·79			4·44
25	0·81			4·51
Nov. 8	0·85			4·47

B.A.C. 453, η Piscium.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 2	0·75	(4·0)	75 22	1 24 2·99
9	0·77			2·99
16	0·79			2·94
17	0·79			2·96
25	0·81			3·00
29	0·82			3·02
Nov. 5	0·84			3·06
8	0·85			2·90

B.A.C. 472.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Nov. 5	0·84	7·0	69 45	1 27 39·03

B.A.C. 482.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 25	0·81	6·0	32 45	1 29 4·01
Nov. 8	0·85	6·0		4·01

B.A.C. 516.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 25	0·81	6·0	55 27	1 34 2·03
Nov. 5	0·84	5·0		2·11
8	0·85	6·0		2·10

B.A.C. 518, ν Piscium.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
			° ′	h. m. s.
Oct. 30	0·83	(5·0)	85 13	1 34 12·06
Dec. 16	0·96			11·99

B.A.C. 538.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 25	0·81	8·0	73 17	1 39 2·91
Nov. 5	0·84			3·04
8	0·85	7·0		2·91

B.A.C. 547.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 25	0·81	(6·0)	42 48	1 40 38·79

B.A.C. 562.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 25	0·81	7·0	39 13	1 43 58·76

B.A.C. 577, β Arietis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 2	0·75	(3·0)	69 52	1 46 58·12
9	0·77			58·02
25	0·81			58·06
Nov. 5	0·84			57·99
8	0·85			57·97
9	0·85			58·07
Dec. 16	0·96			58·00

B.A.C. 588.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Nov. 8	0·85	5·0	26 4	1 49 55·63

B.A.C. 620.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Nov. 8	0·85	7·0	25 34	1 54 15·74

(a) Magnitudes in parenthesis are the tabular magnitudes from the British Association Catalogue.

B.A.C. 647.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Nov. 5	0.84	6.0	64° 58′	1h 58m 56.99s
8	0.85			56.96

B.A.C. 648, α Arietis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 2	0.75	(2.0)	67 12	1 59 20.58
9	0.77			20.64
17	0.79			20.54
29	0.82			20.53
30	0.83			20.61
Nov. 6	0.85			20.62
9	0.85			20.66
Dec. 16	0.96			20.60

B.A.C. 704, 67 Ceti.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 18	0.79	(6.0)	97 4	2 10 2.96
28	0.82			3.14
30	0.83			3.03
Nov. 6	0.85			2.98
9	0.85			3.09

B.A.C. 760, ξ^2 Ceti.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 2	0.75	(4.0)	82 10	2 20 46.31
3	0.75			46.30
16	0.79			46.37
28	0.82			46.39
30	0.83			46.34
Nov. 9	0.85			46.32
22	0.89			46.32

B.A.C. 764.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Nov. 22	0.89	6.0	81 3	2 22 10.21

B.A.C. 776.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Nov. 22	0.89	6.0	88 21	2 24 18.85

B.A.C. 793.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 30	0.83		83 47	2 28 27.79
Nov. 22	0.89	6.5		27.80

B.A.C. 822.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 30	0.83		47° 54′	2h 33m 18.17s
Nov. 8	0.85			18.26
22	0.89	(*)		18.40

B.A.C. 837, γ Ceti.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 15	0.79	(3.0)	87 22	2 36 6.03
16	0.79			6.18
17	0.79			6.17
18	0.79			6.21
25	0.81			6.03
28	0.82			5.96
30	0.83			6.03
Nov. 6	0.85			6.01
8	0.85			6.00
9	0.85			5.93
22	0.89			6.06

B.A.C. 881.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 25	0.81	7.0	75 30	2 43 49.36
Nov. 8	0.85	6.0		49.39
22	0.89	6.0		49.42

B.A.C. 891.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 25	0.81	8.5	84 6	2 45 18.64
Nov. 5	0.84			18.87
22	0.89			18.74

B.A.C. 920.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 25	0.81	(7.0)	68 56	2 50 55.32
Nov. 5	0.84			55.47
22	0.89			55.42

B.A.C. 949, α Ceti.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 9	0.77	(2.5)	86 27	2 55 0.90
16	0.79			0.91
17	0.79			0.99
18	0.79			0.88
25	0.81			0.83
29	0.82			0.93
Nov. 5	0.84			0.86
8	0.85			0.91

(*) Called a nebula in B. A. Cat.

B.A.C. 949, α Ceti.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Nov. 15	0.87	(2.5)	86° 27′	2h 55m 0.97s
22	0.89			0.93
Dec. 23	0.97			1.03

B.A.C. 986, δ Arietis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 17	0.79	(4.0)	70 48	3 3 41.12
18	0.79			41.11
25	0.81			41.02
28	0.82			41.10
29	0.82			41.16
30	0.83			41.12
Nov. 15	0.87			41.17
Dec. 23	0.97			41.31

B.A.C. 1055.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Nov. 5	0.84	7.0	68 27	3 16 30.17

B.A.C. 1087.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Nov. 5	0.84	5.0	77 33	3 23 12.11
8	0.85			12.19

B.A.C. 1101.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Nov. 5	0.84	7.0	58 47	3 26 59.75

B.A.C. 1126.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Nov. 5	0.84	(6.0)	65 7	3 32 28.59

B.A.C. 1166, η Tauri.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Oct. 25	0.81	(3.0)	66 20	3 39 13.57
28	0.82			13.62
29	0.82			13.67
Nov. 5	0.84			13.64
6	0.85			13.74
8	0.85			13.72
26	0.90			13.64
27	0.90			13.62
Dec. 17	0.96			13.55
19	0.96			13.66

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
B.A.C. 1282.				
			° ′	h. m. s.
Nov. 8	0·85	7·5	41 16	4 3 25·52
Dec. 17	0·96	7·0		25·47
28	0·99	7·0		25·57
B.A.C. 1309.				
Nov. 8	0·85	5·0	97 52	4 8 52·31
B.A.C. 1328.				
Nov. 8	0·85	4·0	74 43	4 11 53·16
Dec. 17	0·96	4·0		53·19
28	0·99			53·27
B.A.C. 1351.				
Nov. 8	0·85	8·0	73 42	4 15 30·16
Dec 17	0·96	9·0		30·13
19	0·96			30·21
28	0·99			30·21
B.A.C. 1376, ι Tauri.				
Nov. 6	0·85	(3·5)	71 8	4 20 30·30
8	0·85			30·16
15	0·87			30·27
Dec. 5	0·93			30·21
9	0·94			30·25
10	0·94			30·26
17	0·96			30·31
19	0·96			30·25
20	0·97			30·13
23	0·97			30·29
B.A.C. 1420, α Tauri.				
Nov. 5	0·84	(1·0)	73 46	4 27 56·79
6	0·85			56·74
8	0·85			56·77
15	0·87			56·89
26	0·90			56·90
27	0·90			56·87
Dec. 5	0·93			56·81
9	0·94			56·79
10	0·94			56·79
14	0·95			56·93
17	0·96			56·81
B.A.C. 1420, α Tauri.				
			° ′	h. m. s.
Dec. 19	0·96	(1·0)	73 46	4 27 56·69
20	0·97			56·93
21	0·97			56·89
23	0·97			56·77
28	0·99			57·09
B.A.C. 1434.				
Dec. 20	0·97	5·0	77 46	4 30 23·51
21	0·97	5·0		23·46
28	0·99	5·0		23·44
B.A.C. 1459, (a)				
Dec. 28	0·99	7·0	34 39	4 36 44·13
B.A.C. 1463.				
Dec. 20	0·97	7·5	66 38	4 37 19·30
21	0·97	7·0		19·27
23	0·97	6·0		19·27
B.A.C. 1491.				
Dec. 20	0·97	5·0	81 20	4 43 2·35
23	0·97	6·0		2·40
28	0·99	6·0		2·33
B.A.C. 1501.				
Dec. 20	0·97	7·0	34 14	4 45 22·53
21	0·97	7·5		22·23
23	0·97	8·0		22·39
28	0·99	7·0		22·42
B.A.C. 1520, ι Aurigæ.				
Nov. 14	0·87	(4·0)	57 3	4 47 56·82
15	0·87			56·81
26	0·90			56·76
Dec. 5	0·93			56·79
9	0·94			56·75
10	0·94			56·74
17	0·96			56·71
20	0·97			56·76
21	0·97			56·75
23	0·97			56·79
25	0·98			56·72
28	0·99			56·74
30	0·99			56·80
B.A.C. 1623, δ Orionis.				
			° ′	h. m. s.
Nov. 14	0·87	(1·0)	90 22	5 7 51·58
15	0·87			51·44
22	0·89			51·55
26	0·90			51·41
Dec. 14	0·95			51·59
16	0·96			51·63
B.A.C. 1626.				
Dec. 19	0·96	7·0	49 41	5 8 58·33
20	0·97	6·5		58·41
21	0·97	7·0		58·38
23	0·97	7·0		58·28
B.A.C. 1656.				
Dec. 16	0·96	6·0	51 42	5 14 9·65
19	0·96	7·0		9·59
20	0·97	6·0		9·56
21	0·97	7·0		9·61
23	0·97	6·0		9·52
B.A.C. 1681, β Tauri.				
Jan. 3	0·01	(2·0)	61 30	5 17 30·57
Nov. 14	0·87			30·44
15	0·87			30·41
26	0·90			30·47
27	0·90			30·49
Dec. 5	0·93			30·54
9	0·94			30·50
10	0·94			30·55
14	0·95			30·42
19	0·96			30·46
20	0·97			30·41
21	0·97			30·51
25	0·98			30·39
26	0·98			30·33
27	0·99			30·41
30	0·99			30·42
B.A.C. 1683.				
Dec. 23	0·97	7·0	55 44	5 17 36·51
28	0·99	6·0		36·59

(a) A tabular difference of 12 secs.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
B.A.C. 1696.				
			° ′	h m s
Dec. 16	0·96	6·5	87 11	5 19 14·95
19	0·96	8·0		14·80
20	0·97	8·0		14·93
21	0·97	8·0		14·88
23	0·97	7·5		14·93
26	0·98	8·0		14·97
B.A.C. 1703.				
Dec. 27	0·99	7·0	73 40	5 20 8·63
28	0·99	7·5		8·63
B.A.C. 1730, δ Orionis.				
Jan. 2	0·01	(2·0)	90 24	5 24 54·34
Nov. 14	0·87			54·40
26	0·90			54·15
27	0·90			54·35
Dec. 5	0·93			54·36
14	0·95			54·36
16	0·96			54·36
20	0·97			54·42
21	0·97			54·39
23	0·97			54·33
25	0·98			54·48
26	0·98			54·37
27	0·99			54·45
28	0·99			54·35
B.A.C. 1751.				
Dec. 16	0·96	5·0	24 23	5 28 31·27
19	0·96			31·24
20	0·97	5·5		31·17
21	0·97	5·5		31·12
23	0·97			30·82
B.A.C. 1765, ι Orionis.				
Jan. 3	0·01	(2·5)	91 18	5 29 9·74
Nov. 14	0·87			9·60
22	0·89			9·60
26	0·90			9·60
27	0·90			9·67
Dec. 5	0·93			9·75
14	0·95			9·65
25	0·98			9·69
28	0·99			9·59
31	0·99			9·70

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
B.A.C. 1766.				
			° ′	h m s
Dec. 26	0·98	4·5	80 47	5 29 16·27
27	0·99	6·0		16·43
B.A.C. 1813.				
Dec. 16	0·96	6·0	21 35	5 37 59·00
20	0·97	6·0		59·03
21	0·97	6·0		58·88
26	0·98	6·0		58·92
27	0·99			59·14
B.A.C. 1826.				
Dec. 28	0·99	7·0	80 32	5 39 14·40
B.A.C. 1883, α Orionis.				
Jan. 2	0·00	(1·0)	82 37	5 47 38·94
3	0·01			38·73
Nov. 27	0·90			38·73
Dec. 5	0·93			38·76
9	0·94			38·78
16	0·96			38·78
21	0·97			38·76
28	0·99			38·75
30	0·99			38·79
31	0·99			38·78
B.A.C. 1893.				
Dec. 20	0·97	6·5	80 31	5 48 49·87
27	0·99			49·97
B.A.C. 1907.				
Dec. 20	0·97	6·0	77 13	5 51 3·94
26	0·98	6·0		4·12
27	0·99			4·18
28	0·99	6·0		4·07
31	0·99	7·0		4·10
B.A.C. 1938.				
Dec. 16	0·96	5·0	66 44	5 55 40·19
20	0·97	5·0		40·36
26	0·98			40·25
27	0·99			40·39

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
B.A.C. 1958, ν Orionis.				
			° ′	h m s
Dec. 24	0·98	(4·5)	75 13	5 59 38·03
B.A.C. 1962.				
Dec. 16	0·96	9·0	65 45	6 0 29·99
26	0·98			30·02
B.A.C. 2002.				
Dec. 16	0·96	4·0	67 27	6 6 29·31
20	0·97	4·0		29·31
26	0·98	4·5		29·16
27	0·99	4·0		29·33
31	0·99			29·19
B.A.C. 2022.				
Dec. 16	0·96	6·0	80 1	6 9 26·91
20	0·97	6·0		26·66
26	0·98	6·0		26·92
27	0·99	6·0		26·90
28	0·99	6·0		26·91
31	0·99			26·66
B.A.C. 2047, μ Geminorum.				
Jan. 2	0·00	(3·0)	67 25	6 14 33·09
Dec. 24	0·98			33·15
B.A.C. 2046.				
Dec. 26	0·98	6·0	33 39	6 14 41·60
27	0·99	5·0		41·70
B.A.C. 2163, γ Geminorum.				
Jan. 2	0·00	(2·5)	73 29	6 29 40·94
7	0·02			40·87
Dec. 5	0·93			40·53
16	0·96			40·80
17	0·96			40·77
19	0·96			40·70
20	0·97			40·90
23	0·97			40·82
24	0·98			40·94
26	0·98			40·82

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B.A.C. 2163, γ Geminorum.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. ° ′	Mean Right Ascension, January 1, 1861. h m s
Dec. 27	0·99	(2·5)	73 29	6 29 40·89
28	0·99			40·93
30	0·99			40·91
31	0·99			41·04

B.A.C. 2184.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Dec. 17	0·96	6·0	73 29	6 33 20·66
20	0·97	7·0		20·71
23	0·97	7·0		20·77
26	0·98	7·0		20·69
27	0·99	6·5		20·82
30	0·99	7·0		20·75

B.A.C. 2238.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Dec. 16	0·96	6·0	66 14	6 43 33·66
17	0·96	6·0		33·51
19	0·96	6·0		33·54
20	0·97	6·0		33·61
26	0·98	6·0		33·60

B.A.C. 2292.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Dec. 20	0·97	7·0	79 11	6 53 17·53
23	0·97	7·0		17·54
26	0·97	6·5		17·54
27	0·99	7·0		17·65
30	0·99	6·0		17·51

B.A.C. 2306.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Dec. 20	0·97	6·0	78 50	6 55 55·94
23	0·97	6·0		56·05
27	0·99	5·5		55·98
30	0·99	5·0		55·83

B.A.C. 2329.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Dec. 20	0·97	8·0	74 15	7 0 15·48
26	0·98	7·5		15·52

B.A.C. 2334.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Dec. 27	0·99		39 59	7 1 18·64
30	0·99	6·0		18·69

B.A.C. 2363.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. ° ′	Mean Right Ascension, January 1, 1861. h m s
Dec. 20	0·97	7·5	65 3	7 5 57·59
23	0·97	7·0		57·59
26	0·98	7·0		57·53
27	0·99	7·5		57·61
30	0·99	6·0		57·46

B.A.C. 2379.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Dec. 20	0·97	5·0	40 17	7 7 57·85
23	0·97	5·5		57·82
26	0·98	5·5		57·77
27	0·99	6·0		57·60
30	0·99	5·0		57·69

B.A.C. 2410, δ Geminorum.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Jan. 2	0·00	(3·0)	67 46	7 11 49·06
Feb. 4	0·09			49·32
24	0·15			49·17
Dec. 10	0·94			49·11
17	0·96			49·09
19	0·96			49·10
20	0·97			49·18
23	0·97			49·07
24	0·98			49·20
26	0·98			49·18
27	0·99			49·25
30	0·99			49·27
31	0·99			49·14

B.A.C. 2462, β Canis Minoris.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Dec. 17	0·96	(3·0)	81 26	7 19 36·72
20	0·97			36·72
23	0·97			36·63

B.A.C. 2463.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Dec. 27	0·99	6·0	62 10	7 20 1·89
30	0·99	7·0		1·68

B.A.C. 2485, α² Geminorum.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Jan. 2	0·00	(1·5)	57 49	7 25 43·63
7	0·02			43·67
Feb. 4	0·09			43·58
5	0·10			43·57
24	0·15			43·57

B.A.C. 2485, α² Geminorum.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. ° ′	Mean Right Ascension, January 1, 1861. h m s
Feb. 27	0·16	(1·5)	57 49	7 25 43·63
28	0·16			43·59
Dec. 17	0·96			43·58
19	0·96			43·67
23	0·97			43·44
24	0·98			43·64
26	0·98			43·75
31	0·99			43·56

B.A.C. 2488.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Dec. 20	0·97	6·0	43 31	7 26 25·61
27	0·99	6·0		25·63
30	0·99	6·0		25·54

B.A.C. 2522, α Canis Minoris.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Feb. 4	0·09	(1·0)	84 25	7 32 1·43
5	0·10			1·43
24	0·15			1·43
27	0·16			1·34
Dec. 19	0·96			1·40
20	0·97			1·48
23	0·97			1·40
26	0·98			1·49
27	0·99			1·55
30	0·99			1·47

B.A.C. 2555, β Geminorum.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Jan. 2	0·00	(2·0)	61 38	7 36 48·40
7	0·02			48·30
Feb. 4	0·09			48·31
5	0·10			48·38
24	0·15			48·38
27	0·16			48·45
28	0·16			48·39
Dec. 17	0·96			48·30
19	0·96			48·33
20	0·97			48·36
23	0·97			48·38
26	0·98			48·36
27	0·99			48·37
30	0·99			48·28
31	0·99			48·37

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
B.A.C. 2586.				
Dec. 26	0·98		° ′ 61 27	h. m. s. 7 41 20·25
27	0·99	7·0		20·19
B.A.C. 2672, 6 Cancri.				
Jan. 7	0·02	(5·5)	61 49	7 54 58·64
Feb. 24	0·15			58·61
25	0·15			58·63
Dec. 23	0·97			58·57
26	0·98			58·57
27	0·99			58·45
30	0·99			58·59
B.A.C. 2683.				
Dec. 26	0·98	7·0	70 46	7 56 43·14
27	0·99	6·0		42·81
30	0·99	7·0		42·93
B.A.C. 2737.				
Dec. 26	0·98	7·0	74 58	8 3 10·24
27	0·99	8·0		10·37
30	0·99	7·0		10·18
B.A.C. 2748.				
Dec. 26	0·98	7·0	75 35	8 4 35·48
27	0·99	7·0		35·58
30	0·99	7·0		35·38
B.A.C. 2761.				
Dec. 26	0·98	7·0	76 32	8 6 37·27
27	0·99			37·32
30	0·99	7·0		37·20
B.A.C. 2778, β Cancri.				
Dec. 26	0·98	4·0	80 22	8 8 58·47
27	0·99	4·0		58·44
30	0·99	5·0		58·49
B.A.C. 2862, π Cancri.				
Jan. 7	0·02	(6·0)	69 5	8 24 39·93
Feb. 24	0·15			39·91
25	0·15			39·95
B.A.C. 2971, ε Hydræ.				
Jan. 7	0·02	(4·0)	° ′ 83 4	h. m. s. 8 39 24·71
Feb. 4	0·09			24·78
25	0·15			24·74
27	0·16			24·73
28	0·16			24·81
B.A.C. 3331, ε Leonis.				
Feb. 5	0·10	(3·0)	65 35	9 37 57·32
25	0·15			57·30
26	0·15			57·30
27	0·16			57·30
28	0·16			57·32
B.A.C. 3415, π Leonis.				
Feb. 5	0·10	(4·5)	81 17	9 52 51·89
25	0·15			51·91
26	0·15			51·92
28	0·16			51·85
B.A.C. 3459, α Leonis.				
Feb. 5	0·10	(1·0)	77 21	10 0 58·02
26	0·15			57·94
27	0·16			57·89
28	0·16			57·98
June 17	0·46			57·88
B.A.C. 3523, γ¹ Leonis.				
Feb. 26	0·15	(2·0)	69 27	10 12 18·27
B.A.C. 3609, ρ Leonis.				
Feb. 26	0·15	(4·0)	79 59	10 26 29·40
B.A.C. 3834, δ Leonis.				
June 13	0·45	(2·5)	68 43	11 6 42·62
17	0·46			42·66
B.A.C. 3995, β Leonis.				
June 13	0·45	(2·5)	74 39	11 41 56·08
17	0·46			56·06
B.A.C. 4648, η Bootis.				
June 24	0·48	(3·0)	70 54	13 48 3·90
B.A.C. 4672, τ Virginis.				
June 17	0·46	(4·5)	° ′ 87 47	h. m. s. 13 54 34·60
B.A.C. 4729, α Bootis.				
June 17	0·46	(1·0)	70 5	14 9 19·33
July 23	0·56			19·32
Sept. 12	0·70			19·33
16	0·71			19·31
B.A.C. 4876, ε Bootis.				
Sept. 12	0·70	(3·0)	62 20	14 38 55·00
B.A.C. 5034, β Libræ.				
June 25	0·48	(2·5)	98 52	15 9 31·79
B.A.C. 5143, α Coronæ Borealis.				
June 25	0·48	(2·5)	62 49	15 28 48·19
Sept. 12	0·70			48·22
16	0·71			48·20
B.A.C. 5414, δ Ophiuchi.				
June 13	0·45	(3·0)	93 20	16 7 3·76
July 3	0·50			3·77
8	0·51			3·81
B.A.C. 5604, ζ Herculis.				
June 19	0·46	(3·0)	58 9	16 36 2·87
24	0·48			2·85
B.A.C. 5708, κ Ophiuchi.				
June 13	0·45	(4·0)	80 24	16 51 5·39
19	0·46			5·40
B.A.C. 5821, α Herculis.				
Jan. 2	0·00	(3·5)	75 27	17 8 18·61
June 13	0·45			18·67
19	0·46			18·59
July 6	0·51			18·59
8	0·51			18·63
Oct. 28	0·82			18·66
Nov. 22	0·89			18·68

B.A.C. 5941, α Ophiuchi.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Jan. 2	0·00	(2·0)	77° 20′	17h 28m 28·95s
June 13	0·45			28·99
19	0·46			28·88
24	0·48			28·95
July 6	0·51			28·96
8	0·51			28·94
Oct. 25	0·81			28·95
28	0·82			28·92

B.A.C. 6021, μ Herculis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
June 19	0·46	(4·0)	62 12	17 41 1·17
24	0·48			1·22
July 3	0·50			1·24
6	0·51			1·29
8	0·51			1·23
18	0·54			1·11
Sept. 26	0·73			1·30

B.A.C. 6355, α Lyræ.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
July 6	0·51	(1·0)	51 21	18 32 13·91
27	0·57			13·90
28	0·57			13·81
Nov. 22	0·89			13·87
Dec. 26	0·98			13·90
30	0·99			13·85

B.A.C. 6429, β Lyræ.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
June 25	0·48	(3·0)	56 48	18 44 56·98
July 2	0·50			56·99
3	0·50			56·93
6	0·51			56·93
18	0·54			56·92
23	0·56			56·95
26	0·56			56·81
27	0·57			56·96
28	0·57			56·88
Dec. 30	0·99			56·84

B.A.C. 6528, ζ Aquilæ.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
June 25	0·48	(3·0)	76 20	18 59 1·24
July 2	0·50			1·25
8	0·51			1·27
10	0·52			1·27
18	0·54			1·27
July 23	0·56	(3·0)	76° 20′	18h 59m 1·27s
25	0·56			1·20
27	0·57			1·24
28	0·57			1·25
Sept. 12	0·70			1·23
Nov. 22	0·89			1·26
Dec. 30	0·99			1·34

B.A.C. 6595, ω Aquilæ.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
July 10	0·52	(5·0)	78 39	19 11 17·53
23	0·56			17·47
27	0·57			17·55
28	0·57			17·56

B.A.C. 6646, δ Aquilæ.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
July 2	0·50	(3·5)	87 10	19 18 29·28
8	0·51			29·31
10	0·52			29·30
18	0·54			29·37
23	0·56			29·38
26	0·56			29·27
27	0·57			29·29
28	0·57			29·39
Nov. 22	0·89			29·37

B.A.C. 6772, γ Aquilæ.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
July 2	0·50	(3·0)	79 44	19 39 39·03
3	0·50			39·03
10	0·52			38·98
18	0·54			39·04
23	0·56			38·93
27	0·57			39·01
Aug. 8	0·60			39·06
Nov. 22	0·89			38·98

B.A.C. 6802, α Aquilæ.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
July 2	0·50	(1·5)	81 30	19 43 60·03
3	0·50			59·95
18	0·54			60·03
27	0·57			59·91
Aug. 8	0·60			59·97
Dec. 26	0·98			60·07
30	0·99			60·03

B.A.C. 6833, β Aquilæ.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
July 2	0·50	(3·5)	83° 56′	19h 48m 29·06s
3	0·50			29·13
18	0·54			29·08
27	0·57			29·13
Aug. 8	0·60			29·08

B.A.C. 7256, 32 Vulpeculæ.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
July 8	0·51	(4·5)	62 28	20 48 38·22
26	0·56			38·19
Aug. 5	0·59			38·19
8	0·60			38·20
Dec. 26	0·98			38·19

B.A.C. 7368, ζ Cygni.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
July 26	0·56	(3·0)	60 21	21 7 1·33
Aug. 5	0·59			1·24
8	0·60			1·28
9	0·60			1·30
Dec. 26	0·98			1·30
30	0·99			1·32

B.A.C. 7478, β Aquarii.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Aug. 5	0·59	(3·0)	96 11	21 24 14·29
8	0·60			14·37
9	0·60			14·37

B.A.C. 7561, ε Pegasi.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Dec. 26	0·98	(2·5)	80 46	21 37 21·52

B.A.C. 7627, 16 Pegasi.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Aug. 9	0·60	(5·5)	64 44	21 46 44·38
Sept. 26	0·73			44·32

B.A.C. 7688, α Aquarii.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1861.
Aug. 5	[illegible]	(3·0)	91 0	21 58 38·63
Sept. 11	0·69			38·56
12	0·70			38·61
16	0·71			38·56
29	0·74			38·55

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. °	′	Mean Right Ascension, January 1, 1861. h.	m.	s.
B.A.C. 7773, θ Aquarii.							
Aug. 5	0·59	(4·5)	98	29	22	9	29·68
9	0·60						29·78
Sept. 29	0·74						29·72
B.A.C. 7868, η Aquarii.							
Aug. 5	0·59	(4·0)	90	50	22	28	12·79
9	0·60						12·61
Sept. 11	0·69						12·76
16	0·71						12·69
26	0·73						12·77
29	0·74						12·81
B.A.C. 7908, ζ Pegasi.							
Aug. 9	0·60	(3·0)	79	54	22	34	31·71
Sept. 11	0·69						31·77
B.A.C. 7908, ζ Pegasi.							
Sept. 16	0·71	(3·0)	79	54	22	34	31·82
29	0·74						31·77
B.A.C. 8034, α Pegasi.							
Sept. 11	0·69	(2·0)	75	33	22	57	50·41
12	0·70						50·32
16	0·71						50·28
26	0·73						50·27
29	0·74						50·27
B.A.C. 8105, γ Piscium.							
Sept. 11	0·69	(4·5)	87	29	23	9	57·56
26	0·73						57·40
Oct. 3	0·75						57·65
B.A.C. 8169, κ Piscium.							
Sept. 11	0·69	(5·0)	89	30	23	19	48·33
Oct. 2	0·75						48·47
3	0·75						48·37
B.A.C. 8233, ι Piscium.							
Sept. 11	0·69	(4·5)	85	8	23	32	48·12
Oct. 1	0·75						48·18
2	[illegible]·75						48·14
3	0·75						48·11
B.A.C. 8331, ω Piscium.							
Oct. 1	0·75	(4·5)	83	54	23	52	10·52
2	0·75						10·59
5	0·76						10·46

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EXPLANATION OF THE EDINBURGH TRANSIT OBSERVATIONS FOR 1861; AND THEIR METHODS OF REDUCTION.

Pages 69 to 84 contain the Transit Observations of stars for 1861, similarly with those for 1849, where the methods of reduction are more fully described; the variable data for the present year being as below.

The star observations were taken almost wholly by Mr Alexander Wallace, M.A., the First Assistant Astronomer. They were actually more numerous than here recorded, because, with a view chiefly to economy in printing, all days of observation with less than four standard stars have been struck out; also parts of a day far removed from the chief observing hours of the night; also those periods of the year when either the Instrumental corrections were uncertain, or the Clock going badly. The said observations, however, had been already computed in our MS. books, and have often served useful temporary purposes, as for approximate clock-corrections and instrumental errors.

The Micrometer observations for instrumental corrections have, on the other hand, always been taken by the Astronomer, and he has also decided on the quantities for computation to be adopted for each day of star observation.

Intervals of the Wires.

From 5 observations of α Ursæ Minoris, above and below the Pole, in the year 1861, the intervals of the wires and their Equatorial distances from their mean or middle point were found to be, the star being above the Pole,—

		s	
Wire	I.	+ 16·648	Equatorial
...	II.	+ 8·409	
...	III.	− 0·060	
...	IV.	− 8·243	
...	V.	− 16·756	

These values, immaterially different from those of 1860, have been employed in the reductions throughout the year; using for Polaris (whose Declination varied between 88° 34′ 3″ and 88° 34′ 53″) the following quantities or those adapted to a declination of 88° 34′, with the amount of alteration due to each additional second of Declination added under the term n'',—

		m. s.	s	
Wire	I.	+ 11 5·80	+ n × ·131	Declination 88° 34′
...	II.	+ 5 36·20	+ n × ·066	
...	III.	− 0 2·40		
...	IV.	− 5 29·58	− n × ·065	
...	V.	− 11 10·13	− n × ·131	

and for δ Ursæ Minoris (whose Declination varied between 86° 35′ 46″ and 86° 36′ 27″) the following quantities, or those adapted to a declination of 86° 36′,

with the amount of alteration due to each additional second of Declination added under the term n'',—

			m.	s.		s.		s.	
Wire	I.	+	4	40·73	+	n	×	·023	Declination 86° 36
...	II.	+	2	21·76	+	n	×	·012	
...	III.	−	0	1·01					
...	IV.	−	2	19·00	−	n	×	·012	
...	V.	−	4	42·56	−	n	×	·023	

The correction generally for the imperfect transit of a star, whose North Polar Distance is not very small, being

$$= \frac{\text{Sum of Equatorial intervals for the Wires observed}}{\text{Number of Wires}} \times \text{cosecant of Stars N.P.D.},$$

this quantity being applied to the mean of whatever wires were observed.

With close Polar stars, the *Sine* is used in place of the *Arc*.

The signs and order of the Wires are to be changed when the star is below the Pole.

In the column entitled "Reduction to the Mean of the Wires," either the simple arithmetical mean of the Wires—if 5 were observed—is entered; or, if a less number, the reduced mean according to the method already explained and the quantities above given.

CORRECTIONS FOR INSTRUMENTAL DEVIATIONS.

These deviations are three in number, and are severally termed, Collimation error, Level error, and Azimuth error.

The Collimation error is the deviation of the line joining the optical centre of the object-glass and the Mean of the Wires, from the plane perpendicular to the axis of rotation; and is *mechanically* positive, or is positive as a correction for all objects at all altitudes both above and below the horizon, when the object-glass deviates to the east of the said plane:—$0^s{\cdot}012$, the diurnal aberration, is included, for practical convenience, in the sum representing the collimation.

The Level error is the angle of inclination of the axis of rotation to the horizon, measured in a vertical plane; and is *mechanically* positive, as a correction, for all objects above the horizon, negative for those below, when the Western end is higher than the other.

The Azimuthal error is the angle of deviation of the axis of rotation (presumed approximately horizontal) from the East and West line, measured in a horizontal plane; and is *mechanically* positive as a correction for all objects South of the Zenith, or Nadir, and negative for those North of the same, when the Western end of said axis deviates towards the South.

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COLLIMATION AND LEVEL ERRORS.

These are determined, as explained in former years, by special observations made from time to time with the collimating eye-piece, and by measuring micrometrically the distance between the Middle wire and its reflected image in reversed positions of the transit-instrument's axis.

For dates between the epochs of observation, the errors have been assumed to vary as the time, except where the readings of the earth-thermometers, as noticed in the Introduction, have indicated a modification thereof to be probably desirable.

AZIMUTHAL ERROR.

Of the three usual methods for determining the azimuthal position of a transit-instrument; viz. by a Polar star combined with an Equatorial star, by two successive transits of a Polar star above and below the Pole, or by three consecutive transits of a Polar star, the first plan has alone been adopted; for although the two latter have the advantage of being independent of the Right Ascension assumed for the stars, yet they can only be employed with safety when the stability of the instrument can be depended on through the twelve or twenty-four hours during which the observations extend.

Now grave doubts had long existed on this head; and, as set forth both in the Introduction to this volume and the Report to the Board of Visitors for 1870, towards the end of the volume, see pp. R 50 to R 57, they have since been proved to be only too well founded. The following therefore is the formula which has always been adopted, enabling, for each transit of a Polar star observed, a comparatively instantaneous determination of the Azimuthal error then to be made:—

$$\text{Azimuthal error} = \frac{\text{R.A. 1st} * - \text{R.A. 2d} * - (\text{obs. tr. 1st} * - \text{obs. tr. 2d} *) - \text{clock's loss in the interval}}{\left(\frac{\sin \text{Z.D. South}}{\sin \text{N.P.D.}}\ \text{1st} *\right) - \left(\frac{\sin \text{Z.D. South}}{\sin \text{N.P.D.}}\ \text{2d} *\right)}$$

In the course of the year 25 combinations of either α, or δ, Ursæ Minoris and a Clock star were obtained, from which the Azimuth error at these epochs was computed, and for dates between them the error was made to vary nearly as the time, modified in some cases by the temperature and the annual curve shown in Plate III.

TABLE I.

ADOPTED INSTRUMENTAL CORRECTIONS, EXPRESSED IN SECONDS OF TIME FOR CONVENIENCE OF APPLICATION TO TIME OBSERVATIONS.

Date.	Collimation.	Level.	Azimuth.
1861.	s	s	s
Jan. 2	−0·22	+0·10	0·00
3	−0·22	+0·10	0·00
7	−0·22	+0·11	+0·01
16	−0·22	+0·14	+0·02
23	−0·22	+0·14	+0·03
24	−0·22	+0·14	+0·02
26	−0·22	+0·14	+0·01
28	−0·22	+0·15	0·00
31	−0·22	+0·15	−0·01
Feb. 1	−0·22	+0·15	−0·03
4	−0·22	+0·15	−0·03
5	−0·22	+0·14	−0·03
6	−0·22	+0·14	−0·03
7	−0·22	+0·14	−0·03
9	−0·22	+0·14	−0·04
12	−0·22	+0·14	−0·04
13	−0·22	+0·14	−0·04
20	−0·22	+0·13	−0·04
22	−0·22	+0·13	−0·04
23	−0·22	+0·13	−0·05
24	−0·22	+0·13	−0·06
25	−0·22	+0·13	−0·09
26	−0·22	+0·12	−0·11
27	−0·22	+0·12	−0·13
28	−0·22	+0·12	−0·14
March 4	−0·22	+0·12	−0·16
8	−0·22	+0·11	−0·18
11	−0·21	+0·10	−0·20
13	−0·21	+0·10	−0·22
19	−0·21	+0·09	−0·24
21	−0·21	+0·09	−0·28
24	−0·21	+0·09	−0·31
28	−0·21	+0·08	−0·35
April 11	−0·21	+0·05	−0·37
12	−0·21	+0·05	−0·40
15	−0·21	+0·04	−0·43
23	−0·21	+0·03	−0·46
25	−0·21	+0·02	−0·47
29	−0·21	+0·01	−0·49
30	−0·21	+0·01	−0·50
May 2	−0·21	0·00	−0·51
10	−0·21	−0·01	−0·52
12	−0·21	−0·02	−0·54
14	−0·21	−0·02	−0·55

Date.	Collimation.	Level.	Azimuth.
1861.	s	s	s
May 20	−0·21	−0·03	−0·60
21	−0·21	−0·03	−0·61
23	−0·21	−0·03	−0·62
26	−0·21	−0·04	−0·64
27	−0·21	−0·04	−0·65
June 5	−0·21	−0·05	−0·67
12	−0·21	−0·06	−0·72
13	−0·21	−0·06	−0·73
14	−0·21	−0·07	−0·74
15	−0·21	−0·07	−0·75
16	−0·21	−0·07	−0·76
17	−0·20	−0·07	−0·77
18	−0·20	−0·07	−0·79
19	−0·20	−0·07	−0·80
24	−0·20	−0·08	−0·80
25	−0·20	−0·08	−0·80
27	−0·20	−0·08	−0·80
29	−0·20	−0·08	−0·80
30	−0·20	−0·08	−0·80
July 1	−0·20	−0·08	−0·78
2	−0·20	−0·09	−0·76
3	−0·20	−0·09	−0·75
6	−0·20	−0·09	−0·74
8	−0·20	−0·09	−0·80
10	−0·20	−0·09	−0·78
16	−0·20	−0·10	−0·76
18	−0·20	−0·10	−0·75
23	−0·20	−0·11	−0·75
25	−0·20	−0·11	−0·75
26	−0·20	−0·11	−0·75
27	−0·20	−0·11	−0·72
28	−0·20	−0·11	−0·70
Aug. 3	−0·20	−0·11	−0·70
4	−0·20	−0·11	−0·70
5	−0·20	−0·11	−0·69
8	−0·20	−0·12	−0·69
9	−0·20	−0·12	−0·68
15	−0·20	−0·12	−0·68
16	−0·20	−0·12	−0·68
20	−0·20	−0·12	−0·67
21	−0·20	−0·12	−0·67
22	−0·20	−0·11	−0·66
23	−0·20	−0·11	−0·65
26	−0·20	−0·11	−0·65
27	−0·20	−0·11	−0·65

Date.	Collimation.	Level.	Azimuth.
1861.	s	s	s
Aug. 28	−0·20	−0·10	−0·64
29	−0·20	−0·10	−0·64
30	−0·20	−0·10	−0·63
Sept. 3	−0·20	−0·10	−0·63
4	−0·20	−0·10	−0·62
6	−0·20	−0·09	−0·62
7	−0·20	−0·09	−0·62
9	−0·20	−0·09	−0·61
11	−0·20	−0·09	−0·61
12	−0·20	−0·08	−0·60
13	−0·20	−0·08	−0·59
16	−0·20	−0·08	−0·59
17	−0·20	−0·08	−0·58
18	−0·20	−0·08	−0·58
20	−0·20	−0·08	−0·57
24	−0·20	−0·07	−0·57
26	−0·20	−0·06	−0·56
29	−0·20	−0·05	−0·56
30	−0·20	−0·04	−0·56
Oct. 1	−0·20	−0·04	−0·55
2	−0·20	−0·04	−0·55
3	−0·20	−0·01	−0·54
5	−0·20	−0·04	−0·54
9	−0·20	−0·02	−0·53
13	−0·20	−0·02	−0·58
15	−0·20	−0·01	−0·62
16	−0·20	−0·01	−0·57
17	−0·20	−0·01	−0·55
18	−0·20	−0·01	−0·54
19	−0·20	−0·01	−0·53
20	−0·20	−0·01	−0·55
22	−0·19	0·00	−0·56
24	−0·19	+0·01	−0·55
25	−0·19	+0·01	−0·55
28	−0·19	+0·02	−0·55
29	−0·19	+0·02	−0·55
30	−0·19	+0·03	−0·55
31	−0·19	+0·03	−0·56
Nov. 3	−0·19	+0·04	−0·55
4	−0·19	+0·04	−0·55
5	−0·19	+0·05	−0·55
6	−0·19	+0·05	−0·55
7	−0·19	+0·05	−0·56
8	−0·19	+0·05	−0·56
9	−0·19	+0·05	−0·55

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Date.	Collimation.	Level.	Azimuth.	Date.	Collimation.	Level.	Azimuth.	Date.	Collimation.	Level.	Azimuth.
1861.	s.	s.	s.	1861.	s.	s.	s.	1861.	s.	s.	s.
Nov. 11	−0·19	+0·06	−0·54	Nov. 29	−0·19	+0·09	−0·42	Dec. 17	−0·18	+0·11	−0·39
12	−0·19	+0·06	−0·53	30	−0·19	+0·09	−0·41	19	−0·18	+0·11	−0·34
13	−0·19	+0·06	−0·52					20	−0·17	+0·12	−0·29
14	−0·19	+0·07	−0·51	Dec. 1	−0·19	+0·09	−0·41	21	−0·17	+0·12	−0·27
15	−0·19	+0·07	−0·51	2	−0·19	+0·10	−0·40	22	−0·17	+0·12	−0·25
17	−0·19	+0·07	−0·50	4	−0·19	+0·10	−0·39	23	−0·17	+0·13	−0·23
18	−0·19	+0·07	−0·49	6	−0·19	+0·10	−0·38	24	−0·17	+0·13	−0·22
19	−0·19	+0·07	−0·48	7	−0·19	+0·10	−0·38	25	−0·17	+0·13	−0·21
20	−0·19	+0·08	−0·48	8	−0·19	+0·11	−0·37	26	−0·16	+0·14	−0·20
21	−0·19	+0·08	−0·47	9	−0·18	+0·11	−0·36	27	−0·16	+0·14	−0·19
22	−0·19	+0·08	−0·46	10	−0·18	+0·11	−0·36	28	−0·16	+0·14	−0·23
23	−0·19	+0·08	−0·45	11	−0·18	+0·12	−0·35	30	−0·16	+0·15	−0·12
26	−0·19	+0·09	−0·44	14	−0·18	+0·11	−0·34	31	−0·15	+0·16	−0·08
27	−0·19	+0·09	−0·43	16	−0·18	+0·11	−0·33				

The correction to the star observations of times of Transit, for each of the above three instrumental deviations successively, is,

$$\text{Collimation correction} \times \frac{1}{\text{sin Star's North Polar Distance,}}$$

the sign being positive for a star above the Pole, and negative when it crosses the Meridian below the Pole.

$$\text{Level correction} \times \frac{\text{cos Star's Zenith Distance South}}{\text{sin Star's North Polar Distance,}}$$

the sign being positive for a star above the Pole, and negative when it crosses the Meridian below the Pole. And

$$\text{Azimuthal correction} \times \frac{\text{sin Star's Zenith Distance South}}{\text{sin Star's North Polar Distance,}}$$

the sign being positive for a star above the Pole *and* to the South of the Zenith, also for a star below the Pole and North of the Zenith; but negative when above the Pole and to the North of the Zenith.

CORRECTION OF THE CLOCK.

For computing the errors of the Clock and the Azimuthal errors of the Transit Instrument, the following Table of the Mean Right Ascensions of the principal stars for January 1, 1861, has been employed, and was kindly communicated at the time by G. B. Airy, Esq., Astronomer Royal, as being the same employed by him for reducing the Greenwich Observations of 1861.

TABLE II.

MEAN RIGHT ASCENSIONS ADOPTED OF STANDARD STARS.

Star's Name.	Assumed Mean Right Ascension, January 1, 1861.	Correction to Nautical Almanac.	Approximate North Polar Distance.	Star's Name.	Assumed Mean Right Ascension, January 1, 1861.	Correction to Nautical Almanac.	Approximate North Polar Distance.
	h. m. s.	s.	° ′		h. m. s.	s.	° ′
α Andromedæ	0 1 12·52	+0·05	61 41	κ Geminorum	6 6 29·28	....	67 27
γ Pegasi	0 6 4·87	+0·05	75 35	μ Geminorum	6 11 33·09	+0·04	67 25
ι Ceti	0 12 20·69	....	99 35	β Canis Majoris	6 16 34·82	....	107 53
12 Ceti	0 22 56·72	−0·02	94 43	ν Geminorum	6 20 42·60	....	69 42
ε Andromedæ	0 31 12·98	....	61 26	γ Geminorum	6 29 40·90	−0·01	73 29
β Ceti	0 36 36·62	+0·08	108 45	Cephei 51	6 34 9·90	+2·22	2 45
μ Andromedæ	0 49 2·83	....	52 15	Sirius	6 39 1·27	−0·21	106 31
ε Piscium	0 55 43·93	+0·01	82 51	θ Canis Majoris	6 47 43·91	....	101 52
β Andromedæ	1 1 57·52	....	55 7	ε Canis Majoris	6 53 9·84	+0·03	118 47
Polaris	1 8 21·12	−0·33	1 26	γ Canis Majoris	6 57 28·21	−0·01	105 26
θ Ceti	1 17 4·56	+0·06	98 54	51 Geminorum	7 5 23·28	....	73 36
η Piscium	1 24 2·93	+0·01	75 22	δ Geminorum	7 11 49·17	+0·02	67 46
ν Piscium	1 34 11·97	−0·01	85 13	β Canis Minoris	7 19 36·68	....	81 26
β Arietis	1 46 58·01	+0·01	69 52	Castor	7 25 43·57	0·00	57 48
α Arietis	1 59 20·65	+0·02	67 12	Procyon	7 32 1·50	+0·11	84 25
67 Ceti	2 10 3·03	−0·02	97 4	Pollux	7 36 48·33	0·00	61 38
ξ² Ceti	2 20 46·32	+0·01	82 10	ξ Navis	7 43 26·86	....	114 30
δ Ceti	2 32 21·67	....	90 16	6 Cancri	7 51 58·60	−0·04	61 49
γ Ceti	2 36 6·05	+0·05	87 21	15 Argûs	8 1 37·19	0·00	113 54
ε Arietis	2 43 49·36	....	75 29	β Cancri	8 8 58·50	....	80 23
α Ceti	2 55 0·98	+0·08	86 27	ψ² Cancri	8 15 24·04	....	71 13
δ Arietis	3 3 41·14	0·00	70 48	θ Cancri	8 24 39·93	0·00	69 5
τ¹ Arietis	3 13 12·46	....	69 21	γ Cancri	8 35 14·18	....	68 2
ε Tauri	3 17 20·26	....	81 28	ε Hydræ	8 39 24·76	−0·02	83 4
f Tauri	3 23 12·20	....	77 33	α Cancri	8 50 52·88	....	77 36
ε Eridani	3 26 22·97	....	99 56	κ Cancri	9 0 12·93	....	78 46
11 Tauri	3 32 28·53	....	65 8	83 Cancri	9 11 13·11	+0·08	71 42
δ Eridani	3 36 35·49	....	100 14	α Hydræ	9 20 45·38	+0·03	98 3
η Tauri	3 39 13·60	+0·02	66 20	ξ Leonis	9 24 26·99	....	78 5
γ Eridani	3 51 32·70	+0·05	103 55	ο Leonis	9 33 43·70	....	79 28
ω¹ Tauri	4 1 4·38	....	70 46	π Leonis	9 37 57·32	+0·02	65 35
ν Eridani	4 5 4·90	−0·01	97 13	μ Leonis	9 44 51·09	....	63 20
γ Tauri	4 11 53·21	....	74 43	ε Leonis	9 52 51·90	−0·03	81 17
ε Tauri	4 20 30·19	0·00	71 8	Regulus	10 0 57·96	+0·01	77 21
Aldebaran	4 27 56·87	0·00	73 47	γ¹ Leonis	10 12 18·27	0·00	69 27
μ Eridani	4 38 33·24	....	93 31	μ Hydræ	10 19 22·17	....	106 8
ι Aurigæ	4 47 56·74	−0·03	57 4	ρ Leonis	10 25 29·40	+0·01	79 59
ε Leporis	4 59 31·63	+0·04	112 34	34 Sextantis	10 35 26·73	....	85 42
Rigel	5 7 51·54	+0·05	98 22	l Leonis	10 41 56·87	0·00	78 43
β Tauri	5 17 30·47	+0·07	61 31	d Leonis	10 53 22·84	....	85 38
δ Orionis	5 24 54·40	0·00	90 24	χ Leonis	10 57 50·72	+0·01	81 55
α Leporis	5 26 36·04	0·00	107 56	δ Leonis	11 6 42·71	+0·02	68 43
ι Orionis	5 29 9·67	+0·03	91 18	δ Crateris	11 12 23·62	+0·07	104 2
α Columbæ	5 34 37·06	−0·06	124 9	τ Leonis	11 20 47·28	....	86 23
κ Orionis	5 41 9·88	....	99 43	υ Leonis	11 29 49·91	−0·03	90 4
α Orionis	5 47 38·83	+0·02	82 37	β Leonis	11 41 58·04	+0·04	74 39
1 Geminorum	5 55 40·29	....	66 44	π Virginis	11 53 44·95	....	82 37
ν Orionis	5 59 38·12	−0·03	75 13	ε Corvi	12 2 58·82	−0·01	111 51

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Star's Name.	Assumed Mean Right Ascension. January 1, 1861	Correction to Nautical Almanac.	Approximate North Polar Distance.	Star's Name.	Assumed Mean Right Ascension. January 1, 1861	Correction to Nautical Almanac.	Approximate North Polar Distance.
	h. m. s.	s.	° ′		h. m. s.	s.	° ′
η Virginis	12 12 47·64	−0·02	89 54	α Lyræ	18 32 13·94	+0·06	51 21
δ Corvi	12 22 40·63	....	105 45	2 Aquilæ	18 34 39·68	....	9 11
β Corvi	12 27 5·44	+0·11	112 38	β Lyræ	18 44 56·88	+0·07	56 48
35 Virginis	12 40 46·79	....	83 40	ι Aquilæ	18 53 18·82	....	75 7
δ Virginis	12 48 36·17	....	85 51	ζ Aquilæ	18 59 1·24	+0·10	76 20
ε Virginis	12 55 15·42	....	78 18	ψ Sagittarii	19 7 0·85	....	115 29
θ Virginis	13 2 45·31	+0·01	94 48	κ Aquilæ	19 11 17·45	−0·02	78 39
Spica	13 17 52·14	+0·05	100 26	δ Aquilæ	19 18 29·34	+0·04	87 10
ζ Virginis	13 27 36·75	−0·01	89 53	α Vulpeculæ	19 22 55·30	....	65 57
m Virginis	13 34 19·19	....	98 0	μ Aquilæ	19 27 17·90	....	82 55
τ Bootis	13 40 39·42	....	71 51	h² Sagittarii	19 28 14·67	+0·11	115 11
η Bootis	13 48 4·00	+0·05	70 54	γ Aquilæ	19 39 39·04	+0·05	79 44
τ Virginis	13 54 34·43	+0·01	87 47	α Aquilæ	19 44 0·05	+0·05	81 30
κ Virginis	14 5 29·08	....	99 37	β Aquilæ	19 48 29·11	+0·08	83 56
Arcturus	14 9 19·35	+0·06	70 5	ε Sagittarii	19 54 6·30	....	118 6
f Bootis	14 19 59·47	....	70 9	λ Ursæ Minoris	20 2 58·42	+0·26	1 6
ξ Bootis	14 25 50·34	−0·03	59 1	θ Aquilæ	20 4 7·88	....	91 14
ε Bootis	14 38 55·00	+0·07	62 20	α Capricorni	20 10 20·32	+0·02	102 58
α Libræ	14 43 14·65	+0·06	105 27	β Capricorni	20 13 11·67	....	105 13
ξ¹ Libræ	14 49 13·61	....	100 51	ξ Capricorni	20 20 55·68	+0·13	108 16
ψ Bootis	14 58 29·14	0·00	62 30	ε Delphini	20 26 34·28	....	79 10
β Libræ	15 9 31·83	+0·01	98 51	α Delphini	20 33 10·91	....	74 35
ι¹ Libræ	15 15 16·83	....	101 37	ε Aquarii	20 40 6·87	....	100 0
ζ¹ Libræ	15 20 25·34	....	106 14	32 Vulpeculæ	20 45 38·17	0·00	62 28
α Coronæ	15 28 48·21	+0·08	62 49	θ Capricorni	20 58 7·71	....	107 47
α Serpentis	15 37 25·39	+0·07	83 8	ζ Cygni	21 7 1·28	+0·06	60 21
ε Serpentis	15 43 53·38	....	85 6	α Equulei	21 8 52·11	....	85 20
γ Serpentis	15 50 2·11	....	73 53	ι Capricorni	21 14 30·11	....	107 26
β¹ Scorpii	15 57 21·53	+0·02	109 25	β Aquarii	21 24 14·32	+0·04	96 11
δ Ophiuchi	16 7 3·81	+0·05	93 20	ξ Aquarii	21 30 20·91	....	98 28
γ Herculis	16 15 47·39	....	70 31	ε Pegasi	21 37 21·52	0·00	80 46
Antares	16 20 53·33	−0·01	116 7	δ Capricorni	21 39 21·87	....	106 45
λ Ophiuchi	16 23 54·32	....	87 42	16 Pegasi	21 46 44·34	0·00	64 41
ζ Ophiuchi	16 29 30·47	....	100 17	α Aquarii	21 58 38·57	+0·04	91 0
ζ Herculis	16 36 2·80	0·00	58 9	ι Pegasi	22 0 32·49	....	65 20
κ Ophiuchi	16 51 5·40	−0·03	80 24	θ Aquarii	22 9 29·75	−0·02	98 28
ε Herculis	16 54 58·35	....	58 52	γ Aquarii	22 14 28·53	....	92 5
η Ophiuchi	17 2 21·52	....	105 33	π Aquarii	22 23 17·30	....	101 23
α Herculis	17 8 18·61	+0·06	75 27	η Aquarii	22 28 12·72	0·00	90 50
θ Ophiuchi	17 13 28·49	+0·02	114 51	ζ Pegasi	22 34 31·77	+0·06	79 54
ν Ophiuchi	17 19 37·15	....	85 44	μ Pegasi	22 43 17·79	....	66 8
α Ophiuchi	17 28 28·95	+0·03	77 20	λ Aquarii	22 45 21·55	....	98 20
β Ophiuchi	17 36 36·39	....	85 22	Fomalhaut	22 49 57·71	+0·04	120 21
μ Herculis	17 41 1·18	+0·04	62 12	α Pegasi	22 57 50·32	+0·03	75 32
89 Herculis	17 49 48·79	....	63 55	γ Piscium	23 9 57·58	+0·01	87 29
72 Ophiuchi	18 0 45·59	....	80 27	κ Piscium	23 19 48·40	−0·01	89 30
μ Sagittarii	18 5 26·99	+0·02	111 6	ι Piscium	23 32 48·12	+0·01	85 8
η Serpentis	18 14 7·03	....	92 56	δ Sculptoris	23 41 40·85	+0·04	118 54
δ Ursæ Minoris	18 17 11·18	+0·11	3 24	ω Piscium	23 52 10·50	0·00	63 54
λ Sagittarii	18 19 23·48	....	115 30	2 Ceti	23 56 36·95	....	108 7

The Mean Right Ascensions are converted into Apparent for any day of observation, by the application of the reductions of mean to apparent places taken from the Nautical Almanac. The Correction of the Clock is determined

from the observed transits of the stars in the foregoing Table (excepting the close Polar stars), the corrections of the instrument being previously applied, compared with the Apparent Right Ascensions computed.

The Corrections of the Clock thus determined are contained in the column entitled "Correction of Clock observed."

The sign + prefixed to the Correction of the Clock denotes that the clock is slow; the sign − that it is fast.

On account partly of the variability at times of the Clock-rate, and still more frequently of swerving in the azimuthal position of the Transit Instrument as produced by changes of temperature acting on its supporting stone piers during the observations, the "Adopted Clock Corrections" have been generally obtained by graphical projection, and the stars of each night have been used much more by themselves than with reference to those of preceding and following nights.

At the same time, to afford a tabular view, in the usual manner, of the march of the Clock, its daily errors at 0^h Sidereal Time, as given more or less approximately by the curves, are contained in the following Table.

TABLE III.

CORRECTION FOR TRANSIT CLOCK AT 0^h SIDEREAL TIME.

Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.
1861.	s.	1861.	s.	1861.	s.	1861.	s.	1861.	s.
Jan. 2	+ 9·50	April 4	Jones' large controlled clock fixed in position of old Transit Clock, and placed under control of the old Transit Clock now inaudible in a closet	July 3	+39·81	Sept. 26	+34·83	Nov. 15	+41·63
3	+ 14·08	May	All the clocks undergoing repairs	6	+40·56	29	+38·10	[illegible]	+35·05
7	+ 30·83	June 13	+ 49·10	8	+39·83	Oct. 1	+40·63	[illegible]	+34·16
	Observations ruined by bad rate of clock. Altered the compensation	14	+ 49·00	10	+39·29	2	+41·91	26	+31·39
Feb. 4	+ 53·87	15	+ 49·00	18	+34·00	3	+43·16	27	+30·74
5	+ 55·08	16	+ 48·75	[illegible]	+31·38	5	+45·70	Dec. 5	+25·58
6	+ 57·55	17	+ 46·00	26	+30·83	9	+50·40	9	+22·05
24	+142·16	19	+ 44·94	27	+30·55	13	+55·38	10	+21·32
25	+ 44·04	24	+ 42·74	28	+30·20	15	+58·29	14	+18·94
26	+ 45·85	25	+ 42·19	Aug. 5	+28·95	16	+59·60	16	+18·85
27	+ 48·42	July 1	+ 40·44	8	+28·85	17	+60·61	17	+21·50
28	+ 51·23	2	+ 40·17	9	+28·72	18	+61·12	[illegible]	+23·56
March 6	Transit Clock removed from its old pier, & placed on a new pier preparatory to being used as a controlling clock only			Sept. 11	−23·34	24	+58·30	20	+23·00
				12	−23·45	25	+57·92	21	+22·82
				16	−24·00	28	+56·58	[illegible]	+22·26
					Contact-springs altered	29	+56·03	24	+21·85
				18	+26·76	30	+55·39	25	+21·70
				20	+28·97	Nov. 5	+50·78	26	+21·30
						6	+50·06	27	+21·00
						8	+48·17	28	+20·65
						9	+47·38	30	+19·78
						14	+42·54	31	+19·30

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ROYAL OBSERVATORY, EDINBURGH.

OBSERVATIONS

MADE WITH

THE MURAL CIRCLE,

AND

CALCULATION

OF

APPARENT NORTH POLAR DISTANCES.

1861.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1861.
1861.				h m s	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
Jan. 3	...	Nadir ...	...	6 0 0	54 0	2 50·1	55·7	0·500	...	33·6	32·0	...	...	...	...	...
	...	Nadir ...	...	...	54 0	2 59·2	65·8	0·500	...	...	...	...	...	...	...	...
	2060	(a) ...	7·0	6 16 32	285 15	4 23·3	36·3	0·262	29·96	...	32·0	...	...	6	+51 16 28·4	+ 1·1
	2184	...	7·0	6 33 29	273 25	2 57·7	69·3	0·500	29·96	...	32·0	...	...	6	+39 25 8·0	+ 0·8
	2292	...	9·0	6 53 26	279 10	0 12·1	25·3	0·500	29·96	...	32·0	...	...	5	+45 7 23·2	− 0·3
	2410	δ Geminorum ...	...	7 11 58	267 45	0 22·7	34·9	0·720	29·96	...	32·0	...	...	6	+33 42 38·8	− 1·4
	2463	...	9·0	7 20 10	262 5	4 48·9	61·9	0·583	29·96	...	32·0	...	...	5	+28 7 1·8	− 2·1
	2488	(b) ...	8·0	7 26 34	243 30	1 3·9	17·4	0·747	29·96	...	32·0	...	...	6	+ 9 28 20·1	− 3·0
	...	Nadir ...	...	7 40 0	54 0	2 50·7	56·2	0·500	...	33·0	32·0	...	...	...	...	...
	...	Nadir ...	...	...	54 0	2 59·7	65·5	0·500	...	...	...	...	...	...	...	...
Jan. 7	...	Nadir ...	...	7 9 0	54 0	2 49·7	55·5	0·500	...	29·3	23·6	...	...	...	...	...
	...	Nadir ...	...	...	54 0	2 60·4	65·2	0·500	...	...	...	...	...	...	...	...
	2463	...	7·0	7 20 7	262 5	4 54·1	64·7	0·500	29·90	...	23·5	1, N.	9	5	+28 7 3·5	− 2·1
	2488	...	...	7 26 33	243 30	1 6·9	19·1	0·690	29·90	...	23·5	...	...	6	+ 9 28 20·9	− 2·5
	2586	...	7·0	7 41 26	261 25	2 6·2	16·6	0·661	29·90	...	23·5	...	...	6	+27 24 19·7	− 3·7
	2683	...	...	7 56 49	270 45	0 34·6	45·4	0·639	29·90	...	23·5	...	...	7	+36 42 48·1	− 4·4
	2737	...	7·0	8 3 16	274 55	2 9·8	22·2	0·500	29·90	...	23·5	...	...	6	+40 54 20·5	− 4·5
	2761	...	...	8 6 43	276 30	1 20·1	31·6	0·660	29·90	...	23·5	...	...	5	+42 28 34·7	− 4·5
	2867	...	7·0	8 25 12	279 25	2 8·9	20·9	0·600	29·90	...	23·5	...	...	7	+45 24 22·4	− 5·2
	...	Nadir ...	...	8 40 0	54 0	2 53·0	56·4	0·500	...	25·0	23·3	...	...	...	...	...
	...	Nadir ...	...	...	54 0	2 60·6	64·0	0·500	...	...	...	...	...	...	...	...
Jan. 16	...	Nadir ...	...	6 40 0	54 0	2 49·1	55·3	0·500	...	37·2	37·2	...	...	...	...	...
	...	Nadir ...	...	...	54 0	2 59·7	64·9	0·500	...	...	...	...	...	...	...	...
	2379	...	5·0	7 8 1	240 15	2 42·6	57·2	0·310	30·07	...	37·2	...	4	5	+ 6 14 47·2	+ 0·6
	...	Nadir ...	...	7 21 0	54 0	2 49·3	54·9	0·500	...	...	...	...	...	...	...	...
	...	Nadir ...	...	...	54 0	2 59·9	65·0	0·500	...	...	...	...	...	...	...	...
Jan. 23	...	Nadir ...	...	6 42 0	54 0	2 50·7	57·5	0·500	...	43·3	46·1	...	...	...	...	...
	...	Nadir ...	...	...	54 0	2 58·8	66·0	0·500	...	...	...	...	...	...	...	...
	2363	(c) ...	7·0	7 5 57	265 0	2 56·6	70·4	0·461	29·64	...	46·0	6, S.W.	5	5	+31 0 6·3	− 0·9
Jan. 24	...	Nadir ...	...	7 40 0	54 0	2 48·2	56·2	0·500	...	45·0	47·8	...	...	...	...	...
	...	Nadir ...	...	...	54 0	2 58·8	65·2	0·500	...	...	...	...	...	...	...	...
	2971	ι Hydræ ...	...	8 39 23	263 0	3 35·9	51·3	0·511	29·45	...	47·4	6, W.	5	6	+49 0 48·4	− 7·5
	...	Nadir ...	...	9 0 0	54 0	2 49·1	56·5	0·500	...	44·8	47·0	...	...	...	...	...
	...	Nadir ...	...	...	54 0	2 57·5	65·0	0·500	...	...	...	...	...	...	...	...
Jan. 26	...	Nadir ...	...	9 10 0	54 0	2 48·4	56·9	0·500	...	46·0	46·0	...	...	...	...	...
	...	Nadir ...	...	...	54 0	2 57·6	64·8	0·500	...	...	...	...	...	...	...	...
	3242	θ Ursæ Majoris ...	2·0	9 23 30	237 40	1 48·9	63·4	0·610	29·30	...	46·0	12, W.	9	7	+ 3 39 2·3	−11·8
	3331	(d) ι Leonis ...	3·0	9 37 55	265 30	5 0·0	15·7	0·594	29·30	...	46·0	...	...	7	+31 32 15·4	−12·0
	3420	...	...	9 53 59	257 45	3 0·7	13·1	0·600	29·30	...	45·0	...	...	4	+23 45 11·4	−13·7
	...	Nadir ...	...	10 0 0	54 0	2 48·4	54·8	0·500	...	44·7	44·5	...	...	...	...	...
	...	Nadir ...	...	...	54 0	2 59·3	65·3	0·500	...	...	...	...	...	...	...	...
Jan. 29	...	Nadir ...	...	6 25 0	54 0	2 48·1	56·4	0·500	...	46·6	47·0	...	...	...	...	...
	...	Nadir ...	...	...	54 0	2 57·6	66·3	0·500	...	...	...	...	...	...	...	...

(a) Larger star observed. (b) Stars not well defined. (c) Sky getting cloudy. (d) Wind increasing. Instrument tremulous.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1861.
1861.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Jan. 31	......	Nadir ‖	......	8 18 0	54 0	2 48·2	56·0	0·500	......	47·9	49·5	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 58·1	65·0	0·500	......	......	......	......	......	......	......	......
	2971	ι Hydræ	......	8 39 22	283 0	3 35·0	51·2	0·558	29·54	......	49·3	4, W.	9	7	+49 0 50·4	− 8·3
	3013	......	......	8 45 0	284 5	2 29·8	45·0	0·573	29·54	......	49·2	......	......	7	+50 4 45·2	− 8·5
	3053	......	......	8 50 9	280 0	4 2·8	17·2	0·568	29·54	......	49·2	......	......	6	+46 1 17·9	− 8·8
	3133	......	......	9 4 54	285 30	2 57·0	72·0	0·710	29·54	......	49·2	7, W.	5	6	+51 30 16·2	− 9·4
	3242	θ Ursæ Majoris	......	9 23 30	237 40	1 46·9	62·1	0·550	29·54	......	49·2	......	......	8	+ 3 38 59·0	−10·9
	3336	......	......	9 38 47	282 35	3 18·9	34·9	0·570	29·54	......	49·0	......	......	8	+48 35 34·6	−11·1
	......	Nadir ‖	......	10 7 0	54 0	2 47·8	55·6	0·500	......	48·8	49·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 58·1	66·7	0·500	......	......	......	......	......	......	......	......
Feb. 1	......	Nadir ‖	......	7 20 0	54 0	2 47·8	55·8	0·500	......	45·9	39·4	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 57·5	66·0	0·500	......	......	......	......	......	......	......	......
	2586	......	7·0	7 41 17	261 25	2 3·1	16·1	0·640	30·06	......	39·2	3, W.	9	7	+27 24 18·2	− 2·9
	2867	......	......	8 25 3	279 25	2 12·9	27·9	0·500	30·06	......	38·3	......	......	6	+45 24 26·0	− 7·5
	2988	......	7·5	8 42 39	234 30	2 5·7	19·1	0·707	30·06	......	38·0	......	......	7	+ 0 29 21·1	− 6·0
	3083	......	......	8 55 27	238 35	2 41·0	55·0	0·672	30·07	......	38·0	......	......	8	+ 4 34 56·0	− 7·7
	3242	θ Ursæ Majoris	......	9 23 30	237 40	1 43·9	58·9	0·680	30·08	......	37·7	......	......	7	+ 3 38 59·5	−10·7
	3331	ε Leonis	3·0	9 37 54	265 30	4 58·0	71·4	0·620	30·08	......	37·6	......	......	6	+31 32 12·8	−12·1
	3418	(a)	10·0	......	280 20	2 16·9	31·3	0·500	30·08	......	37·1	......	......	3	+46 19 29·7	−12·0
	......	Nadir ‖	......	10 0 0	54 0	2 47·8	55·6	0·500	......	38·2	37·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 59·7	66·3	0·500	......	......	......	......	......	......	......	......
Feb. 5	......	Nadir ‖	......	7 25 0	54 0	2 48·4	55·8	0·500	......	44·0	48·2	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 58·0	65·3	0·500	......	......	......	......	......	......	......	......
	3242	θ Ursæ Majoris	......	9 23 28	237 40	1 45·4	60·0	0·612	28·69	......	48·1	7, W.	5	6	+ 3 38 59·1	−10·0
	3325	......	6·5	9 36 50	226 5	2 1·1	14·7	0·607	28·70	......	46·8	......	......	6	− 7 55 46·0	−10·6
	3375	(b)	7·5	9 45 12	254 20	1 51·4	66·1	0·600	28·70	......	46·2	......	......	7	+20 19 6·0	−12·5
	3427	(c)	10·0	9 55 47	256 40	1 1·1	16·5	0·500	28·70	......	46·1	......	......	3	+22 38 13·5	−13·4
	3484	......	7·0	10 6 5	257 50	3 10·8	25·5	0·576	28·70	......	46·0	......	......	5	+23 50 25·0	−14·1
	3529	......	......	10 13 10	282 50	1 38·2	55·2	0·500	28·70	......	46·0	......	......	3	+48 48 52·7	−13·0
	......	Nadir ‖	......	10 36 0	54 0	2 47·0	54·9	0·500	......	46·0	45·8	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 57·7	64·5	0·500	......	......	......	......	......	......	......	......
Feb. 6	......	Nadir ‖	......	7 33 0	54 0	2 48·8	55·8	0·500	......	43·3	40·7	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 58·0	66·4	0·500	......	......	......	......	......	......	......	......
	2683	......	......	7 56 38	270 45	0 34·0	49·0	0·750	28·72	......	40·2	6, W.	10	5	+36 42 53·7	− 5·1
	2737	......	......	8 3 5	274 55	2 6·0	22·0	0·751	28·72	......	40·0	......	......	7	+40 54 26·3	− 6·1
	2761	......	7·0	8 6 32	276 30	1 24·8	38·8	0·572	28·72	......	40·0	......	......	7	+42 28 39·3	− 6·4
	2867	......	......	8 25 1	279 25	2 17·8	33·2	0·449	28·72	......	40·0	......	......	6	+45 24 29·6	− 7·8
	2882	......	......	8 27 45	229 30	5 3·6	18·4	0·500	28·72	......	39·8	......	......	6	− 4 27 45·7	− 2·8
	2791	ι Hydræ	......	8 39 20	283 0	3 35·8	51·2	0·641	28·72	......	39·8	......	......	7	+49 0 53·1	− 8·8
	3053	......	......	8 50 7	280 0	3 59·5	73·6	0·761	28·69	......	39·5	12, W.	10	6	+46 1 19·4	− 9·2
	3083	......	......	8 55 25	238 35	2 44·0	58·6	0·560	28·69	......	39·4	......	......	7	+ 4 34 56·2	− 6·8
	3133	......	......	......	285 30	3 6·4	22·0	0·430	28·69	......	39·4	20, W.	......	4	+51 30 18·2	−10·0
	3157	......	......	9 9 44	229 35	3 34·2	47·8	0·577	28·69	......	39·3	......	......	6	− 4 24 13·8	− 7·6
	......	(c) Nadir ‖	......	10 23 0	54 0	2 48·6	55·9	0·500	......	40·7	39·2	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 58·4	66·0	0·500	......	......	......	......	......	......	......	......
Feb. 7	......	Nadir ‖	......	7 26 0	54 0	2 49·1	57·2	0·500	......	41·8	38·2	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 55·0	65·0	0·500	......	......	......	......	......	......	......	......

(a) Scarcely visible. (b) Following of two stars in field. (c) Scarcely seen at time of transit. (d) Mercury undulating so much in consequence of the high wind as to render the observation of the Nadir Point very imperfect.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1861.
1861.				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
Feb. 7	2586	......	......	7 41 14	261 25	2 7·7	21·9	0·530	29·21	......	38·2	3, W.	10	6	+27 24 20·0	− 2·6
	2737	......	......	8 3 4	274 55	2 5·7	21·9	0·750	29·21	......	38·1	......	......	5	+40 54 25·9	− 6·1
	2882	......	......	8 27 43	229 30	5 2·1	15·6	0·631	29·21	......	37·9	......	......	6	− 4 27 44·5	− 2·6
	2988	......	7·0	8 42 36	234 30	2 6·4	19·4	0·640	29·21	......	37·9	......	......	7	+ 0 29 19·5	− 4·9
	3053	......	......	8 50 7	260 0	4 3·0	16·0	0·637	29·21	......	37·3	......	......	6	+46 1 18·5	− 9·3
	3157	......	......	9 9 44	229 35	3 33·6	47·0	0·606	29·26	......	37·5	......	......	6	− 4 24 13·0	− 7·4
	3242	θ Ursæ Majoris	......	9 23 26	237 40	1 46·7	61·7	0·571	29·26	......	37·5	......	......	8	+ 3 38 59·7	− 9·6
	3325	......	......	9 36 49	226 5	2 4·6	19·5	0·480	29·26	......	37·4	......	......	7	− 7 55 45·1	−10·1
	3418	......	9·5	9 53 33	280 20	2 16·4	31·0	0·500	29·26	......	37·3	......	......	4	+46 19 29·8	−12·5
	3138	(a)	......	9 57 24	264 15	3 39·7	53·7	0·500	29·26	......	37·3	......	......	4	+50 15 52·9	−12·5
	......	Nadir ‖|	......	10 4 0	54 0	2 49·7	56·7	0·500	......	38·0	37·2	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 59·6	65·9	0·500	......	......	......	......	......	......	......	......
July 3	......	Nadir ‖|	......	17 54 0	54 0	2 47·0	55·7	0·500	29·43	56·3	55·7	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 56·5	66·6	0·500	......	......	......	......	......	......	......	......
	6213	......	6·0	18 11 37	282 45	1 38·4	56·4	0·500	29·43	......	55·4	2. W.	7	4	+48 43 53·7	+ 1·2
July 8	......	Nadir ‖|	......	17 24 0	54 0	2 43·8	54·9	0·500	29·56	58·0	60·2	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 56·4	66·5	0·500	......	......	......	......	......	......	......	......
	6213	......	......	18 11 50	282 45	1 36·4	53·6	0·500	29·56	......	57·1	......	......	5	+48 43 51·5	+ 2·0
	6429	β Lyræ	3·0	18 44 20	256 45	2 27·6	43·4	0·510	29·56	......	57·0	......	......	7	+22 44 40·9	+ 4·3
	6574	......	6·0	19 6 3	268 35	4 57·7	74·3	0·620	29·56	......	56·9	......	......	7	+34 37 15·1	+ 5·3
	6644	b Aquilæ	......	19 17 45	278 20	0 2·7	20·1	0·610	29·56	......	56·9	......	......	6	+44 17 20·6	+ 6·1
	6729	......	......	19 31 44	284 50	3 46·8	64·7	0·547	29·56	......	56·9	0 0	9	6	+50 51 3·7	+ 7·2
	6791	......	......	19 41 44	278 35	3 38·0	54·9	0·468	29·56	......	56·9	......	......	5	+44 35 51·8	+ 7·5
	6855	......	......	19 51 20	273 50	1 54·0	71·9	0·529	29·56	......	56·9	......	......	7	+39 49 9·9	+ 7·6
	6941	......	6·5	20 4 21	269 15	0 43·7	61·7	0·962	29·56	......	56·8	......	......	8	+35 13 11·3	+ 7·7
	7006	......	......	20 14 0	253 15	2 56·9	73·3	0·503	29·56	......	56·8	......	......	7	+19 15 10·0	+ 6·2
	7086	......	......	20 25 21	234 20	3 55·6	72·0	0·522	29·56	......	56·8	......	......	6	+ 0 21 8·1	+ 4·2
	......	Nadir ‖|	......	20 34 0	54 0	2 46·9	56·1	0·500	29·56	56·9	57·9	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 56·5	65·9	0·500	......	......	......	......	......	......	......	......
Aug. 13	......	Nadir ‖|	......	19 40 0	54 0	2 49·9	60·6	0·358	29·79	59·3	54·0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 60·7	72·1	0·358	......	......	......	......	......	......	......	......
	7006	......	......	20 14 10	253 15	2 49·1	65·2	0·358	29·80	......	53·7	3, W.	10	5	+19 14 57·5	+17·2
	7086	......	0·0	20 25 30	234 20	3 44·4	59·0	0·500	29·80	......	53·6	......	......	6	+ 0 20 54·8	+17·0
	7160	......	6·5	20 32 46	279 10	3 30·4	45·6	0·384	29·80	......	53·5	......	......	8	+45 10 40·5	+17·4
	7220	κ Cephei	......	20 41 58	228 40	2 9·9	24·4	0·221	29·80	......	53·5	......	......	7	− 5 20 47·3	+16·6
	7285	......	......	20 52 47	283 0	0 14·7	32·1	0·280	29·80	......	53·4	......	......	6	+48 57 23·2	+18·1
	7336	(b) 61 Cygni	5·5	21 0 13	251 55	0 22·8	39·6	0·716	29·79	......	53·4	......	......	......	+17 52 41·3	+20·1
	7410	......	5·0	21 14 21	266 40	2 54·1	71·3	0·470	29·80	......	53·4	4, W.	......	6	+32 40 7·0	+19·2
	7590	......	......	21 40 2	273 25	1 44·3	61·9	0·719	29·80	......	53·4	......	......	7	+39 24 4·6	+20·3
	7641	......	......	21 49 47	218 10	0 2·1	18·9	0·844	29·80	......	53·0	......	......	6	−15 52 37·0	+14·6
	7708	......	......	22 0 24	228 20	3 43·4	59·7	0·600	29·80	......	53·0	......	......	5	− 5 39 2·5	+15·6
	7759	......	......	22 6 58	229 55	0 40·2	56·4	0·485	29·80	......	53·0	......	......	7	− 4 7 8·9	+15·6
	......	Nadir ‖|	......	23 4 0	54 0	2 46·9	56·1	0·500	29·79	54·0	52·7	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 58·1	67·2	0·500	......	......	......	......	......	......	......	......
Sept. 16	......	Nadir ‖|	......	21 56 0	54 0	2 47·5	57·2	0·500	29·89	54·8	51·6	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 57·1	66·1	0·500	......	......	......	......	......	......	......	......

(a) Seen rather late.   (b) Larger star observed.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan 1, 1861.
1861.				h. m. s.	° ′	″	″	revs.	inches.	°	°				° ′ ″	″
Sept. 16	68	......	7·0	0 14 28	222 55	1 56·8	72·6	0·500	29·88	......	50·0	3. W.	3	6	−11 5 52·4	+21·4
	125	......	7·0	0 25 30	219 45	2 15·2	31·6	0·500	29·88	......	49·9	......	......	5	−14 15 33·6	+20·1
	197	......	......	0 37 10	242 50	3 31·7	49·0	0·572	29·87	......	49·4	......	......	6	+ 8 50 45·8	+23·0
	......	Nadir ‖	......	1 6 0	54 0	2 46·8	56·7	0·500	29·87	49·2	49·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 58·1	67·4	0·500	......	......	......	......	......	......	......	......
Sept. 20	......	Nadir ‖	......	21 55 0	54 0	2 47·1	55·9	0·500	29·46	54·3	49·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 57·7	66·7	0·500	......	......	......	......	......	......	......	......
	7908	ζ Pegasi	......	22 31 5	279 50	2 18·0	35·0	0·500	29·46	......	49·0	1, S.	10	6	−15 49 32·1	+28·1
	8083	......	......	23 6 8	233 35	0 40·5	57·1	0·469	29·46	......	49·0	......	......	5	− 0 27 9·0	+27·7
	8138	......	......	23 14 3	228 30	2 40·5	56·3	0·558	29·46	......	49·0	......	......	5	− 5 30 6·9	+27·0
	8204 (a)	......	......	23 26 8	218 45	0 58·8	74·8	0·500	29·46	......	48·5	......	......	4	−15 16 50·2	+25·3
	8355	......	......	23 55 2	224 40	0 28·3	41·3	0·482	29·44	......	48·5	......	......	7	− 9 22 21·2	+24·3
	125	......	......	0 24 36	219 45	2 11·9	26·4	0·584	29·44	......	46·5	......	......	6	−14 15 35·5	+21·6
	......	Nadir ‖	......	0 56 0	54 0	2 46·9	55·5	0·500	29·44	51·1	49·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 58·1	67·3	0·500	......	......	......	......	......	......	......	......
Sept. 26	......	Nadir ‖	......	22 56 0	54 0	2 49·0	58·0	0·500	29·54	51·2	48·9	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 57·9	67·4	0·500	......	......	......	......	......	......	......	......
	8135	......	6·0	23 13 37	216 35	2 56·7	72·8	0·792	29·55	......	49·0	......	......	6	+12 35 15·8	+30·0
	8204	......	......	23 26 1	218 45	0 51·6	66·6	0·769	29·55	......	49·0	......	......	7	−15 16 51·2	+27·5
Oct. 1	......	Nadir ‖	......	22 44 0	54 0	2 48·7	57·2	0·500	29·46	55·0	50·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 59·0	67·2	0·500	......	......	......	......	......	......	......	......
	8024	......	......	22 55 0	233 35	3 7·7	23·1	0·500	29·46	......	50·0	......	......	6	− 0 24 42·2	+31·5
	8065	......	7·5	23 1 40	288 30	4 54·7	70·7	0·427	29·46	......	50·0	4. W.	10	4	−54 32 6·0	+28·7
	8137	......	......	23 13 31	228 45	2 12·1	26·2	0·533	29·46	......	50·0	......	......	6	− 5 15 37·4	+30·6
	8204	......	7·0	23 25 56	218 45	1 7·2	21·3	0·098	29·46	......	50·0	......	......	6	−15 16 54·5	+29·3
	8270	......	8·0	23 40 3	286 30	3 55·6	72·0	0·900	29·46	......	50·0	......	......	1	+52 31 20·2	+29·7
	26	γ Pegasi	......	0 5 28	275 30	4 18·7	34·2	0·262	29·46	......	49·0	......	......	7	+41 31 24·5	+30·2
	125	......	......	0 21 25	219 45	2 11·7	26·5	0·500	29·46	......	48·8	......	......	6	−14 15 36·5	+25·6
	177	......	......	0 33 21	281 20	2 57·3	72·4	0·402	29·46	......	48·8	......	......	7	+47 20 7·1	+29·8
	216	η Cassiopeæ	......	0 40 5	232 55	0 14·0	29·6	0·391	29·46	......	48·7	......	......	5	− 1 7 39·5	+26·0
	314	μ Cassiopeæ	......	0 58 25	235 45	0 29·3	46·9	0·700	29·45	......	48·2	......	......	6	+ 1 42 46·1	+24·9
	......	Nadir ‖	......	1 30 0	54 0	2 47·0	55·0	0·500	29·51	52·8	52·8	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 58·3	65·9	0·500	......	......	......	......	......	......	......	......
Oct. 2	......	Nadir ‖	......	22 50 0	54 0	2 47·1	56·6	0·500	29·82	54·0	49·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 59·0	67·2	0·500	......	......	......	......	......	......	......	......
	8137	......	7·0	23 13 30	228 45	2 13·1	28·9	0·500	29·82	......	49·0	......	......	5	− 5 15 36·8	+31·0
	8217	......	......	23 34 50	272 5	0 5·1	21·7	0·500	29·82	......	49·0	2, W.	9	6	+38 2 18·0	+30·7
	8298	......	......	......	213 10	0 21·1	36·4	0·500	29·82	......	49·0	......	......	7	−20 52 28·9	+28·0
	8338	......	......	23 53 0	228 35	0 39·8	55·2	0·404	29·82	......	49·0	......	......	7	− 5 27 12·8	+29·0
	68	......	......	0 13 21	222 55	1 56·6	72·1	0·328	29·82	......	48·7	......	......	7	−11 5 58·3	+27·1
	98	......	......	0 19 38	274 40	3 34·7	51·5	0·401	29·84	......	46·7	......	......	6	+40 40 45·0	+30·1
	149	......	......	0 28 4	277 30	1 59·9	76·8	0·292	29·84	......	48·7	......	......	6	+43 29 7·3	+29·9
	228	......	6·5	0 41 40	226 30	0 37·1	52·1	0·368	29·84	......	48·6	......	......	8	− 7 32 16·8	+25·4
	298	......	......	0 56 18	224 45	1 32·6	47·8	0·352	29·84	......	48·6	......	......	6	− 9 16 21·8	+23·9
	335	......	6·5	1 1 49	226 30	2 17·7	33·3	0·397	29·85	......	48·7	......	......	7	− 7 30 35·2	+23·7
	403	......	......	1 13 3	217 50	3 4·8	20·6	0·439	29·85	......	48·7	......	......	9	−16 9 46·9	+21·4
	455	......	8·0	1 23 55	273 40	4 41·9	58·3	0·425	29·85	......	48·7	......	......	8	+39 41 52·5	+27·8

(a) Very faint. Sky getting cloudy.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1861.
1861.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Oct. 2	524	......	10·0	1 34 20	274 50	4 19·1	35·3	0·600	29·85	......	48·7	......	......	5	+40 51 34·5	+27·4
	562	......	......	......	239 10	2 30·5	47·2	0·710	29·85	......	48·7	......	......	5	+ 5 9 47·0	+21·7
	620	......	......	1 53 36	225 30	4 4·8	20·2	0·475	29·85	......	48·7	......	......	7	− 8 28 46·1	+18·4
	......	Nadir	......	2 10 0	54 0	2 48·1	56·4	0·500	29·85	50·0	48·2	......	......	......	......	......
	......	Nadir	......	......	54 0	2 59·3	68·7	0·500	......	......	......	......	......	......	......	......
Oct. 3	......	Nadir	......	23 28 0	54 0	2 48·0	57·7	0·500	29·99	53·3	49·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 55·5	64·5	0·500	......	......	......	......	......	......	......	......
	8270	......	8·5	23 40 2	286 30	4 9·0	23·9	0·500	29·99	......	49·0	0 0	10	5	+52 31 22·5	+29·8
	8364	......	......	23 57 5	232 10	4 21·7	36·7	0·272	29·99	......	49·0	......	......	7	− 1 48 33·9	+29·4
	133	......	10·0	0 25 43	270 15	3 53·6	70·0	0·670	29·99	......	48·5	......	......	4	+36 16 11·8	+30·0
	218	η Cassiopeæ	......	0 40 0	232 55	0 11·4	28·4	0·470	29·99	......	48·4	......	......	8	− 1 7 38·0	+26·6
	290	......	......	0 55 25	236 30	2 12·4	28·0	0·502	29·99	......	48·1	......	......	6	+ 2 20 23·4	+25·8
	......	Nadir	......	1 50 0	54 0	2 46·0	56·8	0·500	29·55	52·3	47·5	......	......	......	......	......
	......	Nadir	......	......	54 0	2 57·5	66·7	0·500	......	......	......	......	......	......	......	......
Oct. 9	......	Nadir	......	1 0 0	54 0	2 47·4	57·4	0·500	29·70	54·0	49·5	......	......	......	......	......
	......	Nadir	......	......	54 0	2 57·1	66·5	0·500	......	......	......	......	......	......	......	......
	403	......	......	1 12 54	217 50	3 2·3	16·1	0·477	29·70	......	49·3	5, W.	10	6	−16 9 49·0	+23·9
	457	......	6·5	1 24 52	209 15	2 7·0	21·7	0·673	29·70	......	49·2	......	......	7	−24 45 38·3	+21·5
	525	......	......	1 34 20	233 5	4 39·4	53·8	0·607	29·70	......	49·2	......	......	8	− 0 53 7·7	+23·7
	562	......	......	1 43 11	239 10	2 35·4	52·9	0·419	29·70	......	49·4	......	......	8	+ 5 9 44·7	+23·6
	620	......	......	1 53 28	225 30	4 5·7	21·1	0·376	29·70	......	49·4	......	......	7	− 8 28 47·3	+20·6
	694	......	......	2 7 19	226 10	3 20·9	36·9	0·449	29·70	......	49·8	......	......	7	− 7 49 30·0	+19·1
	834	......	......	2 35 0	264 55	1 35·0	51·3	0·417	29·70	......	50·0	7, W.	......	6	+30 53 45·3	+22·6
	......	Nadir	......	2 40 0	54 0	2 50·2	58·1	0·500	29·70	51·8	50·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 57·4	65·2	0·500	......	......	......	......	......	......	......	......
Oct. 14	......	Nadir	......	23 45 0	54 0	2 46·8	56·4	0·500	29·88	56·2	53·4	......	......	......	......	......
	......	Nadir	......	......	54 0	2 58·4	68·2	0·500	......	......	......	......	......	......	......	......
Oct. 15	......	Nadir	......	23 48 0	54 0	2 48·5	57·7	0·500	29·95	54·8	47·2	......	......	......	......	......
	......	Nadir	......	......	54 0	2 57·0	66·5	0·500	......	......	......	......	......	......	......	......
	8372	......	......	23 58 5	232 20	0 1·0	16·7	0·500	29·95	......	47·0	4, W.	10	6	− 1 42 49·0	+33·0
	48	......	8·5	0 8 40	276 50	0 9·8	25·0	0·382	29·95	......	47·0	......	......	6	+42 17 16·7	+31·3
	83	......	5·0	0 16 40	237 40	3 9·8	25·0	0·210	29·95	......	47·0	......	......	8	+ 3 40 11·8	+32·1
	218	(a) η Cassiopeæ	......	0 39 47	232 55	0 13·9	30·0	0·214	29·95	......	46·9	......	......	7	− 1 7 42·9	+30·1
	360	α Ursæ Minoris	......	1 7 24	201 25	1 21·2	38·4	0·373	29·95	......	46·6	......	......	6	−32 36 30·0	+24·4
	514	......	......	1 32 54	260 35	3 46·1	60·7	0·359	29·95	......	46·4	......	......	7	+26 35 53·5	+27·9
	645	......	......	1 57 55	264 45	4 13·7	30·1	0·571	29·95	......	46·0	......	......	8	+30 46 28·1	+26·3
	793	......	......	2 27 31	283 45	0 14·4	30·5	0·620	29·95	......	45·6	......	......	7	+49 42 30·6	+25·9
	891	......	......	2 44 23	284 0	4 22·8	36·7	0·703	29·95	......	45·4	......	......	6	+50 1 41·6	+24·8
	......	Nadir	......	3 5 0	54 0	2 50·0	57·9	0·500	29·95	46·0	45·4	......	......	......	......	......
	......	Nadir	......	......	54 0	2 56·7	66·5	0·500	......	......	......	......	......	......	......	......
Oct. 16	......	Nadir	......	23 49 0	54 0	2 48·9	57·3	0·500	30·12	52·0	46·2	......	......	......	......	......
	......	Nadir	......	......	54 0	2 59·3	68·4	0·500	......	......	......	......	......	......	......	......
	48	......	7·0	0 8 39	276 50	0 11·0	26·8	0·386	30·12	......	46·1	1, W.	10	6	+42 47 19·8	+31·3
	83	......	......	0 16 39	237 40	3 1·8	17·7	0·500	30·12	......	46·0	......	......	6	+ 3 40 11·7	+32·4
	290	......	......	0 55 9	236 30	2 4·7	21·4	0·636	30·12	......	46·0	......	......	5	+ 2 29 18·6	+29·6

(a) Small star well seen.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1861.
1861.				h. m. s.	° ′	′ ″	″	revs.	inches	°	°				° ′ ″	″
Oct. 16	357	(a)	7·0	1 4 14	258 35	4 1·9	18·3	0·500	30·12	......	45·9	....	......	5	+24 36 13·5	+29·9
	472	....	7·0	1 26 43	289 40	3 45·1	62·3	0·459	30·12	......	45·8	....	......	7	+55 40 57·5	+28·8
	547	(b)	......	1 39 42	242 45	2 31·0	48·7	0·287	30·11	......	45·8	....	......	8	+ 8 44 36·2	+26·1
	776	....	6·0	2 23 22	288 15	4 26·1	41·3	0·500	30·11	......	45·6	....	......	7	+54 16 38·6	+26·1
	822	(c)	6·5	2 32 43	247 50	4 54·7	71·0	0·450	30·11	......	45·8	....	......	6	+13 52 4·1	+21·3
	......	Nadir ‖	......	3 0 0	54 0	2 49·5	57·3	0·500	30·10	49·3	45·3	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 59·6	67·9	0·500	......	......	......	....	......	......	....	......
Oct. 17	......	Nadir ‖	......	0 14 0	54 0	2 48·2	56·9	0·500	30·02	51·0	46·2	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 57·9	66·3	0·500	......	......	......	....	......	......	....	......
	237	....	......	0 43 10	287 20	0 31·3	48·2	0·591	30·02	......	46·4	0	10	6	+53 17 47·4	+29·9
	360	α Ursæ Minoris	......	1 6 22	201 25	1 22·5	37·2	0·366	30·02	......	46·6	....	......	7	−32 36 31·7	+25·2
	457	....	6·5	1 21 40	209 15	2 15·5	29·3	0·250	30·02	......	46·2	....	......	7	−24 45 42·3	+24·1
	588	....	......	1 48 28	226 0	3 21·7	37·0	0·600	30·01	......	46·4	....	......	7	− 7 59 25·5	+23·8
	694	....	......	2 7 10	226 10	3 20·3	36·2	0·390	30·01	......	46·1	....	......	8	− 7 49 32·6	+21·6
	793	....	......	2 27 30	283 45	0 10·8	29·9	0·241	30·01	......	46·1	....	......	8	+49 42 18·2	+25·9
	920	....	......	2 49 58	268 55	0 25·2	42·9	0·790	30·01	......	46·6	....	......	7	+34 52 46·2	+22·6
	962	ι Persei	......	2 58 0	240 55	0 4·4	21·8	0·418	30·01	......	46·6	....	......	6	+ 6 52 13·2	+17·5
	985	....	6·5	3 3 19	215 15	2 6·2	21·2	0·500	30·01	......	46·5	....	......	5	−18 45 44·3	+12·8
	......	Nadir ‖	......	3 9 0	54 0	2 48·7	56·3	0·500	30·01	49·7	46·5	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 59·0	67·2	0·500	......	......	......	....	......	......	....	......
Oct. 18	......	Nadir ‖	......	2 17 0	54 0	2 47·6	55·6	0·500	29·85	51·1	49·0	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 59·0	66·8	0·500	......	......	......	....	......	......	....	......
	949	α Ceti	......	....	286 25	1 0·3	17·0	0·500	29·85	......	48·3	4, S.	5	5	+52 23 13·9	+21·2
Oct. 22	......	Nadir ‖	......	2 32 0	54 0	2 47·9	57·1	0·500	29·64	52·9	51·1	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 57·8	66·4	0·500	......	......	......	....	......	......	....	......
	891	(d)	......	2 44 21	284 0	4 29·6	46·6	0·484	29·64	......	51·0	5, E.	5	6	+50 1 43·0	+24·5
	949	α Ceti	......	2 54 5	286 25	1 4·3	21·4	0·344	29·64	......	50·7	....	......	7	+52 23 13·8	+24·1
	1055	....	......	3 15 35	268 25	1 29·9	45·3	0·513	29·64	......	50·7	....	......	6	+34 23 42·3	+20·6
	......	Nadir ‖	......	3 34 0	54 0	2 47·9	56·5	0·500	29·64	52·8	51·0	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 58·8	67·0	0·500	......	......	......	....	......	......	....	......
Oct. 25	......	Nadir ‖	......	0 30 0	54 0	2 48·6	57·7	0·500	30·06	52·0	48·2	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 58·8	67·2	0·500	......	......	......	....	......	......	....	......
	218	η Cassiopeæ	......	0 39 47	232 55	0 9·1	25·7	0·337	30·06	......	48·2	2, S.	10	6	− 1 7 45·1	+33·2
	403	....	......	1 12 48	217 50	2 58·7	73·7	0·389	30·06	......	48·0	....	......	6	−16 9 54·9	+29·4
	472	....	8·0	1 26 44	289 40	3 45·3	61·5	0·500	30·06	......	48·0	....	......	5	+55 40 58·6	+28·6
	525	....	......	1 34 14	233 5	4 39·1	55·2	0·420	30·06	......	48·0	....	......	6	− 0 53 12·7	+28·4
	588	....	......	1 48 31	226 0	3 21·7	37·3	0·474	30·06	......	48·0	....	......	7	− 7 59 29·1	+26·3
	702	....	......	2 8 41	226 15	3 23·3	39·0	0·529	30·06	......	46·7	2, S.W.	10	7	− 7 44 25·9	+23·9
	834	....	......	2 34 53	264 55	1 29·8	45·7	0·500	30·06	......	46·0	....	......	5	+30 53 41·7	+24·3
	962	ι Persei	......	2 58 9	240 55	0 4·2	21·4	0·422	30·06	......	45·6	....	......	6	+ 6 52 12·8	+19·3
	1055	....	......	3 15 36	268 25	1 31·0	46·3	0·389	30·06	......	45·6	....	......	7	+34 23 39·5	+20·7
	1166	η Tauri	......	3 38 20	266 15	3 57·2	72·2	0·464	30·06	......	45·4	....	......	8	+32 16 7·7	+18·0
	......	Nadir ‖	......	3 41 0	54 0	2 47·6	57·0	0·500	30·06	48·9	45·4	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 59·8	68·4	0·500	......	......	......	....	......	......	....	......
Oct. 28	......	Nadir ‖	......	2 32 0	54 0	2 48·4	56·8	0·500	30·05	47·8	41·0	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 59·8	67·8	0·500	......	......	......	....	......	......	....	......

(a) Larger star observed. (b) Sky getting cloudy. (c) Nebulous. (d) Foggy.

Date.	Star or other Object Observed. No. in British Assn. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dec. Jan. 1, 1861.
1861.				h. m. s.	° ′	° ′ ″	″	revs.	inches.	°	°				° ′ ″	″
Oct. 28	891	......	8.0	2 44 25	284 0	4 23.4	39.4	0.619	30.05	......	40.5	......	10	6	+50 1 40.5	+24.7
	949	(a) α Ceti	......	2 54 7	286 25	1 0.9	17.3	0.362	30.05	......	40.3	......	......	5	+52 23 10.2	+24.0
	985	......	......	3 3 24	215 15	1 59.5	73.1	0.665	30.05	......	40.0	......	......	7	−18 45 47.4	+16.2
	1055	......	7.0	3 15 37	268 25	1 27.8	42.8	0.468	30.03	......	39.7	......	......	5	+34 23 38.4	+20.9
	1101	......	......	3 26 7	258 45	1 37.7	53.9	0.540	30.03	......	39.9	......	......	6	[illegible] 24 43 50.5	+18.7
	1166	η Tauri	......	3 38 21	266 15	3 55.8	72.0	0.450	30.03	......	40.0	......	......	6	+32 16 6.5	+18.2
	......	Nadir ‖|	......	3 50 0	54 0	2 47.4	55.0	0.500	30.02	44.4	40.0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 59.9	66.7	0.500	......	......	......	......	......	......	......	......
Oct. 29	......	Nadir ‖|	......	0 56 0	54 0	2 48.9	57.1	0.500	29.79	47.0	43.4	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 58.8	67.3	0.500	......	......	......	......	......	......	......	......
	472	......	......	1 26 46	289 40	3 47.4	63.6	0.460	29.79	......	43.3	3, W.	9	6	+55 40 59.3	+28.4
	538	......	......	1 38 10	273 15	1 2.4	17.8	0.407	29.79	......	43.2	......	......	6	+39 13 11.5	+29.1
	962	ι Persei	......	2 58 11	240 50	4 58.8	74.2	0.632	29.77	......	43.7	......	......	7	+ [illegible] 52 12.4	+20.2
	1055	......	......	3 15 38	268 25	1 34.8	50.0	0.348	29.77	......	43.6	......	......	6	+34 23 41.9	+21.0
	1166	η Tauri	......	3 38 22	266 15	3 54.0	70.0	0.500	29.77	......	43.9	......	......	5	+32 16 5.7	+18.2
	......	Nadir ‖|	......	4 0 0	54 0	2 48.8	56.8	0.500	29.76	44.6	44.0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 60.0	67.6	0.500	......	......	......	......	......	......	......	......
Oct. 30	......	Nadir ‖|	......	0 54 0	54 0	2 49.8	58.0	0.500	29.58	48.0	46.2	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 59.4	67.4	0.500	......	......	......	......	......	......	......	......
	457	......	7.0	1 24 44	209 15	2 2.7	15.0	0.577	29.58	......	45.3	4, N.W.	9	6	−24 45 47.9	+29.2
	516	......	......	1 33 10	255 25	1 47.6	62.6	0.492	29.58	......	45.1	......	......	6	+21 23 57.4	+30.1
	694	......	......	2 7 16	226 10	3 15.3	29.3	0.494	29.56	......	44.9	......	......	7	−7 49 36.6	+25.6
	822	......	9.0	2 32 46	247 50	4 54.0	69.0	0.500	29.55	......	44.4	......	......	5	+13 52 3.7	+24.1
	......	Nadir ‖|	......	3 0 [illegible]	54 0	2 50.2	58.2	0.500	29.55	45.7	44.4	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 60.1	67.7	0.500	......	......	......	......	......	......	......	......
Oct. 31	......	Nadir ‖|	......	0 48 0	54 0	2 50.0	57.1	0.500	29.14	46.3	40.3	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 60.9	68.5	0.500	......	......	......	......	......	......	......	......
	360	α Ursæ Minoris	......	1 7 40	201 25	1 13.3	26.9	0.561	29.12	......	40.4	10, W.	9	6	−32 36 36.9	+30.5
	626	......	7.0	1 55 2	207 5	1 10.4	22.8	0.408	29.11	......	40.0	......	......	7	−26 56 44.8	+25.8
	764	......	......	2 21 20	281 0	2 12.2	29.0	0.383	29.11	......	40.0	......	......	7	+46 59 21.2	+26.1
	834	......	......	2 34 58	261 55	1 27.9	42.9	0.694	29.10	......	39.7	......	......	6	+30 53 43.9	+24.9
	......	Nadir ‖|	......	3 31 0	54 0	2 50.4	58.0	0.500	29.10	41.9	39.3	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 59.8	67.6	0.500	......	......	......	......	......	......	......	......
Nov. 5	......	Nadir ‖|	......	1 50 0	54 0	2 48.3	56.1	0.500	29.09	45.0	41.0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 60.2	68.2	0.500	......	......	......	......	......	......	......	......
	626	......	7.0	1 55 10	207 5	1 6.0	18.9	0.486	29.09	......	41.0	8, W.	10	6	−26 56 46.8	+27.6
	694	......	......	2 7 21	226 10	3 13.7	28.1	0.500	29.09	......	41.0	......	......	6	−7 49 37.8	+27.4
	725	......	......	2 12 24	233 10	4 52.6	65.9	0.479	29.09	......	41.0	......	9	5	−0 47 59.9	+27.1
	834	......	6.0	2 35 2	264 55	1 28.4	43.2	0.648	29.08	......	40.0	......	......	7	+30 53 43.0	+25.3
	891	......	......	2 44 32	284 0	4 29.9	45.0	0.500	29.08	......	40.0	......	......	6	+50 1 41.6	+24.4
	920	......	......	2 49 8	288 55	0 34.9	50.7	0.500	29.08	......	40.0	......	......	5	+34 52 46.0	+23.9
	962	ι Persei	4.0	2 58 17	240 55	0 5.3	21.5	0.331	29.08	......	40.0	......	......	8	+6 52 10.1	+21.7
	1055	......	......	3 15 44	268 25	1 32.7	47.3	0.430	29.08	......	40.3	......	......	7	+34 23 41.3	+21.4
	1101	......	6.5	3 26 12	258 45	1 40.3	55.7	0.500	29.08	......	40.5	......	......	5	+24 43 50.8	+19.5
	......	Nadir ‖|	......	4 30 0	54 0	2 49.0	56.4	0.500	29.08	42.1	40.0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 60.0	67.9	0.500	......	......	......	......	......	......	......	......

(a) Bad definition.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1861.
				h m s	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
1861. Nov. 6	......	Nadir	......	1 30 0	54 0	2 48.6	58.3	0.500	29.05	43.3	37.0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 60.4	68.6	0.500	......	......	......	......	......	......	......	......
	588	......	......	1 48 40	226 0	3 17.0	31.0	0.561	29.08	......	36.6	6, W.	10	5	− 7 59 33.2	+ 29.9
	645	......	6.0	1 58 4	264 45	4 14.0	26.0	0.500	29.07	......	36.0	......	......	6	+ 30 46 23.1	+ 28.7
	702	......	......	2 8 49	226 15	3 22.3	34.1	0.552	29.07	......	35.3	......	......	7	− 7 44 29.3	+ 27.5
	764	......	......	2 21 24	281 0	2 9.8	23.4	0.478	29.07	......	35.6	......	......	6	+ 16 59 19.6	+ 26.1
	814	......	......	2 35 1	264 55	1 29.6	42.9	0.610	29.07	......	35.3	......	......	5	+ 30 53 42.1	+ 25.4
	1101	......	......	3 26 13	258 45	1 45.7	60.2	0.303	29.06	......	35.0	......	......	7	+ 24 43 50.1	+ 19.6
	1166	η Tauri	......	......	266 15	3 57.8	71.4	0.500	29.05	......	35.0	......	......	5	+ 32 16 7.6	+ 18.7
	1434	......	......	4 29 37	277 45	0 22.2	36.4	0.471	29.05	......	35.0	......	......	7	+ 43 42 32.0	+ 14.3
	......	Nadir	......	4 40 0	54 0	2 49.9	58.4	0.500	29.05	35.7	35.0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 61.8	68.5	0.500	......	......	......	......	......	......	......	......
Nov. 8	......	Nadir	......	1 33 0	54 0	2 48.5	57.0	0.500	29.24	42.4	35.4	......	......	......	......	......
	......	Nadir	......	......	54 0	2 60.1	68.2	0.500	......	......	......	......	......	......	......	......
	645	......	7.0	1 58 5	264 45	4 13.4	23.2	0.500	29.24	......	38.4	15, N.	10	......	+ 30 46 21.6	+ 28.8
	764	......	......	2 21 26	281 0	2 7.9	23.7	0.509	29.24	......	38.4	......	......	5	+ 46 59 19.9	+ 26.0
	822	......	7.0	2 32 0	247 50	4 49.0	63.4	0.560	29.24	......	38.1	......	......	5	+ 13 52 0.1	+ 25.8
	891	......	8.0	2 44 35	284 0	4 36.6	52.2	0.249	29.24	......	38.0	......	......	6	+ 50 1 41.7	+ 24.3
	980	......	......	3 1 36	263 35	2 36.2	50.6	0.500	29.24	......	38.0	......	......	5	+ 29 34 46.6	+ 22.9
	1055	......	......	3 15 46	268 25	1 29.9	43.2	0.489	23.24	......	37.9	......	......	6	+ 34 23 39.5	+ 21.5
	1101	......	......	3 25 15	258 45	1 38.0	52.4	0.530	29.24	......	37.7	......	......	5	+ 24 43 50.5	+ 19.8
	1282	......	7.0	4 2 42	241 15	0 57.0	74.2	0.430	29.24	......	37.5	......	......	6	+ 7 13 5.2	+ 13.2
	1361	......	......	4 16 7	271 15	1 18.7	22.5	0.328	29.24	......	37.5	......	......	6	+ 37 13 19.2	+ 15.0
	1434	......	......	4 29 39	277 45	0 21.8	37.4	0.366	29.24	......	37.0	......	......	7	+ 43 42 30.0	+ 14.2
	1459	......	......	......	234 35	4 8.2	21.2	0.510	29.24	......	35.0	......	......	5	+ 0 36 16.4	+ 7.2
	......	Nadir	......	4 40 0	54 0	2 49.9	57.2	0.500	29.24	40.0	37.5	......	......	......	......	......
	......	Nadir	......	......	54 0	2 60.2	67.0	0.500	......	......	......	......	......	......	......	......
Nov. 15	......	Nadir	......	2 12 0	54 0	2 50.0	56.6	0.500	29.30	39.3	32.0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 60.8	68.8	0.500	......	......	......	......	......	......	......	......
	980	(a)	6.5	......	263 35	2 38.4	52.2	0.300	29.30	......	32.0	18, N.	6	5	+ 29 34 43.0	+ 23.4
	1055	......	7.5	3 17 16	268 25	1 26.8	42.1	0.550	29.30	......	32.0	......	......	6	+ 34 23 39.0	+ 21.8
	1434	......	......	4 31 10	277 45	0 20.5	35.7	0.401	29.30	......	32.0	......	......	5	+ 43 42 29.0	+ 13.9
	......	Nadir	......	5 14 0	54 0	2 50.4	57.3	0.500	29.29	36.2	32.0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 60.4	66.8	0.500	......	......	......	......	......	......	......	......
Nov. 18	......	Nadir	......	2 2 0	54 0	2 50.0	56.5	0.500	30.03	38.4	38.9	......	......	......	......	......
	......	Nadir	......	......	54 0	2 60.7	67.2	0.500	......	......	......	......	......	......	......	......
	962	(b) ι Persei	......	2 58 30	240 50	4 56.8	72.0	0.630	30.03	......	39.0	......	......	6	+ 6 52 9.7	+ 24.4
Dec. 10	......	(c) Nadir	......	6 0 0	54 0	2 49.5	58.3	0.500	29.37	42.8	44.0	10, S. by W.	7	......	......	......
	......	Nadir	......	......	54 0	2 60.0	68.0	0.500	......	......	......	......	......	......	......	......
	2238	......	6.0	6 43 23	266 10	3 56.5	69.8	0.500	29.38	......	44.3	......	......	5	+ 32 11 6.4	− 5.8
	2292	......	7.0	6 53 1	279 10	0 3.1	16.7	1.028	29.38	......	44.6	......	......	7	+ 45 7 28.2	− 5.4
	2334	......	......	7 1 4	239 55	4 33.8	47.4	0.500	29.38	......	44.7	......	......	......	+ 5 56 42.3	− 11.9
	......	Nadir	......	7 15 0	54 0	2 49.5	56.3	0.500	29.38	44.2	44.6	15, S. by W.	7	......	......	......
	......	Nadir	......	......	54 0	2 60.0	67.8	0.500	......	......	......	......	......	......	......	......

(a) Observing Clock being upwards of 6 minutes slow, the observations were taken by the old Transit Clock. (b) In consequence of the falling of a mass of snow on Micrometer A. when opening one of the top shutters, the moveable wires of the micrometer were broken, and the microscope otherwise injured. The microscope was removed to be repaired on the 23d and replaced on the 29th. (c) Observations made by Prof. Smyth.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1861.
1861.				h. m. s.	° ′	′ ″	″	revols.	inches	°	°				° ′ ″	″
Dec. 16	......	Nadir	......	3 56 0	54 0	2 49·4	55·8	0·500	29·91	47·0	46·8	......	......	......	......	......
	......	Nadir		......	54 0	2 58·4	64·8	0·500	......	......	......	......	......	......	......	......
	1318	......	6·0	4 10 19	233 45	4 53·0	65·2	0·500	29·91	......	46·6	14, W.	10	6	− 0 12 58·0	+ 19·4
	1434	......	......	4 30 9	277 45	0 19·7	32·7	0·535	29·90	......	46·5	......	......	6	+ 43 42 32·2	+ 12·3
	1626	......	......	5 8 41	249 40	1 2·4	15·6	0·790	29·90	......	46·5	......	......	7	+ 15 38 20·6	+ 8·6
	1683	......	......	5 17 22	255 40	3 38·9	51·0	0·851	29·90	......	46·0	......	......	8	+ 21 40 59·2	+ 7·0
	1730	δ Orionis	......	5 24 38	290 20	3 6·3	20·1	0·150	29·90	......	46·0	......	......	6	+ 56 20 9·4	+ 5·0
	1772	......	......	5 30 13	260 50	1 46·4	58·6	0·500	29·90	......	46·0	......	......	5	+ 26 48 56·9	+ 4·9
	1883	α Orionis	1·0	5 47 23	282 35	1 29·3	42·7	0·300	29·90	......	46·0	25, W.	......	7	+ 48 33 36·0	+ 2·4
	2022	......	......	6 9 12	279 55	4 52·5	65·9	0·377	29·90	......	46·0	......	......	5	+ 45 57 1·3	− 0·4
	2046	......	7·0	6 14 27	233 35	3 58·5	73·3	0·684	29·90	......	46·0	......	......	7	− 0 23 46·2	− 3·2
	2184	......	7·0	6 33 5	273 25	3 0·0	13·5	0·625	29·89	......	46·1	......	......	6	+ 39 25 15·4	− 4·0
	2238	......	......	6 43 17	266 10	3 55·4	69·0	0·500	29·89	......	46·3	......	......	5	+ 32 11 6·9	− 6·0
	......	Nadir	......	7 14 0	54 0	2 49·0	55·4	0·500	29·89	46·3	46·3	......	......	......	......	......
	......	Nadir	......	......	54 0	2 59·1	64·2	0·500	......	......	......	......	......	......	......	......
Dec. 17	......	Nadir	......	4 8 0	54 0	2 49·0	54·5	0·500	29·61	46·2	45·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 58·1	64·1	0·500	......	......	......	......	......	......	......	......
	1826	......	......	5 38 56	280 30	1 3·6	16·2	0·489	29·63	......	44·8	7, W.	5	6	+ 46 28 14·9	+ 3·4
	1883	α Orionis	1·0	5 47 21	282 35	1 23·8	37·4	0·500	29·63	......	44·8	......	......	7	+ 48 33 36·1	+ 2·3
	2184	......	7·0	6 33 3	273 25	3 9·4	23·0	0·266	29·63	......	41·8	......	......	6	+ 39 25 15·4	− 4·0
	......	Nadir	......	7 13 0	54 0	2 50·0	55·8	0·500	29·65	45·1	45·2	......	......	......	......	......
	......	Nadir	......	......	54 0	2 58·1	65·7	0·500	......	......	......	......	......	......	......	......
Dec. 19	......	Nadir	......	4 0 0	54 0	2 49·7	55·1	0·500	30·20	43·0	35·2	......	......	......	......	......
	......	Nadir	......	......	54 0	2 57·7	63·4	0·500	......	......	......	......	......	......	......	......
	1318	......	6·0	4 10 17	233 45	4 52·2	63·3	0·500	30·20	......	35·1	4, N.E.	10	6	− 0 12 59·5	+ 20·0
	1361	......	......	4 16 31	271 15	1 7·9	19·9	0·340	30·20	......	35·0	......	......	6	+ 37 13 14·2	+ 14·7
	1434	......	......	4 30 3	277 45	0 24·7	36·4	0·313	30·20	......	35·0	......	......	7	+ 43 42 30·3	+ 12·1
	1459	......	......	4 36 24	234 35	3 54·2	67·2	0·753	30·20	......	35·1	......	......	6	+ 0 36 10·3	+ 15·4
	1491	......	......	4 42 41	281 15	4 26·2	38·2	0·484	30·20	......	35·8	......	......	8	+ 47 16 37·0	+ 10·2
	1626	......	......	5 8 39	249 40	1 3·4	16·2	0·601	30·20	......	36·0	......	......	5	+ 15 38 18·5	+ 8·9
	1656	......	......	5 13 50	281 40	1 50·9	63·3	0·252	30·20	......	35·9	......	......	7	+ 47 38 55·4	+ 6·3
	1696	......	9·0	5 18 55	287 10	0 12·8	26·8	0·183	30·20	......	35·9	......	......	8	+ 53 7 16·4	+ 5·4
	1730	δ Orionis	2·0	5 24 35	290 20	2 56·8	70·0	0·440	30·20	......	35·8	......	......	6	+ 56 20 7·4	+ 4·5
	1826	......	......	5 38 53	280 30	0 55·0	67·4	0·750	30·20	......	35·8	......	......	7	+ 46 28 13·2	+ 3·2
	1883	α Orionis	1·0	5 47 19	282 35	1 19·8	32·7	0·569	30·20	......	35·8	......	......	8	+ 48 33 33·4	+ 2·1
	1930	(a)	9·0	5 54 31	272 15	4 38·3	51·6	0·500	30·20	......	35·7	......	......	4	+ 38 16 50·0	+ 1·2
	2022	......	......	6 9 7	279 55	4 52·4	65·0	0·333	30·20	......	35·7	......	......	6	+ 45 56 59·3	− 0·7
	2046	......	......	6 14 23	233 35	4 10·5	22·9	0·272	30·20	......	35·7	......	......	6	− 0 23 46·9	− 2·7
	2101	......	......	6 21 38	267 20	1 30·2	42·0	0·762	30·19	......	35·8	......	......	6	+ 33 18 47·9	− 2·9
	2184	......	......	6 33 1	273 25	3 5·4	19·1	0·408	30·19	......	35·8	......	......	5	+ 39 25 14·5	− 4·2
	2238	......	......	6 43 14	266 10	3 33·3	65·0	0·600	30·19	......	35·7	......	......	6	+ 32 11 6·5	− 6·1
	......	Nadir	......	7 21 0	54 0	2 51·1	55·9	0·500	30·17	38·0	36·[illegible]	......	......	......	......	......
	......	Nadir	......	......	54 0	2 60·3	65·7	0·600	......	......	......	......	......	......	......	......
Dec. 20	......	Nadir	......	4 1 0	54 0	2 50·2	55·4	0·500	30·14	41·2	37·4	......	......	......	......	......
	......	Nadir	......	......	54 0	2 59·6	64·4	0·500	......	......	......	......	......	......	......	......
	1361	......	......	4 16 32	271 15	0 56·5	68·8	0·846	30·14	......	37·7	4, W.	10	6	+ 37 13 16·7	+ 14·6
	1434	......	......	4 30 5	277 45	0 22·1	33·4	0·484	30·14	......	37·7	......	......	5	+ 43 42 32·0	+ 12·1
	1463	......	......	4 37 0	266 35	2 15·8	28·9	0·417	30·14	......	37·7	......	......	7	+ 32 34 24·4	+ 12·5

(a) Very faint.

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Date.	Star or other Object Observed. No. in British Asso.Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1861.
				h. m. s.	° ′	′ ″	″	revols.	inches	°					° ′ ″	″
1861. Dec. 20	1491	......	......	4 42 44	281 15	4 29·4	41·4	0·419	30·14	......	37·9	......	......	6	+47 16 38·2	+10·1
	1626	......	7·5	5 8 40	249 40	0 58·8	71·4	0·931	30·14	......	38·1	......	......	5	+15 38 20·2	+ 9·1
	1683	......	......	5 17 18	255 40	3 47·6	59·0	0·459	30·14	......	38·1	......	......	6	+21 40 55·9	+ 7·3
	1751	......	......	5 28 14	224 20	3 15·2	24·8	0·795	30·14	......	38·2	......	......	7	− 9 39 29·6	+ 6·5
	1813	......	......	5 37 44	221 30	4 53·9	64·1	0·637	30·14	......	38·2	......	......	8	−12 27 54·7	+ 4·7
	2022	......	......	6 9 8	279 55	4 47·4	58·4	0·588	30·12	......	38·1	......	......	7	+45 57 0·4	− 0·8
	2060	(a)	6·5	6 16 4	285 15	4 19·3	31·9	0·707	30·12	......	38·1	......	......	6	+51 16 36·7	− 1·5
	2292	......	7·5	6 52 50	279 5	5 19·6	30·4	0·500	30·12	......	38·0	......	......	7	+45 7 29·8	− 6·5
	2363	......	......	7 5 38	265 0	3 3·1	14·2	0·609	30·12	......	38·0	......	......	5	+31 0 15·9	− 9·5
	2410	δ Geminorum	......	7 11 30	267 45	0 30·4	40·9	0·851	30·12	......	38·0	......	......	6	+33 42 49·5	−10·2
	2463	......	......	7 19 43	262 5	5 7·4	20·2	0·374	30·12	......	38·0	......	......	7	+28 7 14·3	−11·9
	......	Nadir ||	......	7 27 0	54 0	2 50·0	54·8	0·500	30·12	39·0	38·0	......	......	......	......	......
	......	Nadir |||	......	......	54 0	2 60·1	65·8	0·500	......	......	......	......	......	......	......	......
Dec. 23	......	Nadir ||	......	4 44 0	54 0	2 50·9	55·0	0·500	30·17	40·1	35·1	......	......	......	......	......
	......	Nadir |||	......	......	54 0	2 61·3	65·4	0·500	......	......	......	......	......	......	......	......
	1626	......	......	5 8 41	249 40	1 9·9	22·1	0·550	30·17	......	34·8	1, S.W.	10	5	+15 38 20·0	+ 9·4
	1656	......	......	......	281 40	1 45·1	57·7	0·500	30·17	......	34·8	......	......	4	+47 38 56·0	+ 6·0
	1703	......	......	5 19 51	273 40	0 3·4	16·0	0·500	30·17	......	34·7	......	......	6	+39 37 13·7	+ 5·8
	1751	......	......	5 28 15	224 20	3 26·1	36·3	0·335	30·17	......	34·7	......	......	6	− 9 39 31·6	+ 7·2
	1813	......	......	5 37 43	221 30	4 56·5	67·7	0·172	30·17	......	34·2	......	......	6	−12 27 56·8	+ 5·4
	1883	α Orionis	1·0	5 47 20	282 35	1 27·1	39·8	0·417	30·17	......	34·2	......	......	......	+48 33 35·6	+ 1·6
	2022	......	......	6 9 8	279 55	4 51·5	62·2	0·428	30·16	......	34·0	......	......	7	+45 56 59·3	− 1·1
	2101	......	8·0	6 21 40	267 20	1 30·6	42·6	0·717	30·16	......	33·6	......	......	6	+33 18 46·3	− 2·9
	2184	......	......	6 33 2	273 25	3 5·1	17·2	0·388	30·16	......	33·3	......	......	7	+39 25 12·2	− 4·4
	2238	......	......	6 43 15	266 10	3 54·7	67·4	0·550	30·16	......	33·4	......	......	7	+32 11 6·1	− 6·2
	2292	......	......	6 53 0	279 5	5 17·9	27·6	0·523	30·16	......	33·6	......	......	5	+45 7 27·7	− 6·8
	2463	......	......	7 19 43	262 5	4 57·7	71·3	0·642	30·16	......	33·9	......	......	6	+28 7 11·8	−11·9
	......	Nadir ||	......	7 36 0	54 0	2 50·7	55·5	0·500	30·16	37·0	33·8	......	......	......	......	......
	......	Nadir |||	......	......	54 0	2 62·2	66·0	0·500	......	......	......	......	......	......		......
Dec. 26	......	Nadir ||	......	4 40 0	54 0	2 51·8	55·2	0·500	30·22	37·2	37·5	......	......	......	......	......
	......	Nadir |||	......	......	54 0	2 61·3	65·7	0·500	......	......	......	......	......	......	......	......
	1626	......	......	5 8 42	249 40	1 5·3	17·1	0·684	30·22	......	37·3	......	......	5	+15 38 18·9	+ 9·7
	1683	......	......	5 17 20	255 40	3 48·7	59·4	0·454	30·22	......	37·5	......	......	6	+21 40 55·8	+ 7·7
	1751	......	......	5 28 17	224 20	3 26·9	35·8	0·393	30·22	......	37·6	......	......	6	− 9 39 29·8	+ 7·9
	1813	......	......	5 37 45	221 30	4 59·7	69·1	0·108	30·22	......	37·5	......	......	7	−12 27 56·6	+ 6·2
	1883	α Orionis	1·0	5 47 21	282 35	1 19·0	30·4	0·750	30·22	......	37·6	......	......	7	+48 33 36·1	+ 1·3
	1930	......	10·0	5 54 33	272 15	4 39·4	50·3	0·500	30·22	......	37·5	......	......	6	+38 16 49·0	+ 0·9
	2022	......	6·0	6 9 10	279 55	4 49·5	60·6	0·509	30·22	......	37·6	......	......	6	+45 56 59·8	− 1·4
	2184	......	......	6 33 4	273 25	3 4·5	16·5	0·495	30·22	......	37·6	......	......	6	+39 25 14·5	− 4·6
	2238	......	......	6 43 16	266 10	3 52·9	64·8	0·636	30·22	......	37·6	......	......	5	+32 11 6·3	− 6·3
	2363	......	......	7 5 41	265 0	2 58·1	69·9	0·750	30·22	......	37·6	......	......	6	+31 0 14·6	− 9·7
	2488	......	......	7 26 10	243 30	1 20·8	33·7	0·527	30·22	......	37·7	......	......	5	+ 9 28 30·1	−14·3
	2522	α Canis Minoris	......	7 31 42	284 20	4 30·8	42·0	0·624	30·22	......	37·7	......	......	7	+50 21 44·5	−12·5
	......	Nadir ||	......	7 42 0	54 0	2 51·0	54·8	0·500	30·22	39·4	37·8	......	......	......	......	......
	......	Nadir |||	......	......	54 0	2 60·0	63·4	0·500	......	......	......	......	......	......	......	......
Dec. 27	......	Nadir ||	......	4 37 0	54 0	2 51·8	56·0	0·500	30·30	36·6	29·0	......	......	......	......	......
	......	Nadir |||	......	......	54 0	2 60·6	64·8	0·500	......	......	......	......	......	......	......	......
	1626	......	......	5 8 42	249 40	1 0·6	13·1	0·833	30·30	......	29·0	0	10	6	+15 38 18·6	+ 9·8

(a) Larger star observed.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Blue Sky. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist. Jan. 1, 1861.
1861.				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
Dec. 27	1656	......	......	5 13 51	281 40	1 49·5	61·8	0·361	30·30	......	29·0	......	......	......	+47 38 56·1	+ 5·6
	1696	......	......	5 18 58	287 10	0 8·0	19·8	0·500	30·30	......	29·0	......	......	5	+53 7 18·5	+ 4·1
	1769	......	......	5 29 49	236 30	4 55·3	69·5	0·500	30·30	......	29·0	......	......	7	+ 2 32 4·4	+ 7·1
	1813	......	......	5 37 45	221 30	4 54·4	65·0	0·568	30·30	......	29·0	......	......	5	−12 27 56·5	+ 6·4
	2238	......	......	6 43 17	266 10	3 58·8	70·6	0·392	30·30	......	29·0	......	......	7	+32 11 5·5	− 6·3
	2292	......	7·0	6 53 1	279 10	0 20·2	32·2	0·443	30·30	......	29·0	......	......	7	+45 7 26·8	− 7·2
	2334	......	......	7 1 3	239 55	4 33·7	45·9	0·500	30·30	......	29·0	......	......	6	+ 5 56 42·0	− 9·9
	2463	......	......	7 19 44	262 5	4 55·0	66·7	0·789	30·28	......	27·2	......	......	7	+29 7 12·5	−12·0
	2488	......	......	7 26 10	243 30	1 17·4	32·3	0·600	30·27	......	27·0	......	......	5	+ 9 28 29·9	−14·2
	2586	......	......	7 41 4	261 25	2 21·2	32·4	0·474	30·27	......	27·0	......	......	7	+27 24 31·5	−15·2
	......	Nadir	......	7 40 0	54 0	2 51·4	54·0	0·500	30·27	30·2	27·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·0	66·5	0·500	......	......	......	......	......	......	......	......
Dec. 30	......	Nadir	......	6 4 0	54 0	2 51·5	54·5	0·500	30·21	37·2	37·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 61·8	64·9	0·500	......	......	......	......	......	......	......	......
	2046	......	......	6 14 28	233 35	4 3·6	13·6	0·548	30·22	......	37·1	......	......	......	......	......
	2184	......	......	6 33 3	273 25	3 1·3	12·0	0·664	30·22	......	37·1	......	......	6	− 0 23 48·3	− 0·6
	2238	......	......	6 43 19	266 10	3 58·7	69·3	0·500	30·22	......	36·4	......	......	5	+39 25 15·2	− 4·8
	2306	......	......	6 55 40	278 50	0 18·4	28·5	0·400	30·22	......	36·4	......	......	6	+32 11 7·7	− 6·3
	2334	......	......	7 1 5	239 55	4 29·0	38·9	0·724	30·22	......	36·4	......	......	7	+44 47 24·9	− 7·9
	2379	......	......	7 7 42	240 15	2 48·0	58·9	0·661	30·22	......	36·4	......	......	7	+ 5 56 41·8	− 9·4
	2463	......	......	7 19 46	262 10	0 0·2	11·2	0·722	30·22	......	35·8	......	......	6	+ 6 15 0·0	−10·6
	2522	α Canis Minoris	......	7 31 47	284 20	4 34·1	43·8	0·456	30·22	......	35·6	......	10	6	+28 7 15·2	−12·0
	2586	......	......	7 41 5	261 25	2 23·7	34·1	0·452	30·22	......	35·0	......	......	7	+50 21 42·5	−13·1
	2683	......	......	7 56 27	270 40	5 51·5	62·9	0·500	30·22	......	35·0	......	......	8	+27 24 31·1	−15·2
	2737	......	......	8 2 54	274 55	2 20·3	31·5	0·604	30·22	......	34·0	......	......	7	+36 43 1·3	−16·5
	......	Nadir	......	8 10 0	54 0	2 52·7	55·5	0·500	30·22	35·6	33·9	......	......	6	+40 54 33·0	−16·8
	......	Nadir	......	......	54 0	2 60·0	63·2	0·500	......	......	......	......	......	......	......	......
Dec. 31	......	Nadir	......	5 0 0	54 0	2 51·1	55·4	0·500	30·09	37·1	38·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 61·4	65·4	0·500	......	......	......	......	......	......	......	......
	1751	......	6·0	5 28 19	224 20	3 21·2	30·0	0·538	30·09	......	38·3	......	......	......	......	......
	1813	......	......	5 37 48	221 30	5 6·0	9·0	0·305	30·09	......	38·3	4, W.	5	7	− 9 39 31·7	+ 8·1
	1883	α Orionis	2·0	5 47 23	282 35	1 31·4	42·6	0·283	30·09	......	38·4	......	......	9	−12 27 56·5	+ 7·4
	1930	......	......	5 54 36	272 15	4 50·9	61·0	0·170	30·09	......	38·4	......	......	8	+48 33 35·5	+ 0·8
	......	Nadir	......	7 55 0	54 0	2 52·7	56·1	0·500	30·09	38·0	38·5	......	......	7	+38 16 51·1	+ 0·7
	......	Nadir	......	......	54 0	2 60·9	64·1	0·500	......	......	......	......	......	......	......	......

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ROYAL OBSERVATORY, EDINBURGH.

Individual Observations of Mean North Polar Distances of the Stars observed at the Royal Observatory, Edinburgh, in the Year 1861, reduced to January 1, 1861.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance. January 1, 1861.
B.A.C. 26, γ Pegasi.				
Oct. 1	0·75	(2·0) (a)	h. m. 0 5	° ′ ″ 75 35 22·3
B.A.C. 48.				
Oct. 15	0·79	8·5	0 9	76 51 21·0
16	0·79	7·0		22·5
B.A.C. 68.				
Sept. 16	0·71	7·0	0 11	22 56 54·4
Oct. 2	0·75			54·2
B.A.C. 83.				
Oct. 15	0·79	5·0	0 17	37 43 21·5
16	0·79			21·7
B.A.C. 98.				
Oct. 2	0·75	(7·0)	0 20	74 44 41·9
B.A.C. 125.				
Sept. 16	0·71	7·0	0 26	19 47 8·5
20	0·72			8·3
Oct. 1	0·75			9·3
B.A.C. 133.				
Oct. 3	0·75	10·0	0 26	70 20 1·5
B.A.C. 149.				
Oct. 2	0·75	(6·0)	0 28	77 33 9·1
B.A.C. 177.				
Oct. 1	0·75	(7·0)	h. m. 0 33	° ′ ″ 81 24 15·9
B.A.C. 197.				
Sept. 16	0·71	(6·5)	0 37	42 53 54·6
B.A.C. 218, α Cassiopeæ.				
Oct. 1	0·75	(4·0)	0 41	32 55 23·2
3	0·75			24·2
15	0·79			23·0
25	0·81			23·7
B.A.C. 226.				
Oct. 2	0·75	(6·5)	0 42	26 30 37·7
B.A.C. 237.				
Oct. 17	0·79	(7·5)	0 44	87 22 12·8
B.A.C. 290.				
Oct. 3	0·75	(7·0)	0 56	36 32 28·5
16	0·79			27·6
B.A.C. 298.				
Oct. 2	0·75	(7·5)	0 57	24 46 29·4
B.A.C. 314, μ Cassiopeæ.				
Oct. 1	0·75	(5·5)	0 59	35 45 49·5
B.A.C. 335.				
Oct. 2	0·75	6·5	h. m. 1 2	° ′ ″ 26 32 17·6
B.A.C. 357.				
Oct. 16	0·79	(9·0)	1 5	56 39 47·2
B.A.C. 360, α Ursæ Minoris.				
Oct. 15	0·79	(2·0)	1 7	1 25 53·7
17	0·79			52·7
31	0·83			53·5
B.A.C. 403.				
Oct. 2	0·75	(7·5)	1 11	17 52 54·4
9	0·77			54·9
25	0·81			54·3
B.A.C. 455				
Oct. 2	0·75	8·0	1 24	73 45 45·3
B.A.C. 457.				
Oct. 9	0·77	6·5	1 26	9 16 53·3
17	0·79	6·5		51·8
30	0·83			51·3
B.A.C. 472.				
Oct. 16	0·79	8·0	1 28	89 45 29·3
25	0·81			29·7
29	0·82			30·3
B.A.C. 514.				
Oct. 15	0·79	(6·5)	1 34	60 39 27·6

(a) The Magnitudes in parenthesis are the tabular magnitudes from the British Association Catalogue.

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension	Mean North Polar Distance, January 1, 1861
B.A.C. 516.				
Oct. 30	0·83	(5·5)	h. m. 1 34	° ′ ″ 55 27 27·1
B.A.C. 524.				
Oct. 2	0·75	10·0	1 35	74 55 28·9
B.A.C. 525.				
Oct. 9	0·77	(7·0)	1 35	33 9 51·9
25	0·81			51·6
B.A.C. 538.				
Oct. 29	0·82	(6·5)	1 39	73 17 5·3
B.A.C. 547.				
Oct. 16	0·79	(6·0)	1 41	42 47 48·2
B.A.C. 562.				
Oct. 2	0·75	(6·5)	1 44	39 12 50·8
9	0·77			50·3
B.A.C. 588.				
Oct. 17	0·79	(6·5)	1 49	26 3 26·9
25	0·81			25·8
Nov. 6	0·85			25·3
B.A.C. 620.				
Oct. 2	0·75	(7·0)	1 54	25 34 0·4
9	0·77			1·5
B.A.C. 626.				
Oct. 31	0·83	7·0	1 56	7 5 48·4
Nov. 5	0·84	7·0		48·3
B.A.C. 645.				
Oct. 15	0·79		1 59	64 50 6·1
Nov. 6	0·85	6·0		3·2
8	0·85	7·0		1·8
B.A.C. 694.				
Oct. 9	0·77	(7·5)	h. m. 2 8	° ′ ″ 26 13 18·0
17	0·79			17·7
30	0·83			17·8
Nov. 5	0·84			18·5
B.A.C. 702.				
Oct. 25	0·81	(7·5)	2 9	26 18 26·8
Nov. 6	0·85			27·1
B.A.C. 725.				
Nov. 5	0·84	(8·0)	2 13	33 15 3·2
B.A.C. 764.				
Oct. 31	0·83	(7·0)	2 22	81 3 25·9
Nov. 6	0·85			24·8
6	0·85			25·0
B.A.C. 776.				
Oct. 16	0·79	6·0	2 24	88 21 3·8
B.A.C. 793.				
Oct. 15	0·79	(6·5)	2 28	33 46 42·5
17	0·79			30·3
B.A.C. 822, (a)				
Oct. 16	0·79	6·5	2 34	47 55 18·8
30	0·83			18·9
Nov. 6	0·85			17·1
B.A.C. 834.				
Oct. 9	0·77		2 36	64 57 19·2
25	0·81			18·0
31	0·83			20·2
Nov. 5	0·84	6·0		19·6
6	0·85			19·1
B.A.C. 891.				
Oct. 15	0·79		2 45	84 5 53·2
22	0·80			53·1
28	0·82			52·9
Nov. 5	0·84	8·0		51·5
8	0·85	8·0		52·2
B.A.C. 920.				
Oct. 17	0·79	(7·0)	h. m. 2 51	° ′ ″ 68 56 26·5
Nov. 5	0·84			26·9
B.A.C. 949, α Ceti.				
Oct. 18	0·79	(2·5)	2 55	86 27 30·1
22	0·80			29·2
28	0·82			28·2
B.A.C. 962, ι Persei.				
Oct. 17	0·79		2 59	40 55 14·6
25	0·81			16·0
29	0·82			16·5
Nov. 5	0·84	4·0		15·5
16	0·88			18·1
B.A.C. 980.				
Nov. 8	0·85		3 2	63 38 19·3
15	0·87	6·5		16·8
B.A.C. 985.				
Oct. 17	0·79	8·5	3 4	15 16 45·3
28	0·82			45·3
B.A.C. 1055.				
Oct. 22	0·80		3 16	68 27 19·1
25	0·81			17·3
28	0·82	7·0		16·9
29	0·82			19·8
Nov. 5	0·84			18·9
8	0·85			17·7
15	0·87	7·5		18·0
B.A.C. 1101.				
Oct. 28	0·82		3 27	58 47 13·4
Nov. 5	0·84	6·5		13·7
6	0·85			13·3
8	0·85			13·9

(a) A star in a straggling group, called a nebula in B. A. Cat.

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B.A.C. 1166, η Tauri.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Oct. 25	0·81	(3·0)	h. m. 3 39	° ′ ″ 66 19 39·7
28	0·82			39·1
29	0·82			37·7
Nov. 6	0·85			39·9

B.A.C. 1282.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Nov. 8	0·85	7·0	4 3	41 16 2·6

B.A.C. 1318.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Dec. 16	0·96	6·0	4 11	33 49 58·0
19	0·96	6·0		57·1

B.A.C. 1361.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Nov. 8	0·85	(6·0)	4 17	71 16 55·3
Dec. 19	0·96			51·7
20	0·97			53·7

B.A.C. 1434.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Nov. 6	0·85	(5·0)	4 30	77 46 18·7
8	0·85			16·7
15	0·87			16·1
Dec. 16	0·96			17·2
19	0·96			17·0
20	0·97			18·3

B.A.C. 1459.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Nov. 8	0·85	(6·5)	4 37	34 39 1·0
Dec. 19	0·96			3·1

B.A.C. 1463.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Dec. 20	0·97	(7·5)	4 37	66 37 52·1

B.A.C. 1491.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Dec. 19	0·96	(5·0)	4 43	81 20 29·4
20	0·97			30·1

B.A.C. 1626.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Dec. 16	0·96	7·5	h. m. 5 9	° ′ ″ 49 41 22·4
19	0·96			21·1
20	0·97			22·9
23	0·97			23·1
26	0·98			22·3
27	0·99			22·4

B.A.C. 1656.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Dec. 19	0·96	(6·0)	5 14	81 42 44·7
23	0·97			45·1
27	0·99			45·9

B.A.C. 1683.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Dec. 16	0·96	(6·0)	5 17	55 44 6·3
20	0·97			3·9
26	0·98			4·3

B.A.C. 1696.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Dec. 19	0·96	9·0	5 19	87 11 19·0
27	0·99			21·5

B.A.C. 1703.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Dec. 23	0·97	(7·0)	5 20	73 40 46·4

B.A.C. 1730, δ Orionis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Dec. 16	0·96	(2·0)	5 25	90 24 18·9
19	0·96			19·2

B.A.C. 1751.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Dec. 20	0·97	6·0	5 28	24 23 3·5
23	0·97			2·1
26	0·98			4·7
31	1·00			4·0

B.A.C. 1769.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Dec. 27	0·99	(6·0)	5 30	36 34 51·0

B.A.C. 1772.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Dec. 16	0·96	(6·0)	5 30	60 52 8·2

B.A.C. 1813.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Dec. 20	0·97	(6·0)	h. m. 5 38	° ′ ″ 21 34 33·5
23	0·97			32·0
26	0·98			33·1
27	0·99			33·1
31	1·00			34·5

B.A.C. 1826.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Dec. 17	0·96	(6·0)	5 39	80 31 56·3
19	0·96			56·7

B.A.C. 1863, α Orionis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Dec. 16	0·96	1·0	5 48	82 37 21·5
17	0·96	1·0		21·1
19	0·96	1·0		20·7
23	0·97	1·0		22·6
26	0·98	1·0		22·4
31	1·00	2·0		20·9

B.A.C. 1930.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Dec. 19	0·96	9·0	5 55	72 20 15·7
26	0·98	10·0		14·2
31	1·00			15·8

B.A.C. 2022.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Dec. 16	0·96		6 9	80 0 38·2
19	0·96			37·8
20	0·97			38·3
23	0·97			37·6
26	0·98	6·0		37·4

B.A.C. 2046.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Dec. 16	0·96	7·0	6 14	33 38 47·0
19	0·96			46·8
30	0·99			47·5

B.A.C. 2060.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Jan. 3	0·01	7·0	6 17	85 20 21·5
Dec. 20	0·97	6·5		26·7

B.A.C. 2101.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
Dec. 19	0·96		6 22	67 22 1·5
23	0·97	8·0		0·0

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
B.A.C. 2184.				
			h m	° ′ ″
Jan. 3	0·01	7·0	6 34	73 28 35·3
Dec. 16	0·96	7·0		36·3
17	0·96			36·0
19	0·96			36·7
23	0·97			34·4
26	0·98			36·2
30	0·99			36·7
B.A.C. 2238.				
Dec. 10	0·94	6·0	6 43	66 14 13·7
16	0·96			14·5
19	0·96			15·2
23	0·97			14·9
26	0·98			14·7
27	0·99			14·7
30	0·99			16·2
B.A.C. 2292.				
Jan. 3	0·01	9·0	6 53	79 10 60·3
Dec. 10	0·94	7·0		57·5
20	0·97	7·5		60·3
23	0·97	7·0		58·5
27	0·99			60·1
B.A.C. 2306.				
Dec. 30	0·99	(6·0)	6 56	78 50 53·6
B.A.C. 2334.				
Dec. 10	0·94	(6·0)	7 1	39 59 13·2
27	0·99			15·3
30	0·99			15·5
B.A.C. 2363.				
Jan. 23	0·06	7·0	7 6	65 3 17·1
Dec. 20	0·97			19·2
26	0·98			17·0
B.A.C. 2379.				
Jan. 16	0·04	5·0	7 8	40 17 31·4
Dec. 30	0·99			32·8
B.A.C. 2410. δ Geminorum.				
			h m	° ′ ″
Jan. 3	0·01		7 12	67 45 54·5
Dec. 20	0·97			56·1
B.A.C. 2463.				
Jan. 3	0·01	9·0	7 20	52 10 8·8
7	0·02	7·0		11·0
Dec. 20	0·97			11·2
23	0·97			9·1
27	0·99			11·7
30	0·99			12·3
B.A.C. 2488.				
Jan. 3	0·01	8·0	7 27	43 31 4·0
7	0·02			5·4
Dec. 26	0·98			2·7
27	0·99			2·8
B.A.C. 2522, α Canis Minoris.				
Dec. 26	0·98	(1·0)	7 32	84 25 21·4
30	0·99			19·1
B.A.C. 2586.				
Jan. 7	0·02	7·0	7 41	61 27 24·6
Feb. 1	0·08	7·0		23·0
7	0·10			24·3
Dec. 27	0·99			25·1
30	0·99			24·1
B.A.C. 2683.				
Jan. 7	0·02	(6·0)	7 57	70 46 6·3
Feb. 6	0·10			7·8
Dec. 30	0·99			6·8
B.A.C. 2737.				
Jan. 7	0·02	7·0	8 3	74 57 46·0
Feb. 6	0·10			46·3
7	0·10			46·9
Dec. 30	0·99			45·6
B.A.C. 2761.				
Jan. 7	0·02	7·0	8 7	76 32 3·2
Feb. 6	0·10			1·8
B.A.C. 2867.				
			h m	° ′ ″
Jan. 7	0·02	7·0	8 25	79 27 56·2
Feb. 1	0·08			55·9
6	0·10			56·3
B.A.C. 2882.				
Feb. 6	0·10	(7·0)	8 28	29 34 43·6
7	0·10			45·2
B.A.C. 2971, ε Hydræ.				
Jan. 24	0·06	(4·0)	8 39	83 4 24·0
31	0·08			25·0
Feb. 6	0·10			26·6
B.A.C. 2988.				
Feb. 1	0·08	7·5	8 43	34 31 52·4
7	0·10	7·0		51·9
B.A.C. 3013.				
Jan. 31	0·08	(6·0)	8 45	84 8 22·1
B.A.C. 3053.				
Jan. 31	0·08	(6·0)	8 50	80 4 45·4
Feb. 6	0·10			46·0
7	0·10			46·3
B.A.C. 3083.				
Feb. 1	0·08	(6·5)	8 55	38 37 29·9
6	0·10			30·6
B.A.C. 3133.				
Jan. 31	0·08	(6·0)	9 5	85 33 55·7
Feb. 6	0·10			56·5
B.A.C. 3157.				
Feb. 6	0·10	(7·0)	9 10	29 38 11·0
7	0·10			11·9

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
B.A.C. 3242, θ Ursæ Majoris.				
			h. m.	° ′ ″
Jan. 25	0·07	2·0	9 24	37 41 31·0
31	0·08			28·6
Feb. 1	0·08			29·4
5	0·10			29·5
7	0·10			30·6
B.A.C. 3325.				
Feb. 5	0·10	6·5	9 37	26 6 32·4
7	0·10			33·5
B.A.C. 3331, ι Leonis.				
Jan. 25	0·07	3·0	9 38	65 35 15·4
Feb. 1	0·08	3·0		14·3
B.A.C. 3336.				
Jan. 31	0·08	(5·5)	9 39	82 39 5·5
B.A.C. 3375.				
Feb. 5	0·10	7·5	9 45	54 21 51·1
B.A.C. 3418.				
Feb. 1	0·08	10·0	9 54	80 22 57·4
7	0·10	9·5		55·1
B.A.C. 3420.				
Jan. 25	0·07	(7·0)	9 54	57 47 59·8
B.A.C. 3427.				
Feb. 5	0·10	10·0	9 56	56 41 0·3
B.A.C. 3438.				
Feb. 7	0·10	(6·5)	9 58	84 19 27·3
B.A.C. 3484.				
Feb. 5	0·10	7·0	10 6	57 53 12·5

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
B.A.C. 3529.				
			h. m.	° ′ ″
Feb. 5	0·10	(6·0)	10 13	82 52 20·6
B.A.C. 6213.				
July 3	0·50	6·0	18 12	82 47 36·1
5	0·51			34·7
B.A.C. 6429, β Lyræ.				
July 8	0·51	3·0	18 45	56 47 45·8
B.A.C. 6574.				
July 8	0·51	6·0	19 7	68 40 36·3
B.A.C. 6644.				
July 8	0·51	(5·0)	19 18	78 20 58·7
B.A.C. 6729.				
July 8	0·51	(5·0)	19 32	84 54 57·2
B.A.C. 6791.				
July 8	0·51	(7·5)	19 42	78 39 31·9
B.A.C. 6855.				
July 8	0·51	(7·5)	19 52	73 52 41·5
B.A.C. 6941.				
July 8	0·51	6·5	20 5	69 16 35·8
B.A.C. 7006.				
July 8	0·51	(7·0)	20 15	53 18 12·8
Aug. 13	0·61			11·6
B.A.C. 7086.				
July 8	0·51	6·0	20 26	34 23 49·4
Aug. 13	0·61			49·0

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
B.A.C. 7150.				
			h. m.	° ′ ″
Aug. 13	0·61	(6·5)	20 33	79 14 32·5
B.A.C. 7220, η Cephei.				
Aug. 13	0·61	(3·5)	20 43	28 42 0·7
B.A.C. 7285.				
Aug. 13	0·61	(7·0)	20 53	83 1 24·4
B.A.C. 7336, 61¹ Cygni.				
Aug. 13	0·61	5·5	21 1	51 55 56·8
B.A.C. 7410.				
Aug. 13	0·61	5·0	21 15	66 43 39·8
B.A.C. 7590.				
Aug. 13	0·61	(7·5)	21 40	73 27 46·9
B.A.C. 7644.				
Aug. 13	0·61	(7·0)	21 50	18 9 58·0
B.A.C. 7708.				
Aug. 13	0·61	(5·5)	22 1	28 23 44·2
B.A.C. 7759.				
Aug. 13	0·61	(6·0)	22 7	29 55 39·4
B.A.C. 7908, ζ Pegasi.				
Sept. 20	0·72	(3·0)	22 34	79 53 36·0
B.A.C. 8024.				
Oct. 1	0·75	(6·5)	22 56	33 38 25·7
B.A.C. 8065.				
Oct. 1	0·75	7·5	23 2	88 36 31·7

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1861.
B.A.C. 8083.				
Sept. 20	0·72	(6·0)	23ʰ 6ᵐ	33° 35′ 55″·1
B.A.C. 8135.				
Sept. 26	0·73	6·0	23 14	46 38 35·4
B.A.C. 8137.				
Oct. 1	0·75	7·0	23 14	28 47 24·7
2	0·75	7·0		25·7
B.A.C. 8138.				
Sept. 20	0·72	(7·0)	23 15	28 32 51·4
B.A.C. 8204.				
Sept. 20	0·72	(7·0)	23ʰ 27ᵐ	18° 45′ 56″·2
26	0·73			57·4
Oct. 1	0·75			56·0
B.A.C. 8247.				
Oct. 2	0·75	(7·2)	23 35	72 6 10·9
B.A.C. 8270.				
Oct. 1	0·75	8·0	23 41	86 35 41·2
3	0·75	8·5		45·1
B.A.C. 8298.				
Oct. 2	0·75	(7·0)	23 45	13 10 13·8
B.A.C. 8338.				
Oct. 2	0·75	(7·0)	23ʰ 54ᵐ	28° 35′ 47″·5
B.A.C. 8355.				
Sept. 20	0·72	(6·0)	23 55	24 40 30·4
B.A.C. 8364.				
Oct. 3	0·75	(7·0)	23 58	32 14 30·5
B.A.C. 8372.				
Oct. 15	0·79	(6·5)	23 59	32 20 19·0

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MURAL CIRCLE OBSERVATIONS IN 1861.

The observations with the Mural Circle in 1861 were taken by Mr Peter Williamson, Second Assistant Astronomer, under the supervision of the Astronomer.

The subjects observed were chiefly stars remarkable for proper motion. They are designated as far as possible by the number in the British Association Catalogue, in col. 2, and by proper name or description in col. 3, assisted if necessary by notes at the foot of the page, as well as by approximate estimate of the magnitude in col. 4, and time of transit past centre of field (by an uncorrected sidereal journeyman clock, but showing fairly differences from star to star) in col. 5.

In Polar distance the star was always carefully bisected when crossing the centre of the field, either at the precise instant if its motion was steady, or in its mean path through several seconds if unsteady or undulatory, as was too often the case. Such bisection being performed by bringing the stellar image between two parallel lines about 7 seconds of space apart: the lines being illuminated in a dark field.

The same general principles of observation as in former years have been kept up with improved details described in 1860. The completion of every observation therefore in Polar distance still depends largely on the Telescope micrometer, whose numbers are a necessary addition to the readings both of the Pointer on the Limb of the Circle and of the two horizontal Microscopes A, B; all which numerical particulars are given in columns 6, 7, 8, and 9.

In columns 10 and 12, the readings of the Barometer and exterior thermometer are noted for refraction purposes: the interior thermometer being assumed to be practically the same as the exterior, for all star-observations when a thorough draught was kept up through the observing room, as was always the case during star observations. During observations for the Nadir-point, on the contrary, all shutters and windows were closed to prevent disturbance to the mercury, and then a sensible difference between the thermometers usually occurred, and is shown by the figures in the narrow column 11, compared with those in column 12.

Columns 13, 14, and 15 contain various points connected with the meteorologic and other circumstances of the observations, as they appeared to the observer at the time; and column 16 contains the reduction of the angular observations in columns 6 to 9, to the stage of "Apparent Zenith Distance South."

To this end, the readings of the Microscopes have been corrected for the error of their runs, as ascertained over 5′ spaces on the limb of the Circle, with the telescope directed first to the Zenith and then to the Nadir: also for the difference between the mean of two and the mean of six Microscopes as ascertained by examination in 1855 (see p. 76, vol. xii.); also for the Telescope micrometer readings converted into arc on the estimate of one revolution being equal to 27·704″, as ascertained by observations in the Mercury trough with the collimating eye-piece, combined with readings of all the six circumferential Microscopes. The Circle positions are then converted into Apparent Zenith Distances, by the application of a reading for the Zenith point derived from observation of the Nadir, as shown by making the bisecting wire cover its illuminated image in the Mercury trough, an observation made generally both at the beginning and conclusion of every series of star measures. The chief data of these several corrections are contained in the following Tables I., II., and III.

TABLE I.

CORRECTION FOR RUNS OF MICROSCOPES IN 1861.

Date.	Thermometer.		Runs Correction observed.			Adopted Runs Correction.	For Period.
	Interior.	Exterior.	Nadir.	Zenith.	Mean.		
1861.	° F.	° F.					
						+0·4	Jan. 1 to Jan. 16.
Feb. 4	42·8	40·4	+0·3 +0·6 +0·8 +0·2	−1·0 −1·7 −0·3 −0·6	−0·4 −0·6 +0·2 −0·2	−0·2	Jan. 23 to Feb. 28.
May 27	53·5	47·0	+1·5 +0·2	−0·3 +0·2	+0·6 +0·2	+0·4	May 27 to June 13.
						0·0	July 3 to Aug. 31.

Date.	Thermometer.		Runs Correction observed.			Adopted Runs Correction.	For Period.
	Interior.	Exterior.	Nadir.	Zenith.	Mean.		
1861.	° F.	° F.					
Sept. 12	56·7	54·0	−0·4 +0·2	−0·7 +0·3	−0·6 +0·2	−0·2	Sept. 1 to Oct. 2. (Transits observed in Aug. and Sept.)
Nov. 14	42·0	41·0	+0·5 +0·9 +0·5	+0·1 −0·3 −0·1	+0·3 +0·3 +0·2	+0·3	Oct. 3 to
Nov. 29	48·2	53·0	+0·8 +1·6	+0·1 −1·2	+0·4 +0·2	+0·3	Dec. 31.

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TABLE II.

CORRECTION TO REDUCE THE MEAN OF THE TWO HORIZONTAL, TO THE MEAN OF THE WHOLE SIX, MICROSCOPES FOR THE YEAR 1861.

Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.
0° & 180°	+1″·0	30° & 210°	+0″·2	60° & 240°	+0″·5	90° & 270°	+2″·4	120° & 300°	+3″·1	150° & 330°	+2″·4
1 181	+0·9	31 211	+0·2	61 241	+0·6	91 271	+2·4	121 301	+3·1	151 331	+2·4
2 182	+0·8	32 212	+0·1	62 242	+0·7	92 272	+2·5	122 302	+3·0	152 332	+2·3
3 183	+0·8	33 213	+0·1	63 243	+0·7	93 273	+2·5	123 303	+3·0	153 333	+2·3
4 184	+0·7	34 214	0·0	64 244	+0·8	94 274	+2·6	124 304	+2·9	154 334	+2·2
5 185	+0·6	35 215	0·0	65 245	+0·9	95 275	+2·6	125 305	+2·9	155 335	+2·2
6 186	+0·6	36 216	0·0	66 246	+0·9	96 276	+2·6	126 306	+2·9	156 336	+2·1
7 187	+0·6	37 217	+0·1	67 247	+1·0	97 277	+2·7	127 307	+2·9	157 337	+2·1
8 188	+0·5	38 218	+0·1	68 248	+1·0	98 278	+2·7	128 308	+2·8	158 338	+2·0
9 189	+0·5	39 219	+0·2	69 249	+1·1	99 279	+2·8	129 309	+2·8	159 339	+2·0
10 190	+0·5	40 220	+0·2	70 250	+1·1	100 280	+2·8	130 310	+2·8	160 340	+1·9
11 191	+0·4	41 221	+0·2	71 251	+1·2	101 281	+2·9	131 311	+2·8	161 341	+1·9
12 192	+0·4	42 222	+0·2	72 252	+1·2	102 282	+2·9	132 312	+2·8	162 342	+1·9
13 193	+0·3	43 223	+0·1	73 253	+1·3	103 283	+3·0	133 313	+2·7	163 343	+1·8
14 194	+0·3	44 224	+0·1	74 254	+1·3	104 284	+3·0	134 314	+2·7	164 344	+1·8
15 195	+0·2	45 225	+0·1	75 255	+1·4	105 285	+3·1	135 315	+2·7	165 345	+1·8
16 196	+0·2	46 226	+0·2	76 256	+1·5	106 286	+3·1	136 316	+2·7	166 346	+1·7
17 197	+0·2	47 227	+0·2	77 257	+1·6	107 287	+3·2	137 317	+2·7	167 347	+1·6
18 198	+0·2	48 228	+0·3	78 258	+1·7	108 288	+3·2	138 318	+2·8	168 348	+1·6
19 199	+0·2	49 229	+0·3	79 259	+1·8	109 289	+3·3	139 319	+2·8	169 349	+1·5
20 200	+0·2	50 230	+0·4	80 260	+1·9	110 290	+3·3	140 320	+2·8	170 350	+1·4
21 201	+0·2	51 231	+0·4	81 261	+1·9	111 291	+3·3	141 321	+2·8	171 351	+1·4
22 202	+0·2	52 232	+0·3	82 262	+2·0	112 292	+3·3	142 322	+2·8	172 352	+1·3
23 203	+0·2	53 233	+0·3	83 263	+2·0	113 293	+3·4	143 323	+2·7	173 353	+1·3
24 204	+0·2	54 234	+0·2	84 264	+2·1	114 294	+3·4	144 324	+2·7	174 354	+1·2
25 205	+0·2	55 235	+0·2	85 265	+2·1	115 295	+3·4	145 325	+2·7	175 355	+1·2
26 206	+0·2	56 236	+0·3	86 266	+2·2	116 296	+3·3	146 326	+2·6	176 356	+1·2
27 207	+0·2	57 237	+0·3	87 267	+2·2	117 297	+3·3	147 327	+2·6	177 357	+1·1
28 208	+0·2	58 238	+0·4	88 268	+2·3	118 298	+3·2	148 328	+2·5	178 358	+1·1
29 209	+0·2	59 239	+0·4	89 269	+2·3	119 299	+3·2	149 329	+2·5	179 359	+1·0

TABLE III.

NADIR AND ZENITH POINTS ON MURAL CIRCLE IN 1861.

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.	Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1861. Jan 3	33°·3	54° 3′ 12″·0 12·4	234° 3′ 12″·2	12″·2	1861. Sept. 26	51°·2	54° 3′ 12″·0	234° 3′ 12″·0	11″·8
7	27·2	3 12·1 12·9	12·5	12·2	Oct. 1	53·9	12·0 10·8	11·4	11·6
16	37·2	11·6 11·6	11·6	12·0	2	52·0	11·4 12·1	11·8	11·8
23	43·3	12·2	12·2	12·0	3	52·8	10·8 11·0	10·9	11·3
24	44·9	11·1 11·0	11·0	11·2	9	52·9	11·4 12·0	11·7	11·7
25	45·4	10·9 11·0	11·0	11·0	15	50·4	11·4 12·6	12·0	12·0
31	48·4	10·8 11·0	10·9	11·0	16	50·6	12·8 12·9	12·8	12·5
Feb. 1	42·0	10·8 11·4	11·1	11·0	17	50·4	11·6 12·1	11·8	12·0
5	45·0	10·0 10·8	10·4	10·8	18	51·1	11·6	11·6	11·8
6	12·0	11·2 11·2	11·2	11·0	22	52·8	11·6 11·8	11·7	11·8
7	39·9	11·4 12·0	11·7	11·3	25	50·4	12·4 12·5	12·4	12·2
July 3	56·3	10·6	10·6	10·5	28	45·9	12·5 11·6	12·0	12·2
8	57·4	10·4 10·0	10·2	10·4	29	46·8	12·3 12·6	12·4	12·5
Aug. 13	56·6	11·0 11·2	11·1	11·0	30	46·8	13·0 13·4	13·2	13·0
Sept. 16	52·0	11·0 11·3	11·2	11·0	31	47·2	13·0 13·4	13·2	13·0
20	52·8	10·8 11·0	10·9	11·0	Nov. 5	43·6	12·5 12·6	12·6	13·0

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Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.	Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1861.					1861.				
Nov. 6	39·5	54° 3′ 12″·8 13·9	234° 3′ 13″·4	13″·2	Dec. 19	40·0	54° 3′ 10″·8 12·6	234° 3′ 11″·7	11″·7
8	41·2	12·8 12·9	12·8	13·0	20	40·1	11·8 12·0	11·9	11·9
15	37·8	13·4 13·0	13·2	13·0	23	38·6	12·9 12·4	12·6	12·5
18	38·4	12·9	12·9	13·0	26	38·3	12·8 11·6	12·2	12·5
Dec. 10	43·5	13·2 12·7	13·0	13·0	27	33·4	12·6 13·0	12·8	12·5
16	46·6	11·4 11·2	11·3	11·5	30	36·4	12·5 12·2	12·4	12·5
17	45·6	10·8 11·7	11·2	11·5	31	37·6	12·6 12·5	12·6	12·5

For the remaining reductions, the refractions have been computed by Bessel's Table, as represented in the Rev. R. Sheepshank's compendious forms; the Latitude of the Observatory has been assumed as in former years $= 55° 57' 23''\cdot 2$; and the *Apparent* N. Polar Distances on the day of observation have been converted into *Mean* North Polar Distances for the beginning of the year of observation, by applying the corrections for precession, nutation, aberration, and proper motions, taken from the elements and subsidiary tables given in the Nautical Almanac and the British Association Catalogue; and whose sum is represented in the last column of each observation-page. The individual results for magnitude and place of each star are collected on pp. 113 to 118.

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ROYAL OBSERVATORY, EDINBURGH.

CATALOGUE

OF

THE MEAN PLACES OF ALL STARS

OBSERVED WITH

EITHER THE TRANSIT INSTRUMENT OR MURAL CIRCLE,

DURING

THE YEAR, AND

REDUCED TO JANUARY 1,

1861.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
4	α Andromedæ	(1·0)	(a)	0 1 12·47	0·76	61 41 ...	......	4	......
26	γ Pegasi	(2·0)	......	0 6 4·90	0·76	75 35 22·3	0·75	4	1
48	......	......	7·8	0 9 ...	......	76 51 21·8	0·79	......	2
68	......	......	7·0	0 14 ...	......	22 56 54·3	0·73	......	2
83	......	......	5·0	0 17 ...	......	37 43 24·6	0·79	......	2
98	......	......	(7·0)	0 20 ...	......	74 44 41·9	0·75	......	1
112	12 Ceti	(6·0)	......	0 22 56·75	0·78	94 43 ...	......	4	......
125	......	......	7·0	0 26 ...	......	19 47 6·7	0·74	......	3
133	......	......	10·0	0 26 ...	......	70 20 1·5	0·75	......	1
149	......	......	(6·0)	0 28 ...	......	77 33 9·1	0·75	......	1
177	......	......	(7·0)	0 33 ...	......	81 24 15·9	0·75	......	1
197	......	......	(6·5)	0 37 ...	......	42 53 54·6	0·71	......	1
218	η Cassiopeæ	......	(4·0)	0 41 ...	......	32 55 23·5	0·78	......	4
228	......	......	6·5	0 42 ...	......	26 30 37·7	0·75	......	1
237	......	......	(7·5)	0 44 ...	......	87 22 12·8	0·79	......	1
268	ε Piscium	(4·0)	......	0 55 43·87	0·79	81 51 ...	......	3	......
290	......	......	(7·0)	0 56 ...	......	36 32 28·0	0·77	......	2
298	......	......	(7·5)	0 57 ...	......	24 46 29·4	0·75	......	1
314	μ Cassiopeæ	......	(5·5)	0 59 ...	......	35 45 49·5	0·76	......	1
335	......	......	6·5	1 2 ...	......	26 32 17·6	0·75	......	1
357	......	......	(9·0)	1 5 ...	......	58 39 47·2	0·79	......	1
360	α Ursæ Minoris	......	(2·0)	1 7 ...	......	1 25 53·3	0·80	......	3
376	......	7·0	......	1 8 28·04	0·81	17 51 ...	......	1	......
403	......	7·5	......	1 13 42·34	0·81	17 52 54·5	0·78	1	3
420	θ¹ Ceti	(3·0)	......	1 17 4·46	0·80	98 54 ...	......	6	......
453	π Piscium	(4·0)	......	1 24 2·08	0·80	75 22 ...	......	8	......
455	......	......	8·0	1 24 ...	......	73 45 45·3	0·75	......	1
457	......	......	6·5	1 26 ...	......	9 16 52·1	0·80	......	3
472	......	7·0	8·0	1 27 39·03	0·84	89 45 29·7	0·81	1	3
482	......	6·0	......	1 29 4·01	0·83	32 45 ...	......	2	......
514	......	......	(6·5)	1 34 ...	......	60 39 27·6	0·79	......	1
516	......	5·7	(5·5)	1 34 2·08	0·83	55 27 27·1	0·83	3	1
518	ν Piscium	(5·0)	......	1 34 12·02	0·90	85 13 ...	......	2	......
524	......	......	10·0	1 35 ...	......	74 55 28·9	0·75	......	1
526	......	......	(7·0)	1 35 ...	......	33 9 51·8	0·73	......	2
538	......	7·5	......	1 39 2·95	0·83	73 17 5·3	0·82	3	1
547	......	(6·0)	......	1 40 38·79	0·81	42 47 48·2	0·79	1	1
562	......	7·0	......	1 43 56·76	0·81	39 12 50·6	0·76	1	2
577	β Arietis	(3·0)	......	1 46 58·03	0·83	69 52 ...	......	7	......
588	(b)	5·0	......	1 49 25·63	0·85	26 3 26·0	0·82	1	3
620	......	7·0	......	1 54 15·74	0·85	25 34 1·0	0·76	1	2
626	......	......	7·0	1 55 ...	......	7 5 48·4	0·84	......	2
645	......	......	6·5	1 59 ...	......	64 50 3·7	0·83	......	3
647	......	6·0	......	1 58 56·92	0·84	64 58 ...	......	2	......
648	α Arietis	(2·0)	......	1 59 20·60	0·83	67 12 ...	......	8	......
694	......	......	(7·5)	2 8 ...	......	26 13 18·0	0·81	......	4
702	......	......	(7·5)	2 9 ...	......	26 16 27·0	0·83	......	2
704	67 Ceti	(6·0)	......	2 10 3·04	0·83	97 4 ...	......	5	......
725	......	......	(8·0)	2 13 ...	......	33 15 3·2	0·84	......	1
760	ξ² Ceti	(4·0)	......	2 20 46·35	0·81	82 10 ...	......	7	......
764	......	6·0	......	2 22 10·21	0·89	81 3 25·2	0·84	1	3

(a) The magnitudes in parenthesis are the tabular, from the B. A. Cat.
(b) In the original observation of this star an error of 20 secs. occurs, which is corrected here.

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Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
776	......	6·0	6·0	2 21 18·85	0·89	88 21 3·8	0·79	1	1
793	......	6·5	......	2 28 27·80	0·86	83 46 36·4	0·79	2	2
822	......	......	(a)	2 33 18·28	0·86	47 55 17·6	0·82	3	3
834	......	......	6·0	2 36 ...	......	64 57 19·2	0·82	......	5
837	γ Ceti	(3·0)	......	2 36 6·06	0·82	87 22 ...	......	11	......
861	......	6·3	......	2 43 49·39	0·85	75 30 ...	......	3	......
891	......	8·5	8·0	2 45 18·75	0·85	81 5 52·6	0·82	3	5
920	......	(7·0)	......	2 50 55·40	0·85	68 56 26·7	0·82	3	2
949	α Ceti	(2·5)	......	2 55 0·92	0·84	86 27 29·2	0·80	11	3
962	ι Persei	......	4·0	2 59 ...	......	40 55 16·1	0·83	......	5
980	......	......	6·5	3 2 ...	......	63 38 18·0	0·86	......	2
985	......	......	8·5	3 4 ...	......	15 16 45·3	0·80	......	2
986	δ Arietis	(4·0)	......	3 3 41·14	0·84	70 48 ...	......	8	......
1055	......	7·0	7·2	3 16 30·17	0·84	68 27 18·2	0·83	1	7
1087	......	5·0	......	3 23 12·15	0·84	77 33 ...	......	2	......
1101	......	7·0	6·5	3 26 59·75	0·84	58 47 13·6	0·84	1	4
1126	......	(6·0)	......	3 32 28·59	0·84	65 7 ...	......	1	......
1166	η Tauri	(3·0)	......	3 39 13·61	0·87	66 19 39·1	0·83	10	4
1282	......	7·2	7·0	4 3 25·52	0·93	41 16 2·6	0·85	3	1
1309	......	5·0	......	4 8 52·31	0·85	97 52 ...	......	1	......
1318	......	......	6·0	4 11 ...	......	33 49 57·6	0·96	......	2
1328	......	4·0	......	4 11 53·21	0·93	74 43 ...	......	3	......
1351	......	8·5	......	4 15 30·18	0·94	73 42 ...	......	4	......
1361	......	......	(6·0)	4 17 ...	......	71 16 53·6	0·93	......	3
1376	ε Tauri	(3·5)	......	4 20 30·24	0·92	71 8 ...	......	10	......
1420	α Tauri	(1·0)	......	4 27 56·84	0·93	73 46 ...	......	16	......
1434	......	5·0	......	4 30 23·16	0·98	77 46 17·3	0·91	3	6
1459	......	7·0	......	4 36 44·13	0·99	34 39 2·0	0·90	1	2
1463	......	6·8	......	4 37 19·28	0·97	66 37 52·1	0·97	3	1
1491	......	5·7	......	4 43 2·36	0·98	81 20 29·8	0·96	3	2
1501	......	7·4	......	4 45 22·39	0·98	34 24 ...	......	4	......
1520	ι Aurigæ	(4·0)	......	4 47 56·77	0·94	57 3 ...	......	13	......
1623	β Orionis	(1·0)	......	5 7 51·53	0·91	98 22 ...	......	6	......
1626	......	6·9	7·5	5 8 58·35	0·97	49 41 22·4	0·97	4	6
1656	......	6·4	......	5 14 9·59	0·97	81 42 45·2	0·97	5	3
1681	β Tauri	(2·0)	......	5 17 30·52	0·88	61 30 ...	......	16	......
1683	......	6·5	......	5 17 36·55	0·98	55 44 4·8	0·97	2	3
1696	......	7·7	9·0	5 19 14·91	0·97	87 11 20·2	0·98	6	2
1703	......	7·2	......	5 20 8·63	0·99	73 40 46·4	0·97	2	1
1730	δ Orionis	(2·0)	......	5 24 54·39	0·88	90 24 19·0	0·96	14	2
1751	......	5·2	6·0	5 28 31·12	0·97	24 23 3·6	0·98	5	4
1765	ε Orionis	(2·5)	......	5 29 9·66	0·84	91 18 ...	......	10	......
1766	......	5·2	......	5 29 16·35	0·98	80 47 ...	......	2	......
1769	......	......	(6·0)	5 30 ...	......	36 34 51·0	0·99	......	1
1772	......	......	(6·0)	5 30 ...	......	60 52 8·2	0·96	......	1
1813	......	6·0	......	5 37 58·99	0·97	21 34 33·2	0·98	5	5
1826	......	7·0	......	5 39 14·40	0·99	80 31 56·5	0·96	1	2
1883	α Orionis	(1·0)	......	5 47 38·78	0·77	82 37 21·5	0·37	10	6
1893	......	6·5	......	5 48 49·92	0·98	80 31 ...	......	2	......
1907	......	6·2	......	5 51 4·08	0·98	77 13 ...	......	5	......
1930	......	......	9·5	5 55 ...	......	72 20 15·2	0·98	......	3

(a) A star of 6·5 magnitude in a straggling group, called a nebula in B. A. Cat.

STARS.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations.	
No. in B. A. C.	Name or Description.			h. m. s.		° ′ ″		R. A.	N. P. D.
1938	....	5.0	......	5 55 40.30	0.98	66 44 ...	......	4	......
1958	ν Orionis..........................	(4.5)	......	5 59 38.03	0.98	75 13 ...	......	1	......
1962	....	9.0	......	6 0 30.00	0.97	65 45 ...	......	2	......
2002	....	4.1	......	6 6 29.26	0.98	67 27 ...	......	5	......
2022	....	6.0	6.0	6 9 26.89	0.98	80 0 37.9	0.97	6	5
2047	μ Geminorum	(4.0)	......	6 14 33.12	0.49	67 25 ...	......	2	......
2046	....	5.5	7.0	6 14 41.65	0.98	33 38 47.1	0.97	2	3
2060	....	......	6.8	6 17 ...	......	85 20 24.1	0.49	......	2
2101	....	......	8.0	6 22 ...	......	67 22 0.8	0.96	......	2
2163	γ Geminorum	(2.5)	... ..	6 29 40.87	0.96	73 29 ...	......	14	......
2184	....	6.8	7.0	6 33 20.73	0.98	73 28 35.9	0.83	6	7
2238	....	6.0	6.0	6 43 33.58	0.97	66 14 14.8	0.97	5	7
2292	....	6.7	7.7	6 53 17.55	0.98	79 10 59.3	0.78	5	5
2306	....	5.6	......	6 55 55.95	0.98	78 50 53.6	0.99	4	1
2329	....	7.8	......	7 0 15.50	0.98	74 15 ...	......	2	......
2434	....	6.0	......	7 1 18.66	0.99	39 59 14.7	0.97	2	3
2363	....	7.0	7.0	7 5 57.56	0.98	65 3 18.1	0.67	5	3
2379	....	5.4	5.0	7 7 57.75	0.98	40 17 31.4	0.52	5	2
2410	δ Geminorum	(3.0)	......	7 11 49.16	0.77	67 45 55.3	0.49	13	2
2462	β Canis Minoris	(3.0)	......	7 19 36.69	0.97	61 26 ...	......	3	......
2463	....	6.5	8.0	7 20 1.78	0.99	62 10 10.6	0.60	2	5
2485	α² Geminorum	(1.5)	......	7 25 43.60	0.50	57 49 ...	......	13	......
2488	....	6.0	8.0	7 26 25.66	0.98	43 31 3.7	0.50	3	4
2522	α Canis Minoris	(1.0)	......	7 32 1.41	0.64	84 25 20.2	0.98	10	2
2555	β Geminorum	(2.0)	......	7 36 48.36	0.56	61 38 ...	......	15	......
2586	....	7.0	7.0	7 41 20.22	0.98	61 27 24.2	0.44	2	5
2672	6 Cancri	(5.5)	......	7 54 58.58	0.61	61 49 ...	......	7	......
2643	....	6.7	......	7 56 42.96	0.99	70 40 7.0	0.56	3	3
2737	....	7.3	7.0	8 3 10.26	0.99	74 57 46.2	0.56	3	4
2748	....	7.0	......	8 4 35.48	0.39	75 35 ...	......	3	......
2761	....	7.0	7.0	8 6 37.26	0.99	76 32 2.5	0.06	3	2
2778	....	4.3	......	8 8 58.47	0.99	80 22 ...	......	3	......
2862	η Cancri	(6.0)	......	8 24 39.93	0.11	69 5 ...	......	3	......
2867	....	......	7.0	8 25 ...	......	79 27 56.1	0.07	......	3
2882	....	......	(7.0)	8 28 ...	......	29 34 41.5	0.10	......	2
2971	ε Hydræ	(4.0)	......	8 39 24.75	0.12	83 4 25.2	......	5	3
2988	....	......	7.2	8 43 ...	......	34 31 52.2	0.09	......	2
3013	....	......	(6.0)	8 45 ...	......	84 8 22.1	0.08	......	1
3053	....	......	(6.0)	8 50 ...	......	80 4 45.9	0.09	......	3
3083	....	......	(6.5)	8 56 ...	......	38 37 30.3	0.09	......	2
3133	....	......	(6.0)	9 5 ...	......	85 33 56.1	0.09	......	2
3157	....	......	(7.0)	9 10 ...	......	29 38 11.4	0.10	......	2
3242	θ Ursæ Majoris	......	2.0	9 24 ...	......	37 41 29.8	0.09	......	5
3325	....	......	6.5	9 37 ...	......	26 11 33.0	0.10	......	2
3331	ε Leonis	......	3.0	9 37 57.31	0.14	65 35 14.8	0.08	5	2
3336	....	......	(5.5)	9 39 ...	......	82 39 5.5	0.08	......	1
3375	....	......	7.5	9 45 ...	......	54 21 51.1	0.10	......	1
3415	ν Leonis	(4.5)	......	9 52 51.89	0.14	81 17 ...	......	4	......
3418	....	......	9.8	9 54 ...	......	80 22 56.3	0.09	......	2
3420	....	......	(7.0)	9 54 ...	......	57 47 59.8	0.07	......	1
3427	....	......	10.0	9 56 ...	......	56 41 0.3	0.10	......	1

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Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
3438	......	......	(6·5)	9 58 ...	......	81 19 27·3	0·10	......	1
3459	α Leonis	(1·0)	......	10 0 57·94	0·21	77 21 ...	......	5	......
3484	......	......	7·0	10 6 ...	......	57 53 12·5	0·10	......	1
3523	γ¹ Leonis	(2·0)	......	10 12 18·27	0·15	69 27 ...	......	1	......
3529	......	......	(6·0)	10 13 ...	......	82 52 20·6	0·10	......	1
3609	ρ Leonis	(4·0)	......	10 25 29·40	0·15	79 59 ...	......	1	......
3834	δ Leonis	(2·5)	......	11 6 42·64	0·46	68 43 ...	......	2	......
3995	β Leonis	(2·5)	......	11 41 58·07	0·46	74 39 ...	......	2	......
4648	η Bootis	(3·0)	......	13 48 3·90	0·48	70 51 ...	......	1	......
4672	τ Virginis	(4·5)	......	13 54 34·50	0·46	87 47 ...	......	1	......
4729	α Bootis	(1·0)	......	14 9 19·32	0·61	70 5 ...	......	4	......
4876	ε Bootis	(3·0)	......	14 38 55·00	0·70	62 20 ...	......	1	......
5034	β Libræ	(2·5)	......	15 9 31·79	0·48	98 52 ...	......	1	......
5143	α Coronæ Borealis	(2·5)	......	15 28 48·20	0·63	62 49 ...	......	3	......
5414	δ Ophiuchi	(3·0)	......	16 7 3·78	0·49	93 20 ...	......	3	......
5604	ζ Herculis	(3·0)	......	16 36 2·86	0·47	58 9 ...	......	2	......
5708	ε Ophiuchi	(4·0)	......	16 51 5·40	0·46	80 24 ...	......	2	......
5821	α Herculis	(3·5)	......	17 8 18·63	0·52	75 27 ...	......	7	......
5941	α Ophiuchi	(2·0)	......	17 28 28·94	0·50	77 20 ...	......	8	......
6021	μ Herculis	(4·0)	......	17 41 1·22	0·53	62 12 ...	......	7	......
6213	......	......	6·0	18 12 ...	......	62 47 35·4	0·50	......	2
6355	α Lyræ	(1·0)	......	18 32 13·87	0·75	51 21 ...	......	6	......
6429	β Lyræ	......	3·0	18 44 56·92	0·58	56 47 45·8	0·51	10	1
6528	ζ Aquilæ	(3·0)	......	18 59 1·26	0·62	76 20 ...	......	12	......
6574	......	......	6·0	19 7 ...	......	68 40 36·3	0·51	......	1
6595	ω Aquilæ	(5·0)	......	19 11 17·53	0·56	78 39 ...	......	4	......
6644	......	......	(5·0)	19 18 ...	......	79 20 55·7	0·51	......	1
6646	δ Aquilæ	(3·5)	......	19 18 29·33	0·58	87 10 ...	......	9	......
6729	......	......	(5·0)	19 32 ...	......	81 51 57·2	0·51	......	1
6772	γ Aquilæ	(3·0)	......	19 39 39·01	0·58	79 41 ...	......	6	......
6791	......	......	(7·5)	19 42 ...	......	78 39 31·0	0·51	......	1
6802	α Aquilæ	(1·5)	......	19 44 0·00	0·67	81 30 ...	......	7	......
6833	β Aquilæ	(3·5)	......	19 48 29·10	0·54	83 56 ...	......	5	......
6855	......	......	7·5	19 52 ...	......	73 52 11·5	0·51	......	1
6941	......	......	6·5	20 5 ...	......	49 16 35·8	0·51	......	1
7006	......	......	(7·0)	20 15 ...	......	53 18 12·2	0·56	......	2
7086	......	......	6·0	20 26 ...	......	34 23 49·2	0·56	......	2
7150	......	......	6·5	20 33 ...	......	71 14 32·5	0·61	......	1
7220	η Cephei	......	(3·5)	20 43 ...	......	28 42 0·7	0·61	......	1
7256	32 Vulpeculæ	(4·5)	......	20 48 38·20	0·65	62 28 ...	......	5	......
7285	......	......	(7·0)	20 53 ...	......	63 1 24·4	0·61	......	1
7336	61¹ Cygni	......	5·5	21 1 ...	......	51 55 56·8	0·61	......	1
7368	ζ Cygni	(3·0)	......	21 7 1·30	0·72	60 21 ...	......	6	......
7410	......	......	5·0	21 15 ...	......	66 43 39·6	0·61	......	1
7478	β Aquarii	(3·0)	......	21 24 14·31	0·60	96 11 ...	......	3	......
7561	ε Pegasi	(2·5)	......	21 37 21·52	0·98	80 46 ...	......	1	......
7627	16 Pegasi	(5·5)	......	21 46 41·35	0·66	64 44 ...	......	2	......
7644	......	......	(7·0)	21 50 ...	......	18 9 58·0	0·61	......	1
7688	κ Aquarii	(3·0)	......	21 58 38·58	0·69	91 [illegible] ...	......	5	......
7708	......	......	(5·5)	22 1 ...	......	28 23 44·2	0·61	......	1
7759	......	......	(6·0)	22 7 ...	......	29 55 39·4	0·61	......	1

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h m s		° ′ ″			
7773	θ Aquarii	(4·5)	......	22 9 29·73	0·64	98 29 ...	......	3	......
7868	η Aquarii	(4·0)	......	22 28 12·74	0·63	90 50 ...	......	6	......
7908	ζ Pegasi	(3·0)	......	22 34 31·77	0·68	79 53 36·0	0·72	4	1
8024	......	......	(6·5)	22 56 ...	......	33 38 25·7	0·75	......	1
8034	α Pegasi	(2·0)	......	22 57 50·31	0·71	75 33 ...	......	5	......
8065	......	......	7·5	23 2 ...	......	86 36 31·7	0·75	......	1
8083	......	......	(6·0)	23 6 ...	......	33 35 55·1	0·72	......	1
8105	γ Piscium	(4·5)	......	23 9 57·57	0·72	67 29 ...	......	3	......
8135	......	......	6·0	23 14 ...	......	46 38 35·4	0·73	......	1
8137	......	......	7·0	23 14 ...	......	28 47 24·7	0·75	......	2
8138	......	......	(7·0)	23 15 ...	......	28 32 51·4	0·72	......	1
8169	κ Piscium	(5·5)	......	23 19 48·39	0·73	80 30 ...	......	3	......
8204	......	......	(7·0)	23 27 ...	......	18 45 56·6	0·73	......	3
8233	ι Piscium	(4·5)	......	23 32 48·14	0·74	85 8 ...	......	4	......
8247	......	......	(7·5)	23 35 ...	......	72 6 10·9	0·75	......	1
8270	......	......	8·2	23 41 ...	......	86 35 13·2	0·75	......	2
8298	......	......	(7·0)	23 45 ...	......	13 10 13·8	0·75	......	1
8331	ω Piscium	(4·5)	......	23 52 10·52	0·75	83 54 ...	......	3	......
8338	......	......	(7·0)	23 54 ...	......	28 35 47·5	0·75	......	1
8356	......	......	(6·0)	23 55 ...	......	24 40 30·4	0·72	......	1
8364	......	......	(7·0)	23 58 ...	......	32 14 30·5	0·75	......	1
8372	......	......	(6·5)	23 59 ...	......	32 20 19·0	0·79	......	1

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ROYAL OBSERVATORY, EDINBURGH.

OBSERVATIONS

MADE WITH

THE TRANSIT INSTRUMENT,

AND

CALCULATION

OF

APPARENT RIGHT ASCENSIONS.

1862.

Date.	No. in British Association Catalogue.	Object Observed	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1862.
1862.				° ′	s	s	s	s	m s	h m s	s	s	s	s
Jan. 2	2410	δ Geminorum	....	67 16	18·9	27·6	37·0	45·8	11 54·9	7 11 36·84	− 0·07	+ 18·72	+ 18·80	− 2·75
	2522	α Canis Minoris	....	84 26	31·8	39·9	48·5	56·8	32 5·1	7 31 48·42	− 0·11	+ 18·80	+ 18·80	− 2·48
	2555	β Geminorum	....	61 39	17·0	26·6	36·1	45·5	36 55·0	7 36 36·04	− 0·05	+ 18·91	+ 18·80	− 2·85
	2586	....	7·0	61 28	49·0	58·3	8·0	17·2	41 27·0	7 41 7·90	− 0·05	....	+ 18·80	− 2·84
	2672	6 Cancri	....	61 50	27·5	36·8	46·3	55·8	55 5·2	7 54 46·32	− 0·05	+ 18·78	+ 18·80	− 2·80
	2688	(a)	....	62 6	34·5	44·0	53·6	2·8	57 12·3	7 56 53·41	− 0·05	....	+ 18·80	− 2·79
	2737	(b)	7·0	74 59	40·1	48·6	57·4	6·0	3 14·8	8 2 57·38	− 0·09	....	+ 18·80	− 2·54
	2761	....	7·0	76 34	7·4	15·7	24·4	32·9	6 41·5	8 6 24·36	− 0·09	....	+ 18·80	− 2·51
	2778	β Cancri	....	80 25	28·3	36·9	45·6	53·9	9 2·4	8 8 45·42	− 0·10	....	+ 18·80	− 2·46
	2862	η Cancri	....	69 7	9·4	18·2	27·2	36·0	24 45·3	8 24 27·22	− 0·07	+ 18·86	+ 18·80	− 2·57
	6355	α Lyræ	....	51 29	35·0	45·6	56·2	6·9	32 17·8	18 31 56·30	− 0·03	+ 18·70	+ 18·80	+ 1·01
Jan. 3	1681	β Tauri	....	61 30	59·5	8·8	18·4	27·7	17 37·5	5 17 18·38	− 0·05	+ 18·69	+ 18·69	− 2·78
	1730	δ Orionis	....	90 23	24·8	32·9	41·4	49·6	24 57·9	5 24 41·32	− 0·13	+ 18·61	+ 18·69	− 2·37
	1766	....	4·5	80 47	46·8	54·9	3·4	11·8	29 20·5	5 29 3·48	− 0·10	....	+ 18·69	− 2·48
	1893	....	7·0	80 31	20·3	28·5	37·1	45·3	48 51·0	5 48 37·04	− 0·10	....	+ 18·69	− 2·52
	1930	....	8·0	72 10	21·0	29·8	38·6	47·2	54 56·0	5 54 38·52	− 0·08	....	+ 18·69	− 2·65
	1962	(c)	8·0	65 45	59·8	8·8	18·0	27·0	0 36·3	6 0 17·98	− 0·06	....	+ 18·69	− 2·78
	2046	....	6·0	33 39	2·0	17·0	32·3	47·2	15 2·4	6 14 32·18	+ 0·01	....	+ 18·69	− 4·26
	2083	....	6·0	16 13	17·6	47·0	17·4	46·5	21 17·0	6 20 17·10	+ 0·10	....	+ 18·68	− 7·60
	2163	γ Geminorum	....	73 29	11·2	19·6	28·5	37·0	29 45·9	6 29 25·44	− 0·08	+ 18·64	+ 18·68	− 2·66
	2184	....	7·0	73 29	51·0	59·5	8·5	17·0	33 25·9	6 33 8·38	− 0·08	....	+ 18·68	− 2·67
	2238	....	7·0	66 15	3·5	12·2	21·5	30·6	43 40·0	6 43 21·56	− 0·06	....	+ 18·68	− 2·50
	2462	β Canis Minoris	4·0	61 27	7·0	15·4	24·0	32·3	19 40·9	7 19 23·92	− 0·10	....	+ 18·68	− 2·54
	2485	α² Geminorum	....	57 49	12·2	21·8	31·8	41·6	25 51·5	7 25 31·78	− 0·05	+ 18·67	+ 18·68	− 2·98
	2522	α Canis Minoris	....	84 26	32·0	40·2	48·5	57·0	32 5·3	7 31 48·60	− 0·11	+ 18·64	+ 18·67	− 2·50
	2555	β Geminorum	....	61 39	17·4	26·8	36·4	45·8	36 55·2	7 36 36·32	− 0·05	+ 18·64	+ 18·67	− 2·86
	2586	....	7·0	61 29	49·3	58·6	8·2	17·5	41 27·2	7 41 8·16	− 0·05	....	+ 18·67	− 2·86
	2672	6 Cancri	....	61 50	27·6	37·0	46·7	55·9	55 5·5	7 51 46·54	− 0·05	+ 18·58	+ 18·67	− 2·82
	2683	....	7·0	70 48	13·1	21·8	30·6	39·4	56 48·3	7 56 30·64	− 0·08	....	+ 18·67	− 2·64
	2737	....	7·0	74 59	40·5	49·0	57·8	6·2	3 15·0	8 2 57·70	− 0·09	....	+ 18·66	− 2·56
	2748	....	7·0	75 37	5·7	14·0	22·9	31·4	4 40·2	8 4 22·84	− 0·10	....	+ 18·66	− 2·55
	2761	....	7·0	76 34	7·5	15·9	24·7	33·0	6 41·9	8 6 24·60	− 0·09	....	+ 18·66	− 2·53
	2778	β Cancri	4·5	80 25	28·9	37·1	45·8	54·0	9 2·7	8 8 45·70	− 0·10	....	+ 18·66	− 2·48
	2867	....	7·0	79 30	36·1	44·4	53·0	1·4	25 10·0	8 24 52·98	− 0·10	....	+ 18·65	− 2·45
	2882	....	6·0	29 36	6·6	23·0	40·4	56·9	28 14·2	8 27 40·22	+ 0·03	....	+ 18·66	− 4·32
	2937	γ Cancri	6·5	68 4	44·0	52·8	2·0	10·6	35 20·0	8 35 1·88	− 0·07	....	+ 18·66	− 2·56
	2971	ι Hydræ	....	83 6	55·0	3·2	11·7	20·0	39 28·5	8 39 11·68	− 0·11	+ 18·74	+ 18·66	− 2·37
Jan. 5	1623	(d) β Orionis	....	98 21	21·5	30·0	38·4	46·7	7 55·4	5 7 38·40	− 0·20	+ 18·47	+ 18·45	− 2·28
	1681	β Tauri	....	61 30	59·6	9·0	18·8	28·0	17 37·4	5 17 18·56	− 0·07	+ 18·54	+ 18·45	− 2·79
	1730	δ Orionis	....	90 23	25·0	33·2	41·6	49·8	24 58·0	5 24 41·52	− 0·16	+ 18·44	+ 18·45	− 2·37
	1765	ε Orionis	....	91 17	30·3	48·5	56·8	5·1	29 13·6	5 28 56·86	− 0·17	+ 18·36	+ 18·45	− 2·38
Jan. 6	1681	(e) β Tauri	....	61 30	59·6	8·9	18·5	27·9	17 37·4	5 17 18·46	− 0·09	+ 18·66	+ 18·62	− 2·70
	1703	....	7·0	73 40	38·9	47·2	56·0	4·8	20 13·6	5 19 56·10	− 0·13	....	+ 18·62	− 2·56
	1730	δ Orionis	....	90 23	24·9	33·0	41·4	49·8	24 58·0	5 24 41·42	− 0·18	+ 18·56	+ 18·62	− 2·38
	1765	ε Orionis	....	91 17	40·0	48·2	56·8	4·9	29 13·4	5 28 56·66	− 0·20	+ 18·59	+ 18·62	− 2·38
	1883	α Orionis	....	82 37	9·4	17·5	26·2	34·4	47 42·9	5 47 26·06	− 0·16	+ 18·66	+ 18·62	− 2·50

(a) Two stars 8th and 9th mags. observed 2nd and following. (b) Faint. (c) A very faint star. (d) Night cloudy. Stars faint.
(e) Commenced experiments on the effect of heating the piers by means of lamps.

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Date.	No. in British Association Catalogue.	Object Observed	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan 1. 1862
1862					s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Jan. 8	2047	μ Geminorum	....	67 25	3.0	12.0	21.2	30.0	14 39.2	6 14 21.08	− 0.13	+ 18.54	+ 18.53	− 2.80
	2163	γ Geminorum	....	73 29	11.4	19.9	28.8	37.2	29 46.0	6 29 28.66	− 0.15	+ 18.53	+ 18.53	− 2.70
	2184	....	7.0	73 29	51.2	59.8	8.5	17.1	33 26.0	6 33 8.52	− 0.15	....	+ 18.53	− 2.71
	2410	δ Geminorum	....	67 46	19.1	28.0	37.1	46.0	11 55.2	7 11 37.08	− 0.13	+ 18.61	+ 18.53	− 2.82
	2462	β Canis Minoris	4.0	81 27	7.2	15.6	24.1	32.5	19 41.0	7 19 24.08	− 0.17	....	+ 18.53	− 2.60
	2485	α² Geminorum	....	57 49	12.5	22.1	32.0	41.9	25 51.8	7 25 32.06	− 0.10	+ 18.51	+ 18.53	− 3.05
	2522	α Canis Minoris	....	84 26	32.1	40.4	48.9	57.0	32 5.5	7 31 48.78	− 0.19	+ 18.60	+ 18.53	− 2.56
	2555	β Geminorum	....	61 39	17.9	27.0	36.7	45.9	36 55.8	7 36 36.66	− 0.11	+ 18.44	+ 18.53	− 2.94
	2586	....	7.0	61 29	49.6	58.9	8.4	17.9	41 27.5	7 41 8.46	− 0.10	....	+ 18.53	− 2.94
	2672	6 Cancri	....	61 50	27.9	37.2	46.9	56.0	55 5.8	7 54 46.76	− 0.11	+ 18.51	+ 18.53	− 2.91
	2683	....	7.0	70 48	13.4	22.0	31.0	39.6	56 48.9	7 56 30.98	− 0.15	....	+ 18.53	− 2.72
	2737	....	6.0	74 59	40.8	49.1	57.9	6.5	3 15.2	8 2 57.90	− 0.16	....	+ 18.53	− 2.65
	2748	....	7.0	75 37	5.9	14.1	23.0	31.6	4 40.2	8 4 23.02	− 0.15	....	+ 18.53	− 2.63
	2761	....	7.0	76 34	7.9	16.0	24.9	33.4	6 42.0	8 6 24.54	− 0.15	....	+ 18.53	− 2.62
	2778	β Cancri	4.0	80 25	29.1	37.5	46.0	54.3	9 3.0	8 8 45.98	− 0.17	....	+ 18.53	− 2.56
	2867	....	7.0	79 30	36.4	44.8	53.3	1.9	25 10.3	8 24 53.34	− 0.17	....	+ 18.53	− 2.54
	2882	....	5.5	29 36	6.8	23.2	40.6	57.2	28 14.2	8 27 40.40	+ 0.05	....	+ 18.53	− 4.46
	2937	γ Cancri	6.0	68 4	44.1	53.0	2.0	10.9	35 20.0	8 35 2.00	− 0.13	....	+ 18.53	− 2.68
	2971	ι Hydræ	....	83 6	55.4	3.5	12.1	20.3	39 29.0	8 39 12.06	− 0.19	+ 18.54	+ 18.53	− 2.47
	2988	....	....	31 31	2.4	16.7	31.8	46.0	43 1.0	8 42 31.58	+ 0.01	....	+ 18.53	− 3.93
Jan. 9	7561	ι Pegasi	....	80 43	49.4	57.7	6.2	14.5	37 23.2	21 37 6.20	− 0.19	+ 18.52	+ 18.48	− 0.03
	7908	ζ Pegasi	....	79 50	0.0	8.3	17.0	25.1	34 33.9	22 34 16.86	− 0.19	+ 18.38	+ 18.48	− 0.27
	8034	α Pegasi	....	75 29	18.0	26.5	35.4	44.0	57 52.6	22 57 35.30	− 0.18	+ 18.55	+ 18.48	− 0.37
	1883	α Orionis	....	82 37	9.5	17.7	26.2	34.5	47 43.0	5 47 26.18	− 0.20	+ 18.60	+ 18.58	− 2.50
	2163	γ Geminorum	....	73 29	11.2	20.0	28.9	37.2	29 46.0	6 29 28.66	− 0.16	+ 18.55	+ 18.58	− 2.71
	2184	....	7.0	73 29	51.1	0.0	8.6	17.0	33 26.0	6 33 8.60	− 0.16	....	+ 18.58	− 2.72
	2410	δ Geminorum	....	67 46	19.3	28.0	37.2	46.0	11 55.0	7 11 37.10	− 0.14	+ 18.62	+ 18.58	− 2.84
	2462	β Canis Minoris	4.0	81 27	7.2	15.6	24.1	32.4	19 41.0	7 19 24.06	− 0.19	....	+ 18.58	− 2.62
	2488	....	6.0	43 32	51.0	3.0	15.3	27.1	26 39.6	7 26 15.20	− 0.04	....	+ 18.58	− 3.64
	2522	α Canis Minoris	....	84 26	32.1	40.3	49.0	57.1	32 5.5	7 31 48.80	− 0.20	+ 18.60	+ 18.58	− 2.57
	2555	β Geminorum	....	61 39	17.9	27.1	36.6	45.9	36 55.6	7 36 36.62	− 0.12	+ 18.51	+ 18.58	− 2.96
Jan. 18	2047	μ Geminorum	....	67 25	3.9	12.8	22.0	30.9	14 39.9	6 14 21.90	− 0.07	+ 17.69	+ 17.77	− 2.63
	2163	γ Geminorum	....	73 29	12.0	20.4	29.5	38.0	29 46.9	6 29 29.36	− 0.09	+ 17.81	+ 17.77	− 2.74
	2485	α² Geminorum	....	57 49	13.1	22.9	32.9	42.6	25 52.8	7 25 32.86	− 0.05	+ 17.78	+ 17.77	− 3.17
	2555	β Geminorum	....	61 39	18.6	27.9	37.3	46.7	36 56.4	7 36 37.38	− 0.06	+ 17.79	+ 17.77	− 3.06
Jan. 23	8034	α Pegasi	....	75 29	21.4	29.9	38.4	47.0	57 55.8	22 57 38.50	− 0.09	+ 15.16	+ 15.17	− 0.27
	4	α Andromedæ	....	61 37	42.0	51.5	1.0	10.4	1 20.1	0 1 1.00	− 0.05	+ 15.19	+ 15.17	− 0.53
	26	γ Pegasi	....	75 32	36.2	44.8	53.6	2.0	6 10.9	0 5 53.50	− 0.08	+ 15.16	+ 15.17	− 0.63
	3223	(a) α Hydræ	....	98 5	19.2	27.4	36.0	44.2	20 52.9	9 20 35.94	− 0.16	+ 15.10	+ 15.02	− 2.54
	3331	ε Leonis	....	65 37	30.3	39.4	48.7	57.9	38 7.9	9 37 48.84	− 0.05	+ 14.79	+ 15.02	− 2.82
	3415	π Leonis	....	81 20	26.0	34.2	42.9	51.0	52 59.6	9 52 42.74	− 0.11	+ 15.04	+ 15.02	− 2.57
	3459	α Leonis	....	77 23	31.8	40.1	48.8	57.0	1 5.8	10 0 48.70	− 0.08	+ 15.15	+ 15.02	− 2.56
Jan. 24	2410	δ Geminorum	....	67 46	23.0	31.9	41.2	50.0	11 59.1	7 11 41.04	− 0.07	+ 14.72	+ 14.68	− 2.95
	2463	....	7.0	62 11	35.1	44.4	54.0	3.2	20 12.7	7 19 53.88	− 0.05	....	+ 14.68	− 3.08
	2488	....	7.0	43 32	55.0	6.9	19.2	31.0	26 43.5	7 26 19.12	+ 0.01	....	+ 14.68	− 3.79
	2522	α Canis Minoris	....	84 26	36.0	44.2	52.8	1.0	32 9.4	7 31 52.68	− 0.12	+ 14.76	+ 14.68	− 2.69
	2555	β Geminorum	....	61 39	21.9	31.0	40.6	50.0	36 59.4	7 36 40.58	− 0.05	+ 14.62	+ 14.68	− 3.10

(a) Definition bad.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1862.
1862				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Jan. 24	2672	6 Cancri	....	61 50	31·9	41·2	51·0	0·2	55 9·9	7 54 50·84	− 0·05	+ 14·56	+ 14·68	− 3·10
	2748	....	7·0	75 37	10·0	18·3	27·0	35·6	4 44·3	8 4 27·01	− 0·09	....	+ 14·68	− 2·83
	2761	....	7·5	76 34	11·7	20·1	29·0	37·2	6 46·0	8 6 28·80	− 0·09	....	+ 14·69	− 2·81
	2778	β Cancri	4·0	80 25	33·0	41·3	50·0	58·2	9 6·9	8 8 49·88	− 0·10	....	+ 14·69	− 2·76
	2882	....	7·0	29 36	11·0	27·6	44·3	1·3	28 18·5	8 27 44·66	+ 0·05	....	+ 14·69	− 4·85
	2937	γ Cancri	5·0	68 4	48·2	57·0	6·2	15·0	35 24·1	8 35 6·10	− 0·07	....	+ 14·69	− 2·94
	2971	ι Hydræ	....	83 6	59·4	7·2	16·0	24·4	39 32·9	8 39 15·98	− 0·12	+ 14·78	+ 14·69	− 2·70
	2986	....	8·0	34 34	6·5	20·9	35·9	50·4	43 5·5	8 42 35·84	+ 0·03	....	+ 14·70	− 4·31
	3013	....	7·0	84 10	38·3	46·4	55·0	3·2	45 11·5	8 44 54·88	− 0·12	....	+ 14·70	− 2·69
	3055	α Cancri	5·0	77 38	27·4	35·9	44·4	52·9	51 1·4	8 50 44·40	− 0·10	....	+ 14·70	− 2·76
	3083	....	7·5	38 40	57·8	10·0	21·4	37·6	55 51·0	8 55 24·34	+ 0·03	....	+ 14·70	− 3·96
	3103	....	7·5	72 22	2·0	10·5	19·6	28·1	58 37·0	8 58 19·44	− 0·08	....	+ 14·70	− 2·83
	3133	....	7·0	85 36	31·5	39·8	48·3	56·6	5 5·0	9 4 48·24	− 0·13	....	+ 14·70	− 2·65
	3157	....	7·0	29 40	10·2	26·9	41·0	0·5	10 17·7	9 9 43·86	+ 0·05	....	+ 14·70	− 4·65
	3331	ι Leonis	....	65 37	30·8	39·7	49·1	58·0	38 7·4	9 37 43·00	− 0·06	+ 14·66	+ 14·70	− 2·84
Jan. 25	2410	δ Geminorum	....	67 46	23·5	32·2	41·3	50·2	11 59·5	7 11 41·34	− 0·08	+ 14·43	+ 14·43	− 2·95
	2485	α² Geminorum	....	57 49	16·8	26·3	36·5	46·0	25 56·0	7 25 36·32	− 0·06	+ 14·37	+ 14·43	− 3·21
	2522	α Canis Minoris	....	84 26	36·1	44·5	53·0	1·2	32 9·9	7 31 52·94	− 0·13	+ 14·51	+ 14·42	− 2·69
	2555	β Geminorum	....	61 39	22·0	31·1	40·9	50·2	36 59·9	7 36 40·82	− 0·06	+ 14·40	+ 14·42	− 3·11
	2672	6 Cancri	....	61 50	32·2	41·5	51·1	0·3	55 10·0	7 54 51·02	− 0·06	+ 14·39	+ 14·41	− 3·10
Jan. 28	9	α Andromedæ	....	61 37	13·0	52·3	2·0	11·4	1 21·0	0 1 1·94	− 0·07	+ 14·21	+ 14·20	− 0·47
	26	γ Pegasi	....	75 32	37·2	45·8	54·5	3·0	6 11·8	0 5 51·46	− 0·11	+ 14·19	+ 14·20	− 0·59
	2485	α² Geminorum	....	57 49	16·9	26·5	36·4	46·0	25 56·3	7 25 36·12	− 0·06	+ 14·28	+ 14·23	− 3·22
	2522	α Canis Minoris	....	84 26	36·6	44·8	53·3	1·5	32 10·0	7 31 53·24	− 0·13	+ 14·22	+ 14·23	− 2·70
	2555	β Geminorum	....	61 39	22·0	31·5	41·0	50·2	37 0·0	7 36 40·94	− 0·07	+ 14·30	+ 14·23	− 3·12
	2672	6 Cancri	....	61 51	32·6	41·8	51·3	0·8	55 9·9	7 54 51·28	− 0·07	+ 14·16	+ 14·23	− 3·12
	2971	ι Hydræ	....	83 6	59·9	8·1	16·7	25·0	39 33·5	8 39 16·61	− 0·13	+ 14·17	+ 14·23	− 2·74
	3171	83 Cancri	....	71 44	47·8	56·2	5·1	14·0	11 22·9	9 11 5·20	− 0·10	+ 14·24	+ 14·23	− 2·86
Jan. 29	2163	γ Geminorum	....	73 29	15·6	24·1	33·0	41·5	29 50·3	6 29 32·90	− 0·11	+ 14·25	+ 14·23	− 2·73
	2410	δ Geminorum	....	67 46	23·9	32·4	41·8	50·6	11 59·8	7 11 41·70	− 0·09	+ 14·09	+ 14·23	− 2·96
	2485	α² Geminorum	....	57 49	16·9	26·6	36·5	46·1	25 56·1	7 25 36·46	− 0·07	+ 14·25	+ 14·23	− 3·22
	2522	α Canis Minoris	....	84 26	36·5	44·7	53·2	1·4	32 10·0	7 31 53·16	− 0·14	+ 14·31	+ 14·23	− 2·70
	2555	β Geminorum	....	61 39	22·1	31·4	41·0	50·3	37 0·0	7 36 40·96	− 0·07	+ 14·28	+ 14·23	− 3·12
Feb. 6	3331	(a) ι Leonis	....	65 37	29·9	38·7	48·2	57·3	38 6·4	9 37 48·10	− 0·12	+ 15·81	+ 15·79	− 3·03
	3415	σ Leonis	....	81 20	25·5	33·7	42·2	50·8	52 59·2	9 52 42·28	− 0·17	+ 15·77	+ 15·79	− 2·78
	3459	α Leonis	....	77 23	31·5	39·6	48·2	56·8	1 5·5	10 0 48·32	− 0·15	+ 15·82	+ 15·80	− 2·78
	3523	γ¹ Leonis	....	69 30	51·1	59·6	9·0	17·5	12 26·8	10 12 8·80	− 0·13	+ 15·80	+ 15·80	− 2·69
	3609	ρ Leonis	....	80 1	2·8	11·1	19·8	28·0	25 36·8	10 25 19·70	− 0·16	+ 15·73	+ 15·80	− 2·72
Feb. 9	2410	δ Geminorum	....	67 46	22·0	30·8	40·0	48·9	11 58·0	7 11 39·94	− 0·15	+ 15·87	+ 15·90	− 2·92
	2485	α² Geminorum	....	57 49	15·2	25·1	34·0	44·1	25 54·5	7 25 34·82	− 0·12	+ 15·93	+ 15·90	− 3·21
	2555	β Geminorum	....	61 39	20·5	29·9	39·4	48·9	36 58·2	7 36 39·38	− 0·12	+ 15·91	+ 15·90	− 3·12
	2672	6 Cancri	....	61 50	30·9	40·0	49·6	59·0	55 8·7	7 54 49·64	− 0·12	+ 15·88	+ 15·90	− 3·15
Feb. 11	2522	(b) α Canis Minoris	....	84 26	35·5	43·8	52·4	0·5	32 8·9	7 31 52·22	− 0·21	+ 15·30	+ 15·32	− 2·68
	2555	β Geminorum	....	61 39	21·1	30·4	40·0	49·4	36 59·0	7 36 39·98	− 0·14	+ 15·32	+ 15·32	− 3·11

(a) Definition very bad all night. (b) Faint. Cloudy.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1862.
				° ′	s.	s.	s.	s.	m. s.	h m s	s.	s.	s.	s.
1862. Feb. 11	2672	6 Cancri	....	61 50	31·4	40·6	50·2	59·6	55 9·2	7 54 50·20	− 0·14	+ 15·34	+ 15·32	− 3·15
	2971	ι Hydræ	....	83 6	59·0	7·2	15·6	24·0	39 32·5	8 39 15·66	− 0·21	+ 15·31	+ 15·32	− 2·82
	3223	α Hydræ	....	98 5	19·1	27·5	36·1	44·2	20 53·0	9 20 35·98	− 0·26	+ 15·34	+ 15·32	− 2·72
	3331	ι Leonis	....	65 37	30·6	39·4	48·8	57·8	38 7·0	9 37 48·72	− 0·14	+ 15·27	+ 15·32	− 3·09
	3375	(a)	6·0	51 24	50·6	0·6	11·1	21·2	45 31·5	9 45 11·00	− 0·12	....	+ 15·32	− 3·34
	3420	....	7·0	57 51	31·8	41·4	51·5	1·2	54 11·4	9 53 51·46	− 0·13	....	+ 15·32	− 3·23
	3431	....	7·0	56 55	11·2	51·0	1·2	11·0	56 21·2	9 56 1·12	− 0·12	....	+ 15·32	− 3·25
	3459	α Leonis	....	77 23	31·9	40·3	49·0	57·2	1 6·0	10 0 18·88	− 0·18	+ 15·35	+ 15·32	− 2·86
	3484	....	7·5	57 56	43·0	52·1	2·3	12·1	6 22·2	10 6 2·40	− 0·13	....	+ 15·32	− 3·19
	3528	....	5·0	6 47	32·0	41·8	51·0	4·0	16 17·0	10 13 53·76	+ 0·11	....	+ 15·32	− 15·09
	3592	....	7·0	87 50	8·2	16·4	24·9	33·0	22 41·7	10 22 24·84	− 0·23	....	+ 15·32	− 2·74
	3609	ξ Leonis	....	80 1	3·4	11·7	20·2	28·6	25 37·1	10 25 20·20	− 0·19	+ 15·33	+ 15·32	− 2·79
	3662	....	7·0	78 35	55·4	3·9	12·5	20·9	34 29·5	10 34 12·14	− 0·19	....	+ 15·32	− 2·79
	3708	l Leonis	....	78 46	30·9	39·1	47·8	56·0	42 4·9	10 41 47·71	− 0·19	+ 15·28	+ 15·32	− 2·77
	3726	....	6·0	88 17	39·4	47·6	56·0	4·1	45 12·5	10 44 55·92	− 0·23	....	+ 15·32	− 2·70
Feb. 18	3223	α Hydræ	....	98 5	19·1	27·4	36·0	44·1	20 52·8	9 20 35·88	− 0·27	+ 15·47	+ 15·36	− 2·74
	3331	ι Leonis	....	65 37	30·5	39·6	48·8	57·8	38 7·0	9 37 48·74	− 0·16	+ 15·31	+ 15·36	− 3·13
	3415	π Leonis	....	81 20	26·0	34·4	43·0	51·2	53 0·0	9 52 42·92	− 0·21	+ 15·28	+ 15·36	− 2·89
	3459	α Leonis	....	77 23	32·0	40·4	49·0	57·2	1 6·0	10 0 18·92	− 0·19	+ 15·37	+ 15·36	− 2·91
Feb. 20	3459	α Leonis	....	77 23	31·9	40·2	49·0	57·1	1 6·1	10 0 18·92	− 0·21	+ 15·41	+ 15·35	− 2·93
	3484	....	....	57 56	43·0	52·4	2·6	12·3	6 22·1	10 6 2·48	− 0·15	....	+ 15·35	− 3·28
	3523	γ^1 Leonis	....	69 30	51·9	0·4	9·5	18·1	12 27·1	10 12 9·40	− 0·19	+ 15·42	+ 15·35	− 3·04
	3609	ξ Leonis	....	80 1	3·5	11·9	20·5	28·7	25 37·3	10 25 20·38	− 0·22	+ 15·28	+ 15·35	− 2·89
	3662	....	7·5	78 35	55·5	3·9	12·6	20·9	34 29·4	10 34 12·46	− 0·21	....	+ 15·35	− 2·89
	3708	l Leonis	....	78 46	31·0	39·3	47·8	56·1	42 4·9	10 41 47·82	− 0·21	+ 15·33	+ 15·35	− 2·88
	3726	....	7·0	88 17	39·3	47·5	56·0	4·2	45 12·8	10 44 55·96	− 0·25	....	+ 15·35	− 2·81
	3768	d Leonis	....	85 41	57·0	5·1	13·8	22·0	53 30·5	10 53 13·68	− 0·24	....	+ 15·35	− 2·81
	3780	....	7·5	81 43	1·7	10·0	18·5	26·8	56 35·4	10 56 15·48	− 0·23	....	+ 15·35	− 2·83
	3821	....	5·0	21 0	23·5	46·2	10·0	33·0	3 56·6	11 3 9·86	+ 0·01	....	+ 15·35	− 5·53
	3836	....	6·0	67 2	19·0	27·2	35·6	43·9	6 52·4	11 6 35·62	− 0·25	....	+ 15·35	− 2·78
	3869	....	6·0	71 51	45·7	54·3	3·3	11·9	15 21·0	11 15 3·24	− 0·20	....	+ 15·35	− 2·88
	3900	τ Leonis	4·0	86 26	21·4	29·6	38·0	46·1	20 54·6	11 20 37·91	− 0·25	....	+ 15·35	− 2·76
	3946	υ Leonis	....	90 6	24·0	32·2	40·7	48·9	29 57·3	11 29 40·62	− 0·26	+ 15·35	+ 15·35	− 2·73
	3995	β Leonis	....	74 42	31·5	40·0	48·9	57·3	42 6·0	11 41 48·74	− 0·21	+ 15·34	+ 15·35	− 2·76
Mar. 3	648	α Arietis	....	67 9	51·0	59·9	9·1	18·0	59 27·2	1 59 9·04	− 0·17	+ 15·98	+ 16·01	− 0·84
	3171	(b) 83 Cancri	....	71 44	46·3	54·9	3·6	12·4	11 21·2	9 11 3·66	− 0·20	+ 15·99	+ 16·00	− 2·99
	3223	α Hydræ	....	98 5	18·4	27·0	35·3	43·8	20 52·2	9 20 35·34	− 0·30	+ 16·04	+ 16·00	− 2·74
	3312	ο Leonis	....	79 31	17·1	25·4	34·0	42·4	33 51·0	9 33 33·98	− 0·22	....	+ 16·00	− 2·92
	3331	ι Leonis	....	65 37	30·0	38·9	48·0	57·1	38 6·3	9 37 48·06	− 0·16	+ 16·01	+ 16·00	− 3·15
	3371	μ Leonis	3·0	63 23	23·2	32·5	41·9	51·0	45 0·4	9 44 41·80	− 0·15	....	+ 15·99	− 3·19
	3418	....	8·0	80 25	12·2	20·5	29·1	37·5	53 46·2	9 53 29·10	− 0·22	....	+ 15·99	− 2·93
	3459	α Leonis	....	77 23	31·5	39·8	48·3	56·8	1 5·5	10 0 48·38	− 0·21	+ 15·98	+ 15·99	− 2·96
	3523	γ^1 Leonis	....	69 30	51·3	59·9	8·9	17·5	12 26·6	10 12 8·84	− 0·18	+ 16·01	+ 15·99	− 3·08
	3946	υ Leonis	....	90 6	23·8	31·4	40·1	48·3	29 57·0	11 29 40·12	− 0·27	+ 15·99	+ 15·98	− 2·86
Mar. 4	3375	....	6·5	54 24	50·2	0·4	11·0	21·0	45 31·4	9 45 10·80	− 0·13	....	+ 15·49	− 3·42

(a) Sky suddenly cleared. (b) Definition bad all night.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance to	Wires I.	Wires II.	Wires III.	Wires IV.	Wires V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1862.
1862.				° ′	s	s	s	s	m s	h m s	s	s	s	s
Mar. 4	3415	π Leonis	....	81 20	25·9	34·1	42·9	51·1	52 59·7	9 52 42·74	− 0·24	+ 15·52	+ 15·49	− 2·92
	3459	α Leonis	....	77 23	32·0	40·2	48·9	57·1	1 5·9	10 0 38·82	− 0·22	+ 15·55	+ 15·49	− 2·96
	3484	....	8·0	57 56	42·9	52·5	2·5	12·2	6 22·0	10 6 2·42	− 0·15	....	+ 15·48	− 3·32
	3529	....	7·0	62 55	49·9	58·1	6·6	14·9	13 23·4	10 13 6·58	− 0·24	....	+ 15·48	− 2·92
	3592	....	8·0	67 50	8·0	16·4	24·8	33·1	22 41·8	10 22 21·82	− 0·26	....	+ 15·48	− 2·89
	3609	ρ Leonis	....	80 1	3·4	11·8	20·3	28·5	25 37·2	10 25 20·24	− 0·23	+ 15·49	+ 15·48	− 2·95
	3708	l Leonis	....	78 46	30·9	39·2	47·9	56·1	42 5·0	10 11 47·82	− 0·21	+ 15·41	+ 15·48	− 2·96
	3726	....	6·0	88 17	30·3	47·2	56·0	1·1	45 12·8	10 41 55·88	− 0·26	....	+ 15·47	− 2·89
	3768	....	5·0	85 41	57·0	5·1	13·9	22·0	53 30·5	10 53 13·70	− 0·26	....	+ 15·47	− 2·90
	3780	....	7·0	81 43	1·6	9·9	18·4	26·8	56 35·3	10 56 18·40	0·24	....	+ 15·47	− 2·93
	4145	η Virginis	....	89 56	21·8	29·9	38·5	46·8	12 55·0	12 12 38·40	− 0·27	+ 15·43	+ 15·45	− 2·60
Mar. 9	2971	ε Hydræ	....	83 6	0·5	8·9	17·2	25·6	39 34·1	8 39 17·26	− 0·29	+ 13·68	+ 13·63	− 2·71
	3171	83 Cancri	....	71 44	48·9	57·2	6·0	14·9	11 23·7	9 11 6·14	− 0·25	+ 13·55	+ 13·63	− 2·96
	3223	α Hydræ	....	98 5	21·0	29·1	37·8	46·0	20 54·5	9 20 37·68	− 0·35	+ 13·71	+ 13·63	− 2·70
	3331	ε Leonis	....	65 37	32·2	41·3	50·6	59·6	38 8·9	9 37 50·52	− 0·23	+ 13·59	+ 13·63	− 3·12
Mar. 10	3233	α Hydræ	....	98 5	21·0	29·1	37·6	46·0	20 54·6	9 20 37·66	− 0·36	+ 13·74	+ 13·72	− 2·70
	3331	ε Leonis	....	65 37	32·0	41·1	50·5	59·3	38 8·9	9 37 50·36	− 0·25	+ 13·77	+ 13·72	− 3·12
	3459	α Leonis	....	77 23	33·8	42·0	50·9	59·0	1 7·9	10 0 50·72	− 0·28	+ 13·70	+ 13·72	− 2·95
	3592	....	7·0	67 50	10·0	18·2	26·8	35·0	22 43·3	10 22 26·66	− 0·32	....	+ 13·72	− 2·89
	3609	ρ Leonis	....	80 1	5·1	13·3	22·1	30·4	25 39·3	10 25 22·01	− 0·29	+ 13·76	+ 13·72	− 2·96
	3995	δ Leonis	....	74 42	33·6	42·0	50·8	59·1	42 8·0	11 41 50·70	− 0·28	+ 13·66	+ 13·72	− 2·97
Mar. 11	3331	ε Leonis	....	65 37	32·0	41·0	50·4	59·3	38 8·5	9 37 50·26	− 0·27	+ 13·88	+ 13·97	− 3·11
	3371	μ Leonis	....	63 23	25·5	34·7	44·2	53·4	45 2·8	9 44 44·12	− 0·25	....	+ 13·97	− 3·17
	3380	....	....	83 26	0·6	8·9	17·3	25·7	46 34·0	9 46 17·30	− 0·32	....	+ 13·98	− 2·87
	3459	α Leonis	....	77 23	33·2	41·8	50·5	59·0	1 7·5	10 0 50·10	− 0·30	+ 14·04	+ 13·98	− 2·95
	3484	....	....	57 56	44·4	54·0	4·0	13·8	6 23·7	10 6 3·98	− 0·23	....	+ 13·98	− 3·31
	3523	γ^1 Leonis	....	69 30	53·0	2·0	11·0	19·9	12 28·9	10 12 10·96	− 0·26	+ 13·97	+ 13·98	− 3·08
	3609	ρ Leonis	....	80 1	5·0	13·2	22·0	30·1	25 38·9	10 25 21·84	− 0·31	+ 13·98	+ 13·99	− 2·96
	3834	δ Leonis	....	68 45	17·5	26·1	35·4	44·0	6 53·2	11 6 35·24	− 0·26	+ 14·03	+ 13·99	− 3·09
Mar. 20	3415	π Leonis	....	81 20	27·0	35·1	43·6	52·1	53 0·4	9 52 43·68	− 0·35	+ 14·63	+ 14·62	− 2·86
	3431	....	7·5	56 55	42·0	51·8	2·0	11·9	56 22·0	9 56 1·94	− 0·25	....	+ 14·61	− 3·27
	3459	α Leonis	....	77 23	32·9	41·1	49·9	58·2	1 7·0	10 0 49·82	− 0·33	+ 14·61	+ 14·60	− 2·91
	3995	β Leonis	....	74 42	32·9	41·2	50·0	58·3	42 7·1	11 41 49·90	− 0·33	+ 14·57	+ 14·58	− 3·03
April 1	1420	α Tauri	....	73 45	34·4	43·0	51·9	0·5	28 9·3	4 27 51·82	− 0·38	+ 10·09	+ 10·07	− 1·23
	4643	η Bootis	....	70 56	42·8	51·1	0·0	8·9	48 17·9	13 48 0·14	− 0·36	+ 10·03	+ 10·07	− 2·96
	4672	(a) τ Virginis	....	67 49	14·1	22·4	30·9	39·1	54 47·8	13 54 30·86	− 0·44	+ 10·07	+ 10·07	− 2·98
	4729	α Bootis	....	70 8	57·6	6·3	15·2	24·0	9 33·1	14 9 15·24	− 0·35	+ 10·09	+ 10·07	− 2·69
April 4	4648	η Bootis	....	70 56	42·3	51·0	0·2	8·6	48 17·1	13 47 59·90	− 0·37	+ 10·31	+ 10·38	− 2·99
	4672	τ Virginis	....	67 49	13·9	22·1	30·6	39·0	54 47·3	13 54 30·58	− 0·44	+ 10·39	+ 10·39	− 3·02
	4729	α Bootis	....	70 8	57·2	5·9	14·9	22·6	9 33·0	14 9 14·92	− 0·36	+ 10·46	+ 10·40	− 2·93
	4808	ρ Bootis	....	59 3	26·3	35·9	45·9	55·2	26 5·1	14 25 45·68	− 0·31	+ 10·50	+ 10·41	− 2·92
	4876	ε Bootis	....	62 22	31·8	41·0	50·4	59·8	39 9·2	14 38 50·44	− 0·32	+ 10·36	+ 10·42	− 2·85

(a) Definition bad. Stars much diffused. Violent wind from S.W.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviation.	Correction of Clock observed.	Correction of Clock Interpolated.	Correction to Mean R A., Jan. 1, 1862.
				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
1862. April 6	3708	ι Leonis	....	78 46	35·1	43·8	52·1	0·8	42 9·4	10 41 52·36	− 0·41	+ 11·00	+ 11·03	− 2·89
	3788	χ Leonis	....	81 57	29·2	37·6	46·0	54·1	58 3·0	10 57 46·01	− 0·42	+ 11·09	+ 11·03	− 2·91
	3834	δ Leonis	....	68 45	20·7	29·1	38·3	47·2	6 56·1	11 6 38·28	− 0·37	+ 11·05	+ 11·04	− 3·05
	3946	υ Leonis	....	90 6	28·8	37·0	45·4	53·5	30 2·0	11 29 45·34	− 0·46	+ 11·05	+ 11·04	− 2·94
	3995	β Leonis	....	74 42	36·2	44·9	53·6	2·1	42 10·9	11 41 53·54	− 0·40	+ 11·01	+ 11·05	− 3·03
April 11	3946	(a) υ Leonis	....	90 6	27·0	35·1	43·5	51·9	30 0·5	11 29 43·60	− 0·55	+ 12·86	+ 12·99	− 2·93
	3995	(b) β Leonis	....	74 42	34·1	42·9	51·6	0·1	42 9·0	11 41 51·51	− 0·47	+ 13·06	+ 12·99	− 3·02
	4052	σ Virginis	5·0	82 40	21·7	30·0	38·5	46·9	53 55·3	11 53 38·48	− 0·51	....	+ 12·99	− 3·01
	4145	η Virginis	....	89 56	24·9	33·0	41·5	49·6	12 58·0	12 12 41·40	− 0·55	....	+ 12·99	− 3·04
	360	(c) α Ursæ Minoris S. P.	....	1 26	39·5	22·5	51·0	35·0	19 5·0	13 7 54·60	− 6·79	....	+ 12·99	+ 39·88
	4648	η Bootis	....	70 56	39·8	48·1	57·4	6·0	48 15·0	13 47 57·32	− 0·45	+ 13·05	+ 12·99	− 3·07
April 12	3788	(d) χ Leonis	....	81 57	27·2	35·8	44·2	52·3	58 1·0	10 57 44·10	− 0·42	+ 12·99	+ 12·96	− 2·87
	3834	δ Leonis	....	68 45	18·5	27·1	36·4	45·3	6 54·3	11 6 36·38	− 0·37	+ 12·91	+ 12·95	− 3·01
	3995	β Leonis	....	74 42	34·4	42·9	51·5	0·0	12 9·0	11 41 51·56	− 0·39	+ 12·96	+ 12·95	− 3·02
	360	α Ursæ Minoris S. P.	....	1 26	37·5	17·5	17·0	32·0	....	13 7 52·12	− 4·20	....	+ 12·94	+ 39·73
	4532	ζ Virginis	....	89 55	13·9	22·0	30·5	38·6	27 47·0	13 27 30·40	− 0·46	....	+ 12·94	− 3·11
April 16	4145	η Virginis	....	89 56	25·4	33·5	42·0	50·1	12 58·8	12 12 41·96	− 0·46	+ 12·30	+ 12·29	− 3·04
	4199	....	7·0	63 22	16·7	26·0	35·3	44·6	20 54·0	12 20 35·32	− 0·33	....	+ 12·29	− 3·16
	4205	....	6·5	63 3	17·0	26·1	35·8	44·9	21 54·1	12 21 35·04	− 0·33	....	+ 12·29	− 3·16
	4231	....	8·0	64 50	12·6	21·4	31·0	40·0	26 49·3	12 26 30·86	− 0·31	....	+ 12·29	− 3·15
	4340	δ Virginis	4·0	85 54	13·9	22·0	30·4	38·6	48 47·1	12 48 30·40	− 0·44	....	+ 12·29	− 3·10
	4364	....	7·0	68 2	23·3	32·0	41·0	49·9	54 59·1	12 54 41·06	− 0·36	....	+ 12·29	− 3·14
	4421	β Comæ	4·0	61 28	58·0	7·3	17·1	26·5	5 36·0	13 5 16·98	− 0·34	....	+ 12·29	− 3·18
	360	α Ursæ Minoris S. P.	....	1 26	37·0	21·5	51·0	32·5	13 3·0	13 7 53·00	− 3·96	....	+ 12·29	+ 38·96
	4503	....	7·0	85 27	49·3	57·7	6·0	14·1	22 22·8	13 22 5·98	− 0·44	....	+ 12·29	− 3·13
	4526	....	6·0	64 58	48·9	57·9	7·0	16·1	26 25·6	13 26 7·10	− 0·31	....	+ 12·29	− 3·14
	4532	ζ Virginis	....	89 55	14·1	22·6	31·0	39·2	27 47·9	13 27 30·96	− 0·46	....	+ 12·29	− 3·14
	4648	η Bootis	....	70 56	40·5	49·0	58·0	6·9	48 15·8	13 47 58·01	− 0·37	+ 12·28	+ 12·29	− 3·10
	4969	ψ Bootis	....	62 32	4·3	13·5	23·1	32·3	58 42·0	14 58 23·04	− 0·33	+ 12·25	+ 12·29	− 2·97
	5000	....	6·0	56 25	34·6	41·2	54·6	4·3	5 14·7	15 4 54·48	− 0·30	....	+ 12·29	− 2·96
	5034	β Libræ	....	98 54	9·7	18·0	26·5	34·8	9 43·2	15 9 26·44	− 0·50	+ 12·32	+ 12·29	− 3·20
April 17	4145	η Virginis	....	89 56	25·3	33·5	42·0	50·2	12 58·8	12 12 41·96	− 0·47	+ 12·30	+ 12·30	− 3·03
	4532	ζ Virginis	....	89 55	14·5	22·7	31·0	39·2	27 47·8	13 27 31·04	− 0·47	+ 12·37	+ 12·30	− 3·11
	4648	η Bootis	....	70 56	40·6	49·1	58·0	6·7	48 15·9	13 47 58·06	− 0·38	+ 12·28	+ 12·30	− 3·11
	4672	τ Virginis	....	87 19	12·3	20·5	28·3	37·1	54 45·5	13 54 28·86	− 0·45	+ 12·25	+ 12·30	− 3·15
	4729	α Bootis	....	70 8	55·7	4·2	13·3	22·0	9 31·0	14 9 13·21	− 0·38	+ 12·29	+ 12·30	− 3·06
April 19	3995	β Leonis	....	74 42	34·9	43·2	52·0	0·6	42 9·2	11 41 51·96	− 0·42	+ 12·53	+ 12·52	− 2·98
	4145	η Virginis	....	89 56	25·0	33·2	42·0	50·1	12 58·5	12 12 41·76	− 0·48	....	+ 12·53	− 3·03
	360	α Ursæ Minoris S. P.	....	1 26	37·5	23·0	49·5	30·5	19 3·5	13 7 52·80	− 2·97	....	+ 12·53	+ 38·22
	4532	ζ Virginis	....	89 55	14·3	22·5	31·0	39·1	27 47·6	13 27 30·90	− 0·48	+ 12·53	+ 12·54	− 3·15
April 22	4145	η Virginis	....	89 56	21·2	32·3	40·9	42·0	12 57·5	12 12 40·78	− 0·47	....	+ 13·53	− 3·03
	360	α Ursæ Minoris S. P.	....	1 26	43·5	22·5	52·5	33·0	....	13 7 56·40	− 2·07	....	+ 13·53	+ 37·34
	4648	η Bootis	....	70 56	39·4	48·0	57·0	5·6	48 14·6	13 47 56·92	− 0·41	+ 13·47	+ 13·53	− 3·13

(a) Stars blurred and unsteady. (b) The beats of the clock were sometimes very unequal. (c) Very unsteady. (d) Definition bad.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R. A. Jan. 1, 1862.
1862.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
April 22	4729	α Bootis	....	70 8	51·3	3·0	12·0	20·8	9 30·0	14 9 12·02	− 0·40	+ 13·58	+ 13·54	− 3·11
	4808	ρ Bootis	....	59 3	23·6	33·0	43·0	52·5	26 2·3	14 25 42·88	− 0·37	+ 13·57	+ 13·54	− 3·13
	4876	ε Bootis	....	62 22	28·9	38·0	47·7	57·0	39 6·3	14 38 47·58	− 0·37	+ 13·51	+ 13·54	− 3·09
	5143	α Coronæ Borealis	....	62 50	21·9	31·0	40·7	49·8	28 59·3	15 28 40·54	− 0·38	+ 13·57	+ 13·55	− 2·96
	5196	α Serpentis	....	83 9	1·7	9·9	18·3	26·5	37 35·0	15 37 18·28	− 0·45	+ 13·58	+ 13·56	− 3·07
April 28	1883	α Orionis	....	62 37	11·6	19·9	28·4	36·8	47 45·3	5 47 28·44	− 0·50	+ 15·32	+ 15·40	− 1·18
	3331	ε Leonis	....	65 37	30·1	39·0	48·4	57·4	38 6·9	9 37 48·36	− 0·44	+ 15·38	+ 15·43	− 2·54
	4876	ε Bootis	....	62 22	27·0	36·0	45·5	55·0	39 4·4	14 38 45·64	− 0·42	+ 15·55	+ 15·45	− 3·14
	4969	ψ Bootis	....	62 32	1·5	10·6	20·0	29·3	58 39·0	14 58 20·08	− 0·42	+ 15·44	+ 15·45	− 3·11
	5000	....	6·5	56 25	31·8	41·5	51·6	1·3	5 11·5	15 4 51·54	− 0·41	....	+ 15·45	− 3·10
	5034	β Libræ	....	96 54	6·8	15·0	23·5	31·9	9 40·4	15 9 23·52	− 0·57	+ 15·48	+ 15·45	− 3·37
	5071	....	6·0	37 36	22·6	36·2	50·0	3·5	16 17·4	15 15 49·94	− 0·33	....	+ 15·45	− 3·22
	5091	....	6·0	26 11	31·8	50·4	9·3	28·0	20 47·0	15 20 9·30	− 0·28	....	+ 15·46	− 3·52
	5143	α Coronæ Borealis	....	62 50	20·1	29·3	38·8	48·0	28 57·6	15 28 38·76	− 0·42	+ 15·48	+ 15·46	− 3·05
	5196	α Serpentis	....	83 9	59·9	8·0	16·4	24·8	37 33·2	15 37 16·46	− 0·50	+ 15·53	+ 15·46	− 3·15
	5414	δ Ophiuchi	....	93 21	38·8	46·9	55·4	3·5	7 12·0	16 6 55·32	− 0·54	+ 15·40	+ 15·47	− 3·23
April 29	4648	η Bootis	....	70 56	36·9	45·5	54·4	3·1	48 12·0	13 47 54·38	− 0·47	+ 16·10	+ 16·02	− 3·16
	4729	α Bootis	....	70 8	52·1	0·7	9·9	18·2	9 27·5	14 9 9·68	− 0·47	+ 16·02	+ 16·03	− 3·14
	4808	ρ Bootis	....	59 3	21·3	30·9	40·6	50·1	26 0·1	14 25 40·60	− 0·43	+ 15·96	+ 16·03	− 3·18
	4876	ε Bootis	....	62 22	26·5	35·7	45·1	54·5	39 4·0	14 38 45·16	− 0·41	+ 16·05	+ 16·04	− 3·14
April 30	1681	β Tauri	....	61 30	0·8	10·0	19·6	29·1	17 39·0	5 17 19·70	− 0·46	+ 16·27	+ 16·36	− 1·27
	360	(a) α Ursæ Minoris S. P.	....	1 26	42·5	......	51·0	33·0	19 5·5	13 7 53·41	− 3·77	....	+ 16·45	+ 34·34
	4526	....	....	64 58	44·8	53·9	3·0	12·1	26 21·7	13 26 3·10	− 0·47	....	+ 16·46	− 3·17
	4532	ζ Virginis	....	89 55	10·2	18·4	27·1	35·2	27 43·8	13 27 26·94	− 0·57	....	+ 16·47	− 3·19
	4552	....	....	53 3	46·2	56·4	6·9	17·0	31 28·0	13 31 6·90	− 0·41	....	+ 16·47	− 3·26
	4575	....	....	66 39	43·0	52·0	0·2	10·2	37 19·5	13 36 59·98	− 0·47	....	+ 16·47	− 3·17
	4648	η Bootis	....	70 56	36·2	45·0	54·0	2·8	48 11·8	13 47 53·96	− 0·49	+ 16·55	+ 16·48	− 3·17
	4672	τ Virginis	....	87 49	8·2	16·4	25·0	33·1	54 41·7	13 54 21·88	− 0·56	+ 16·42	+ 16·48	− 3·23
	4808	ρ Bootis	....	59 3	20·9	30·0	40·0	49·8	25 59·7	14 25 40·08	− 0·44	+ 16·49	+ 16·49	− 3·16
	4876	ε Bootis	....	62 22	26·0	35·1	44·8	54·0	39 3·6	14 38 44·70	− 0·45	+ 16·53	+ 16·49	− 3·15
	5143	α Coronæ Borealis	....	62 50	19·0	28·2	37·9	47·1	28 56·6	15 28 37·76	− 0·46	+ 16·55	+ 16·49	− 3·08
	5196	α Serpentis	....	83 9	58·9	7·0	15·6	23·9	37 32·5	15 37 15·58	− 0·54	+ 16·49	+ 16·50	− 3·19
May 2	4648	η Bootis	....	70 56	35·8	44·0	53·1	1·8	48 10·9	13 47 53·12	− 0·48	+ 17·38	+ 17·40	− 3·17
	4672	τ Virginis	....	87 49	7·3	15·5	24·0	32·1	54 40·[illegible]	13 54 23·94	− 0·56	+ 17·36	+ 17·40	− 3·23
	4678	....	7·0	57 43	52·5	2·3	12·2	22·0	56 32·0	13 56 12·20	− 0·43	....	+ 17·40	− 3·21
	4716	κ Virginis	6·0	99 40	2·0	10·3	19·0	27·2	5 35·9	14 5 18·88	− 0·62	....	+ 17·41	− 3·37
	4723	....	7·0	60 17	13·6	23·0	32·4	42·1	7 52·0	14 7 32·62	− 0·45	....	+ 17·41	− 3·20
	4729	α Bootis	....	70 8	50·4	59·2	8·2	17·0	9 25·9	14 9 8·14	− 0·48	+ 17·58	+ 17·41	− 3·15
	4756	....	7·0	37 22	0·1	13·8	27·5	41·0	13 55·1	14 13 27·50	− 0·34	....	+ 17·41	− 3·46
	4797	....	6·5	53 13	59·0	9·1	19·9	30·1	22 40·8	14 22 19·78	− 0·41	....	+ 17·42	− 3·22
	4808	ρ Bootis	....	59 3	19·8	29·1	39·0	48·7	25 58·9	14 25 39·10	− 0·44	+ 17·48	+ 17·42	− 3·19
	4876	ε Bootis	....	62 22	25·0	34·1	43·8	53·1	39 2·8	14 38 43·76	− 0·45	+ 17·48	+ 17·43	− 3·17
	4942	....	7·0	49 50	33·0	43·7	54·8	5·4	54 16·6	14 53 54·70	− 0·40	....	+ 17·43	− 3·19
	4992	....	6·0	34 57	37·9	51·9	6·9	21·0	2 35·8	15 2 6·70	− 0·33	....	+ 17·44	− 3·37
	5001	....	7·0	60 17	32·8	42·4	52·0	1·3	5 11·2	15 4 51·94	− 0·45	....	+ 17·44	− 3·14
	5034	β Libræ	....	98 54	4·9	13·1	21·8	30·0	9 38·8	15 9 21·72	− 0·62	+ 17·38	+ 17·44	− 3·48

(a) Definition bad.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1862.
				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
1862. May 2	5071	....	6·0	37 36	21·0	34·1	48·0	1·6	16 15·3	15 15 48·00	− 0·34	....	+ 17·45	− 3·27
	5091	....	6·0	26 11	29·6	48·0	7·0	25·9	20 45·0	15 20 7·10	− 0·26	....	+ 17·45	− 3·56
	5143	α Coronæ Borealis........	....	62 50	18·2	27·4	37·0	46·1	28 55·5	15 28 36·84	− 0·15	+ 17·48	+ 17·46	− 3·10
	5196	α Serpentis..............	....	83 9	58·0	6·2	14·9	23·0	37 31·5	15 37 14·72	− 0·54	+ 17·37	+ 17·46	− 3·21
	5245	ε Serpentis..............	....	85 8	26·0	34·3	42·8	51·0	43 59·4	15 43 42·70	− 0·55	....	+ 17·46	− 3·22
	5284	γ Serpentis..............	....	73 51	33·8	42·2	51·0	59·8	50 8·4	15 49 51·01	− 0·50	....	+ 17·46	− 3·11
	5414	δ Ophiuchi...............	....	93 21	36·8	45·0	53·6	1·6	7 10·2	16 6 53·44	− 0·59	+ 17·40	+ 17·46	− 3·30
May 13	4808	ρ Bootis.................	....	59 3	17·2	26·5	36·7	46·0	25 56·2	14 25 36·52	− 0·45	+ 20·10	+ 20·04	− 3·22
	4969	(a) ψ Bootis.............	....	62 32	57·0	6·1	15·8	24·9	58 34·1	14 58 15·64	− 0·46	+ 20·03	+ 20·04	− 3·22
	5143	α Coronæ Borealis........	....	62 50	15·7	24·9	34·4	43·6	28 53·0	15 28 34·32	− 0·46	+ 20·11	+ 20·04	− 3·20
	5196	α Serpentis..............	....	83 9	55·7	3·8	12·2	20·5	37 29·3	15 37 12·30	− 0·55	+ 19·93	+ 20·04	− 3·34
May 14	5143	α Coronæ Borealis........	....	62 50	15·7	24·9	34·3	43·4	28 53·0	15 28 34·26	− 0·46	+ 20·18	+ 20·26	− 3·21
	5245	ε Serpentis..............	3·0	85 8	23·4	31·6	40·0	48·5	43 56·9	15 43 40·08	− 0·56	....	+ 20·26	− 3·37
	5284	γ Serpentis..............	4·0	73 54	31·0	39·8	48·3	56·9	50 5·6	15 49 48·32	− 0·51	....	+ 20·26	− 3·26
	5414	δ Ophiuchi...............	....	93 21	34·0	42·2	50·9	59·0	7 7·3	16 6 50·68	− 0·60	+ 20·34	+ 20·26	− 3·47
	5452	....	6·0	68 33	30·9	39·5	48·8	57·4	14 6·7	16 13 48·66	− 0·49	....	+ 20·26	− 3·19
	5493	....	....	87 21	20·1	28·2	36·8	45·0	19 53·4	16 19 36·70	− 0·57	....	+ 20·26	− 3·36
	5504	....	....	74 21	14·4	22·9	31·6	40·0	21 48·9	16 21 31·56	− 0·51	....	+ 20·26	− 3·23
	5527	....	7·0	69 14	59·9	8·8	17·8	26·5	24 35·2	16 24 17·64	− 0·49	....	+ 20·26	− 3·18
	5537	....	7·0	79 21	28·0	36·4	45·0	53·3	27 2·0	16 26 44·94	− 0·53	....	+ 20·26	− 3·27
	5604	ζ Herculis...............	....	58 9	28·9	38·6	48·3	58·0	36 7·9	16 35 48·34	− 0·44	+ 20·26	+ 20·26	− 3·08
	5615	....	....	53 14	31·8	41·8	52·7	2·9	38 13·2	16 37 52·48	− 0·42	....	+ 20·26	− 3·06
	5686	....	7·5	74 23	32·0	40·4	49·6	58·0	47 6·9	16 46 49·38	− 0·51	....	+ 20·26	− 3·19
	5777	....	8·0	54 30	7·9	17·7	28·4	38·2	1 48·9	17 1 28·22	− 0·42	....	+ 20·26	− 3·00
May 20	4876	ε Bootis.................	....	62 22	20·5	29·7	39·2	48·4	38 58·1	14 38 39·18	− 0·47	+ 22·14	+ 22·20	− 3·22
	5031	β Libræ..................	....	98 54	0·3	8·6	17·0	25·1	9 34·0	15 9 17·00	− 0·65	+ 22·29	+ 22·21	− 3·58
	5071	....	6·0	37 36	15·9	29·5	43·4	56·8	16 10·6	15 15 43·24	− 0·34	....	+ 22·21	− 3·34
	5091	....	6·0	26 11	24·8	43·5	2·8	21·0	20 40·2	15 20 2·46	− 0·26	....	+ 22·22	− 3·60
	5143	α Coronæ Borealis........	....	62 50	13·6	22·9	32·2	41·5	28 51·0	15 28 32·24	− 0·48	+ 22·26	+ 22·23	− 3·25
	5196	α Serpentis..............	....	83 9	53·4	1·5	10·1	18·4	37 27·0	15 37 10·08	− 0·57	+ 22·23	+ 22·23	− 3·40
	5245	ε Serpentis..............	....	85 8	21·5	29·6	38·2	46·3	43 55·0	15 43 38·12	− 0·56	....	+ 22·23	− 3·43
	5284	γ Serpentis..............	....	73 54	29·2	37·5	46·4	55·0	50 3·9	15 49 46·40	− 0·53	....	+ 22·24	− 3·31
	5493	....	6·0	87 21	18·4	26·6	35·0	43·1	19 51·8	16 19 34·96	− 0·59	....	+ 22·24	− 3·46
	5504	....	7·5	74 21	12·6	21·0	29·9	38·3	21 47·1	16 21 29·78	− 0·53	....	+ 22·24	− 3·30
	5527	....	6·0	69 14	58·3	6·9	15·9	24·7	21 33·6	16 24 15·88	− 0·50	....	+ 22·24	− 3·26
	5537	....	7·0	79 21	26·2	34·6	43·0	51·6	26 0·2	16 25 43·12	− 0·55	....	+ 22·25	− 3·35
	5597	....	6·5	64 53	40·5	49·6	59·0	8·0	35 17·3	16 34 58·88	− 0·49	....	+ 22·25	− 3·21
June 3	4808	ψ Bootis.................	....	59 3	53·8	3·0	12·5	22·0	58 31·3	14 58 12·52	− 0·45	+ 23·15	+ 23·30	− 3·23
	4932	....	....	34 57	31·6	46·1	0·9	15·0	2 30·1	15 2 0·74	− 0·28	....	+ 23·30	− 3·28
	5001	....	7·0	60 17	27·0	36·4	46·2	55·5	5 5·5	15 4 46·12	− 0·45	....	+ 23·30	− 3·24
	5034	β Libræ..................	....	98 54	59·2	7·5	16·1	24·4	9 33·0	15 9 16·04	− 0·67	+ 23·34	+ 23·30	− 3·65
	5143	α Coronæ Borealis........	....	62 50	12·6	21·9	31·2	40·6	28 50·0	15 28 31·26	− 0·46	+ 23·26	+ 23·30	− 3·28
	5196	α Serpentis..............	....	83 9	52·4	0·5	9·1	17·2	37 26·0	15 37 9·04	− 0·57	+ 23·35	+ 23·30	− 3·48
	5414	δ Ophiuchi...............	....	93 21	31·2	39·4	48·0	56·0	7 4·5	16 6 47·82	− 0·62	+ 23·43	+ 23·30	− 3·68
	5452	....	6·0	68 33	28·0	36·9	46·0	54·7	14 3·9	16 13 45·90	− 0·49	....	+ 23·30	− 3·37
	5466	γ Herculis...............	4·0	70 32	13·2	21·7	30·8	39·2	15 48·4	16 15 30·66	− 0·49	....	+ 23·30	− 3·39
	5507	....	7·0	74 17	30·8	39·2	48·0	56·5	22 5·2	16 21 47·94	− 0·53	....	+ 23·30	− 3·43

(a) Cloudy.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed	North Polar Distance set to.	Wires.					Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock		Correction to Mean R.A. Jan. 1, 1862.
					I.	II.	III.	IV.	V.			observed.	interpolated.	
1862.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
June 3	5527	....	6·0	69 14	57·0	5·9	15·0	23·7	24 32·8	16 24 14·88	− 0·49	....	+ 23·30	− 3·38
	5537	....	7·0	79 21	25·1	33·5	42·3	50·6	26 59·2	16 26 42·14	− 0·55	....	+ 23·30	− 3·49
	5615	....	6·0	53 14	29·0	39·0	49·9	59·8	38 10·5	16 37 49·64	− 0·40	....	+ 23·30	− 3·27
	5634	....	7·0	78 38	0·7	9·0	17·8	26·0	41 34·6	16 41 17·62	− 0·55	....	+ 23·30	− 3·49
	5686	....	7·5	74 23	29·4	38·0	46·8	55·1	47 3·9	16 46 46·64	− 0·53	....	+ 23·30	− 3·44
	5708	κ Ophiuchi	....	80 25	32·1	40·5	49·0	57·3	51 6·0	16 50 48·98	− 0·55	+ 23·30	+ 23·30	− 3·50
	5716	....	7·0	74 21	46·5	55·4	4·0	12·7	52 21·4	16 52 4·00	− 0·53	....	+ 23·30	− 3·14
	5726	....	7·0	83 13	9·9	18·1	26·6	35·0	53 43·4	16 53 26·60	− 0·57	....	+ 23·30	− 3·55
	5732	....	6·0	74 51	40·2	48·8	57·5	6·0	55 14·9	16 54 57·48	− 0·54	....	+ 23·30	− 3·44
	5776	....	6·0	41 1	25·1	37·9	50·9	3·3	1 16·0	17 0 50·64	− 0·32	....	+ 23·30	− 3·23
	5787	....	6·5	79 47	33·8	42·0	50·7	59·0	3 7·7	17 2 50·64	− 0·55	....	+ 23·30	− 3·50
	5821	α Herculis	....	75 27	45·0	53·4	2·1	10·5	8 19·4	17 8 2·08	− 0·54	+ 23·28	+ 23·30	− 3·44
	5917	....	5·0	29 51	1·5	18·0	34·9	51·6	24 8·6	17 23 34·92	− 0·22	....	+ 23·30	− 3·26
	5941	α Ophiuchi	....	77 20	55·5	3·9	12·8	21·0	28 29·8	17 28 12·60	− 0·55	....	+ 23·30	− 3·46
	6213	....	6·0	82 48	53·2	1·5	10·0	18·3	12 26·9	18 12 9·98	− 0·57	....	+ 23·30	− 3·47
	6281	δ Ursæ Minoris	....	3 24	......	......	34·0	53·0	21 15·5	18 16 33·32	+ 2·05	....	+ 23·30	− 7·04
	6355	α Lyræ	....	51 20	33·0	45·2	56·1	6·7	32 17·8	18 31 56·16	− 0·39	+ 23·32	+ 23·30	− 3·11
June 4	5143	α Coronæ Borealis	....	62 50	12·9	22·0	31·3	40·6	28 50·1	15 28 31·38	− 0·43	+ 23·11	+ 23·20	− 3·28
	5196	α Serpentis	....	83 9	52·2	0·5	9·1	17·5	37 26·0	15 37 9·06	− 0·53	+ 23·29	+ 23·20	− 3·48
	5414	δ Ophiuchi	....	93 21	31·5	39·6	48·0	56·2	7 4·9	16 6 48·06	− 0·58	+ 23·13	+ 23·20	− 3·68
	5507	....	7·0	74 17	30·8	39·1	48·1	56·7	22 5·5	16 21 48·10	− 0·49	....	+ 23·20	− 3·44
	5529	....	8·0	78 18	42·0	50·1	59·0	7·2	25 16·0	16 24 58·86	− 0·51	....	+ 23·20	− 3·48
	5597	....	6·0	64 53	39·8	48·9	58·2	7·0	35 16·6	16 34 58·10	− 0·41	....	+ 23·20	− 3·35
	5615	....	6·5	53 14	29·0	39·2	49·9	0·0	38 10·8	16 37 49·78	− 0·38	....	+ 23·20	− 3·29
	5634	....	....	78 38	0·3	9·0	18·0	26·0	41 34·9	16 41 17·64	− 0·51	....	+ 23·20	− 3·49
	5686	....	7·5	74 23	29·5	38·0	46·9	55·2	47 1·0	16 46 46·72	− 0·49	....	+ 23·20	− 3·45
	5708	κ Ophiuchi	....	80 25	32·2	40·5	49·1	57·5	51 6·0	16 50 49·06	− 0·52	+ 23·20	+ 23·20	− 3·51
	5726	....	6·0	83 13	10·0	18·0	26·8	34·9	53 13·6	16 53 26·66	− [illegible]·53	....	+ 23·20	− 3·56
	5776	....	6·0	41 1	25·1	37·9	50·9	3·1	1 16·0	17 0 50·60	− 0·31	....	+ 23·20	− 3·21
	5787	....	7·0	79 47	33·9	42·0	50·8	59·0	3 7·6	17 2 50·66	− 0·52	....	+ 23·20	− 3·51
	5821	α Herculis	....	75 27	45·0	53·4	2·1	10·8	8 19·5	17 8 2·16	− 0·50	....	+ 23·20	− 3·45
	6281	δ Ursæ Minoris	....	3 24	53·0	11·8	34·5	53·0	21 17·0	18 16 33·86	+ 1·62	....	+ 23·20	− 7·10
	6355	α Lyræ	....	51 20	35·0	45·3	56·1	6·9	32 17·8	18 31 56·22	− 0·38	+ 23·27	+ 23·20	− 3·13
June 6	5143	α Coronæ Borealis	....	62 50	13·1	22·3	31·9	41·1	28 50·6	15 28 31·80	− 0·48	+ 22·73	+ 22·71	− 3·28
	5196	α Serpentis	....	83 9	52·9	1·2	9·9	18·0	37 26·5	15 37 9·70	− 0·56	+ 22·69	+ 22·71	− 3·49
	5414	δ Ophiuchi	....	93 21	31·9	40·0	48·5	56·8	7 5·2	16 6 18·48	− 0·62	+ 22·79	+ 22·70	− 3·70
	5452	....	7·0	68 33	28·5	37·1	46·4	55·2	14 4·4	16 13 46·32	− 0·48	....	+ 22·70	− 3·38
	5466	γ Herculis	....	70 32	13·6	22·2	31·2	40·0	15 48·9	16 15 31·18	− 0·49	....	+ 22·70	− 3·40
	5507	....	7·0	74 17	31·2	39·8	48·6	57·1	22 6·0	16 21 48·51	− 0·51	....	+ 22·70	− 3·45
	5529	(a)	8·0	78 18	42·5	50·8	59·4	8·0	25 16·4	16 24 59·42	− 0·53	....	+ 22·69	− 3·50
	5597	....	6·0	64 53	40·6	49·4	58·9	7·8	35 17·0	16 34 58·74	− 0·45	....	+ 22·69	− 3·36
	5620	....	6·0	74 1	31·8	40·0	49·0	57·4	39 6·1	16 38 48·86	− 0·51	....	+ 22·69	− 3·46
	5634	....	7·0	78 38	1·2	9·5	18·2	26·6	41 35·2	16 41 18·14	− 0·54	....	+ 22·69	− 3·52
	5708	κ Ophiuchi	....	80 25	33·0	41·1	49·8	58·0	51 6·6	16 50 49·70	− 0·54	+ 22·59	+ 22·69	− 3·52
	5716	....	....	74 21	47·5	55·9	4·6	13·1	52 22·0	16 52 4·62	− 0·51	....	+ 22·69	− 3·40
	5732	....	....	74 51	40·9	49·4	58·1	6·6	55 15·2	16 54 58·04	− 0·51	....	+ 22·69	− 3·47
	5821	(b) α Herculis	....	75 27	45·4	54·0	2·9	11·2	8 20·0	17 8 2·70	− 0·52	+ 22·68	+ 22·69	− 3·48

(a) Faint—cloud. (b) Definition bad.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1862.
				° ′	s.	s.	s.	s.	m s.	h m s.	s.	s.	s.	s.
1862. June 14	5143	α Coronæ Borealis	....	62 50	14·2	23·4	33·0	42·1	28 51·8	15 28 32·90	− 0·50	+ 21·64	+ 21·60	− 3·27
	5196	α Serpentis	....	83 9	54·0	2·2	10·9	19·1	37 27·8	15 37 10·80	− 0·61	+ 21·65	+ 21·60	− 3·50
	5414	δ Ophiuchi	....	93 21	33·0	41·1	49·8	58·0	7 6·6	16 6 49·70	− 0·67	+ 21·65	+ 21·60	− 3·73
	5604	ζ Herculis	....	58 9	27·9	37·4	47·2	57·0	36 6·9	16 35 47·28	− 0·48	+ 21·60	+ 21·60	− 3·32
	5708	κ Ophiuchi	....	80 25	34·0	42·3	51·0	59·1	51 7·8	16 50 50·84	− 0·59	+ 21·56	+ 21·60	− 3·58
	5821	α Herculis	....	75 27	46·9	55·2	4·0	12·5	7 21·2	17 7 3·96	− 0·57	+ 21·54	+ 21·60	− 3·55
June 17	5708	(a) κ Ophiuchi	....	80 25	33·9	42·1	50·8	59·1	51 7·8	16 50 50·71	− 0·62	+ 21·71	+ 21·74	− 3·60
	5716	....	....	74 21	48·8	57·0	5·6	14·2	52 23·1	16 52 5·74	− 0·59	....	+ 21·74	− 3·54
	5726	....	7·0	83 13	11·5	19·9	28·4	36·5	53 45·0	16 53 28·26	− 0·64	....	+ 21·74	− 3·66
	5732	....	7·0	74 51	42·0	50·4	59·0	7·8	55 16·6	16 54 59·16	− 0·59	....	+ 21·74	− 3·55
	5777	....	5·0	54 30	6·7	16·9	27·1	37·0	1 47·8	17 1 27·10	− 0·48	....	+ 21·74	− 3·34
	5787	....	7·0	79 47	35·3	43·8	52·2	0·7	3 9·3	17 2 52·22	− 0·62	....	+ 21·74	− 3·62
	5821	α Herculis	....	75 27	46·8	55·0	3·9	12·2	8 21·0	17 8 3·78	− 0·59	+ 21·76	+ 21·74	− 3·57
	5863	μ Herculis	4·5	57 21	52·4	2·0	12·0	21·9	15 31·9	17 15 12·04	− 0·49	....	+ 21·74	− 3·38
	5893	ν Ophiuchi	4·0	85 45	6·6	14·3	22·9	31·0	19 39·6	17 19 22·76	− 0·65	....	+ 21·74	− 3·73
	5917	....	5·0	29 51	3·0	19·6	36·8	53·0	24 10·0	17 23 36·48	− 0·27	....	+ 21·74	− 3·32
	5941	α Ophiuchi	....	77 20	57·1	5·5	14·2	22·8	28 31·1	17 28 14·14	− 0·61	+ 21·86	+ 21·74	− 3·61
	5996	β Ophiuchi	3·0	85 22	5·0	13·4	21·9	30·2	36 38·8	17 36 21·86	− 0·65	....	+ 21·74	− 3·73
	6021	μ Herculis	....	62 12	26·9	36·2	45·6	55·0	41 4·7	17 40 45·68	− 0·52	....	+ 21·74	− 3·41
	6035	....	7·0	80 7	3·1	11·4	20·0	28·3	43 37·0	17 43 19·96	− 0·62	....	+ 21·74	− 3·65
	6123	(b) 70 Ophiuchi	5·0	87 28	54·8	3·0	11·6	19·9	58 26·3	17 58 11·52	− 0·66	....	+ 21·74	− 3·77
	6143	....	4·0	80 27	14·1	22·4	31·0	39·1	0 48·0	18 0 30·92	− 0·62	....	+ 21·74	− 3·66
	6281	δ Ursæ Minoris	....	3 24	54·5	13·0	36·0	54·0	21 17·5	18 16 35·00	+ 2·13	....	+ 21·74	− 7·40
	6302	χ Draconis	....	17 19	18·5	46·0	15·0	42·2	24 10·8	18 23 14·50	− 0·02	....	+ 21·74	− 5·49
	6355	α Lyræ	....	51 20	37·0	47·5	58·1	8·8	32 19·3	18 31 58·14	− 0·45	+ 21·63	+ 21·74	− 3·34
	6429	β Lyræ	....	56 47	21·4	31·1	41·2	51·0	45 1·1	18 44 41·16	− 0·49	+ 21·80	+ 21·74	− 3·34
	6468	....	6·0	56 13	11·1	21·0	31·2	41·0	49 51·1	18 49 31·08	− 0·49	....	+ 21·74	− 3·35
	6480	....	6·0	57 16	13·6	23·2	33·2	43·1	51 53·1	18 51 33·24	− 0·49	....	+ 21·74	− 3·36
	6487	ι Aquilæ	3·0	75 6	46·8	55·2	4·0	12·5	53 21·2	18 53 3·91	− 0·59	....	+ 21·74	− 3·54
	6527	....	7·5	71 3	14·6	23·1	32·3	41·0	58 50·0	18 58 32·20	− 0·57	....	+ 21·74	− 3·48
	6542	....	7·0	65 57	17·2	26·4	35·6	44·7	0 54·0	19 0 35·58	− 0·55	....	+ 21·74	− 3·42
	6567	....	8·0	58 31	52·0	1·5	11·5	21·0	5 31·2	19 5 11·44	− 0·51	....	+ 21·74	− 3·35
	6602	....	6·0	67 12	17·5	26·4	35·8	44·5	11 53·9	19 11 35·62	− 0·49	....	+ 21·74	− 3·42
	6617	....	6·0	78 42	49·4	57·4	6·1	14·6	13 23·1	19 13 6·12	− 0·61	....	+ 21·74	− 3·55
	6646	δ Aquilæ	....	87 8	58·4	6·7	15·0	23·2	18 31·6	19 18 15·02	− 0·66	+ 21·66	+ 21·74	− 3·66
	6674	α Vulpeculæ	5·0	65 36	21·5	30·8	40·0	49·1	22 58·3	19 22 39·91	− 0·55	....	+ 21·74	− 3·38
June 26	4876	ι Bootis	....	62 22	20·1	29·3	39·0	48·2	38 57·9	14 38 38·90	− 0·54	+ 22·30	+ 22·37	− 3·03
	6355	α Lyræ	....	51 20	36·1	46·4	57·3	8·0	32 18·8	18 31 57·32	− 0·47	+ 22·56	+ 22·43	− 3·43
	6429	β Lyræ	....	56 47	20·9	30·8	40·8	50·6	45 0·7	18 44 40·76	− 0·51	+ 22·34	+ 22·43	− 3·46
	6528	ζ Aquilæ	....	76 19	28·7	37·2	46·0	54·4	59 3·0	18 58 45·86	− 0·62	+ 22·45	+ 22·44	− 3·67
	6595	ω Aquilæ	....	78 38	45·4	53·5	2·3	10·5	11 19·2	19 11 2·18	− 0·62	+ 22·47	+ 22·45	− 3·70
	6646	δ Aquilæ	....	87 8	57·9	5·9	14·6	22·7	18 31·0	19 18 14·42	− 0·67	+ 22·43	+ 22·45	− 3·82
	6772	γ Aquilæ	....	79 42	6·9	15·1	23·8	32·0	39 40·9	19 39 23·72	− 0·63	+ 22·50	+ 22·45	− 3·66
	6802	α Aquilæ	....	81 28	28·0	36·2	44·8	53·0	44 1·8	19 43 44·76	− 0·63	+ 22·54	+ 22·46	− 3·71
	6833	β Aquilæ	....	83 54	57·3	5·5	14·0	22·1	48 30·6	19 48 13·90	− 0·65	+ 22·50	+ 22·46	− 3·72
July 1	5941	α Ophiuchi	....	77 20	56·0	4·4	13·1	21·5	28 30·0	17 28 13·00	− 0·64	+ 23·11	+ 23·11	− 3·69
	6021	μ Herculis	....	62 12	25·7	35·0	44·6	53·9	41 3·5	17 40 44·54	− 0·56	....	+ 23·11	− 3·49
	6281	(c) δ Ursæ Minoris	....	3 24	53·0	10·5	35·0	53·0	21 17·5	18 16 33·80	+ 1·23	....	+ 23·11	− 6·51

(a) Definition not good. Stars unsteady. (b) Double. (c) Very faint.

[2 N]

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires.					Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock		Correction to Mean R.A. Jan. 1, 1862.
					I.	II.	III.	IV.	V.			observed.	interpolated.	
1862.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
July 1	6355	α Lyræ	....	51 20	33·7	46·0	57·0	7·4	32 18·1	18 31 56·84	− 0·51	+ 23·12	+ 23·12	− 3·47
July 4	6021	(a) μ Herculis	....	62 12	25·7	35·0	44·6	53·9	41 3·4	17 40 44·52	− 0·57	....	+ 23·16	− 3·49
	6281	δ Ursæ Minoris	....	3 24	54·0	11·0	35·0	52·5	21 17·0	18 16 33·90	+ 0·76	....	+ 23·17	− 6·17
	6420	β Lyræ	....	56 47	20·3	30·2	40·2	50·0	45 0·0	18 44 40·14	− 0·55	+ 23·06	+ 23·17	− 3·52
	6772	γ Aquilæ	....	79 42	6·2	14·6	23·2	31·4	39 40·0	19 39 23·08	− 0·64	+ 23·28	+ 23·18	− 3·81
July 9	5821	α Herculis	....	75 27	45·1	53·6	2·5	10·9	8 19·7	17 8 2·36	− 0·63	+ 23·26	+ 23·25	− 3·61
	5863	ω Herculis	....	57 21	51·0	0·6	10·6	20·3	15 30·6	17 15 10·62	− 0·56	....	+ 23·25	− 3·37
	5917	....	6·0	29 51	1·6	18·0	35·0	51·6	21 8·4	17 23 34·92	− 0·46	....	+ 23·26	− 3·11
	5941	α Ophiuchi	....	77 20	56·0	4·2	12·9	21·2	28 30·0	17 28 12·86	− 0·64	....	+ 23·28	− 3·70
	5996	β Ophiuchi	3·0	85 23	4·0	12·2	20·6	29·0	36 37·4	17 36 20·64	− 0·66	+ 23·26	+ 23·26	− 3·96
	6021	μ Herculis	....	62 12	25·6	34·9	44·4	53·6	41 3·2	17 40 44·34	− 0·58	....	+ 23·27	− 3·49
	6035	....	7·0	80 7	1·9	10·1	18·6	27·0	43 35·6	17 43 18·64	− 0·63	....	+ 23·27	− 3·79
	6281	δ Ursæ Minoris	....	3 21	54·5	11·0	34·0	52·0	21 15·5	18 10 33·40	+ 0·30	....	+ 23·28	− 5·46
July 14	5941	α Ophiuchi	....	77 20	54·8	3·0	11·9	20·2	28 29·0	17 28 11·78	− 0·65	+ 24·34	+ 24·30	− 3·69
	5996	β Ophiuchi	....	85 23	3·0	11·1	19·6	28·0	36 36·3	17 36 19·60	− 0·66	....	+ 24·30	− 3·86
	6021	μ Herculis	....	62 12	24·6	33·9	43·4	52·7	41 2·2	17 40 43·36	− 0·59	+ 24·24	+ 24·30	− 3·47
	6355	α Lyræ	....	51 20	34·2	44·8	55·9	6·2	32 17·0	18 31 55·62	− 0·55	+ 24·41	+ 24·31	− 3·50
	6429	β Lyræ	....	56 47	19·0	29·0	39·0	48·9	44 59·0	18 44 38·98	− 0·57	+ 24·29	+ 24·31	− 3·57
	6468	....	6·0	56 13	9·0	18·9	29·0	38·9	49 49·0	18 49 28·96	− 0·57	....	+ 24·31	− 3·58
	6480	....	6·0	57 16	11·1	21·0	31·0	41·0	51 51·0	18 51 31·02	− 0·57	....	+ 24·31	− 3·60
	6487	ι Aquilæ	4·0	75 6	44·6	53·0	1·8	10·2	53 19·0	18 53 1·72	− 0·64	....	+ 24·31	− 3·82
	6528	ζ Aquilæ	....	76 19	27·0	35·6	44·2	52·8	59 1·4	18 58 44·20	− 0·64	+ 24·31	+ 24·32	− 3·85
	7150	....	....	79 13	38·3	46·7	55·2	3·5	33 12·2	20 32 55·18	− 0·64	....	+ 24·32	− 3·88
	7220	η Cephei	3·0	28 40	34·0	51·2	9·0	26·0	42 43·8	20 42 8·80	− 0·46	....	+ 24·32	− 3·82
	7256	32 Vulpeculæ	....	62 26	2·0	11·1	21·0	30·0	48 39·6	20 48 20·74	− 0·59	+ 24·35	+ 24·32	− 3·73
	7285	....	....	82 59	39·8	48·0	56·4	4·9	53 13·4	20 52 56·50	− 0·66	....	+ 24·33	− 3·93
	7336	61¹ Cygni	....	51 53	2·0	12·3	22·9	33·4	0 44·2	21 0 22·96	− 0·56	....	+ 24·34	− 3·86
July 16	6021	μ Herculis	....	62 12	24·0	33·0	42·5	52·0	41 1·3	17 40 42·56	− 0·58	+ 25·03	+ 26·01	− 3·47
	6355	α Lyræ	....	51 20	33·8	44·2	55·0	5·4	32 16·1	18 31 54·90	− 0·55	+ 25·12	+ 25·01	− 3·49
	6480	....	....	57 16	10·5	20·1	30·5	40·0	51 50·1	18 51 30·24	− 0·56	....	+ 25·01	− 3·60
	6646	δ Aquilæ	....	87 8	55·4	3·8	12·2	20·3	18 29·0	19 18 12·14	− 0·66	+ 24·94	+ 25·01	− 4·06
	6674	α Vulpeculæ	....	65 36	18·9	27·9	37·1	46·0	22 55·3	19 22 37·04	− 0·59	....	+ 25·01	− 3·74
	6701	μ Aquilæ	....	82 54	43·8	52·[illegible]	0·6	8·9	27 17·2	19 27 0·50	− 0·65	....	+ 25·01	− 3·96
	6729	....	....	84 54	45·9	54·0	2·6	10·8	32 19·1	19 32 2·48	− 0·65	....	+ 25·[illegible]	− 4·02
	6762	....	....	63 10	37·5	46·8	56·0	5·2	38 14·9	19 37 56·08	− 0·59	....	+ 25·01	− 3·74
	6802	α Aquilæ	....	81 28	25·9	34·0	42·6	50·9	43 59·6	19 43 42·60	− 0·63	+ 24·98	+ 25·01	− 3·99
	6852	....	6·0	30 38	13·4	29·6	46·0	2·3	51 18·9	19 50 46·04	− 0·48	....	+ 25·01	− 3·66
	6941	....	....	69 15	20·7	29·2	38·4	47·0	4 56·0	20 4 38·26	− 0·60	....	+ 25·01	− 3·81
	7088	ε Delphini	....	79 8	59·9	8·0	16·9	25·1	26 33·6	20 26 16·70	− 0·62	....	+ 25·01	− 3·92
	7149	α Delphini	....	74 33	35·8	44·2	53·1	1·8	33 10·4	20 32 53·06	− 0·62	....	+ 25·01	− 3·66
July 21	6646	(b) δ Aquilæ	....	87 8	53·9	2·3	10·5	18·8	18 27·1	19 18 10·52	− 0·65	+ 26·58	+ 26·73	− 4·09
	6772	γ Aquilæ	....	79 42	2·9	11·2	19·0	28·1	39 36·5	19 39 19·72	− 0·62	+ 26·79	+ 26·73	− 3·98
	6802	α Aquilæ	....	81 28	24·0	32·2	40·9	49·1	43 57·8	19 43 40·80	− 0·63	+ 26·83	+ 26·74	− 4·04
	6833	β Aquilæ	....	83 54	53·1	1·4	10·0	18·2	48 26·9	19 48 9·92	− 0·63	+ 26·79	+ 26·74	− 4·05
	7256	32 Vulpeculæ	....	62 26	59·9	9·0	18·6	27·6	48 37·2	20 48 18·46	− 0·58	+ 26·72	+ 26·74	− 3·83
	7368	ζ Cygni	....	60 18	22·5	31·8	41·4	51·0	7 0·8	21 6 41·50	− 0·57	+ 26·73	+ 26·75	− 3·81
	7478	β Aquarii	....	96 8	38·9	47·1	55·6	3·9	24 12·3	21 23 55·56	− 0·67	+ 26·71	+ 26·75	− 4·12

(a) Faint. (b) Definition bad.

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Date.	No. in British Association Catalogue	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1862.
				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
1862. July 22	6281	δ Ursæ Minoris	....	3 21	49·5	6·0	29·0	47·5	21 10·0	18 16 28·40	− 0·84	....	+ 26·93	− 2·95
	6429	β Lyræ	....	56 47	16·6	26·2	36·5	46·2	44 56·4	18 44 36·38	− 0·55	+ 26·87	+ 26·93	− 3·57
	6567	....	7·5	58 34	47·0	56·9	6·7	16·2	5 26·2	19 5 6·60	− 0·56	....	+ 26·93	− 3·65
	6595	ε Aquilæ	6·0	78 38	40·9	49·2	58·0	6·2	11 15·0	19 10 57·86	− 0·60	+ 26·99	+ 26·93	− 3·93
	6617	....	7·0	78 42	44·2	52·6	1·2	9·9	13 18·3	19 13 1·24	− 0·60	....	+ 26·93	− 3·94
	6644	b Aquilæ	6·0	78 20	44·0	52·4	1·1	9·5	18 18·1	19 18 1·02	− 0·59	....	+ 26·93	− 3·94
	6701	μ Aquilæ	5·0	82 54	41·9	50·0	58·6	6·9	27 15·4	19 26 58·56	− 0·61	....	+ 26·93	− 4·02
	6729	....	6·0	84 54	44·0	52·3	0·8	9·0	32 17·5	19 32 0·72	− 0·62	....	+ 26·93	− 4·06
	6762	....	7·0	63 10	35·5	44·7	54·2	3·4	38 13·0	19 37 54·16	− 0·57	....	+ 26·93	− 3·77
	6791	....	7·0	74 38	43·4	51·9	0·4	8·9	42 17·5	19 42 0·42	− 0·59	....	+ 26·93	− 3·97
	6802	α Aquilæ	....	81 28	23·9	32·1	40·8	49·0	43 57·5	19 43 40·66	− 0·60	....	+ 26·93	− 4·04
	6833	β Aquilæ	....	83 54	53·0	1·2	10·0	18·1	48 26·5	19 48 9·76	− 0·61	+ 26·93	+ 26·93	− 4·05
	7368	ζ Cygni	....	60 18	22·1	31·8	41·2	50·9	7 0·5	21 6 41·30	− 0·56	+ 26·94	+ 26·93	− 3·63
	7410	....	....	66 41	9·6	18·3	27·8	36·5	14 46·0	21 14 27·64	− 0·37	....	+ 26·93	− 3·86
	7450	....	....	71 11	22·0	30·8	39·9	48·3	19 57·2	21 19 39·64	− 0·58	....	+ 26·93	− 3·88
	7478	β Aquarii	....	96 8	38·7	46·9	55·5	3·6	24 12·0	21 23 55·34	− 0·65	+ 26·92	+ 26·93	− 4·13
	7497	....	7·5	88 45	2·6	11·0	19·3	27·4	27 36·0	21 27 19·26	− 0·63	....	+ 26·93	− 4·06
July 23	6772	γ Aquilæ	....	79 42	2·8	11·0	19·7	28·0	39 36·4	19 39 19·58	− 0·60	+ 26·93	+ 26·92	− 4·00
	6802	α Aquilæ	....	81 28	23·9	32·0	40·6	49·0	43 57·6	19 43 40·62	− 0·61	+ 26·99	+ 26·92	− 4·04
	6833	β Aquilæ	....	83 51	53·0	1·2	9·8	18·1	48 26·6	19 48 9·74	− 0·61	+ 26·96	+ 26·92	− 4·06
	6852	....	6·0	30 38	11·9	27·9	44·7	0·7	51 17·3	19 50 44·50	− 0·51	....	+ 26·92	− 3·67
	6934	θ Aquilæ	4·0	91 12	32·0	40·2	48·9	57·1	4 5·5	20 3 48·74	− 0·64	....	+ 26·92	− 4·19
	6966	....	5·0	61 48	44·2	53·3	2·6	11·8	9 21·0	20 9 2·58	− 0·56	....	+ 26·92	− 3·84
	7000	....	7·0	12 34	3·6	41·2	20·0	57·7	13 37·0	20 12 19·90	− 0·48	....	+ 26·92	− 8·06
	7086	....	7·0	31 22	8·1	22·8	37·8	52·2	26 7·1	20 25 37·60	− 0·53	....	+ 26·92	− 3·80
	7150	....	7·0	79 13	35·7	44·0	52·6	1·0	33 9·7	20 32 52·60	− 0·60	....	+ 26·92	− 4·00
	7220	η Cephei	3·0	28 40	31·7	48·8	6·6	23·7	42 41·4	20 42 6·44	− 0·51	....	+ 26·92	− 3·94
	7256	32 Vulpeculæ	....	62 26	59·6	8·9	18·3	27·5	48 37·0	20 48 18·26	− 0·56	+ 26·92	+ 26·92	− 3·65
	7285	....	7·5	82 59	37·3	45·4	54·0	2·2	53 10·9	20 52 53·96	− 0·61	....	+ 26·92	− 4·03
	7336	61¹ Cygni	....	51 53	59·4	9·8	20·6	31·0	0 41·8	21 0 20·52	− 0·55	....	+ 26·92	− 4·01
	7368	ζ Cygni	....	60 18	22·2	31·8	41·5	51·0	7 0·8	21 6 41·46	− 0·56	+ 26·79	+ 26·92	− 3·84
	7380	α Equulei	6·0	85 18	16·5	24·8	33·2	41·5	8 50·0	21 8 33·20	− 0·62	....	+ 26·92	− 4·04
	7410	....	5·5	66 41	9·5	18·4	27·8	36·8	14 45·9	21 14 27·68	− 0·56	....	+ 26·92	− 3·86
	7430	....	6·0	29 47	3·0	21·6	38·5	55·2	17 12·5	21 16 38·56	− 0·51	....	+ 26·92	− 4·05
	7478	β Aquarii	....	96 8	38·8	46·9	55·4	3·8	24 12·1	21 23 55·40	− 0·65	+ 26·88	+ 26·92	− 4·15
	7496	....	7·5	42 8	31·4	43·7	56·2	8·5	27 21·0	21 26 56·16	− 0·52	....	+ 26·92	− 3·89
	7514	ξ Aquarii	....	98 26	45·2	53·6	2·0	10·5	30 19·0	21 30 2·06	− 0·66	....	+ 26·92	− 4·19
	7528	....	....	70 20	55·1	3·9	13·0	21·8	32 30·7	21 32 12·90	− 0·58	....	+ 26·92	− 3·88
	7561	ι Pegasi	....	60 43	45·1	53·5	2·0	10·4	37 19·0	21 37 2·00	− 0·61	+ 27·06	+ 26·92	− 3·95
July 24	6528	ζ Aquilæ	....	76 19	24·5	32·9	41·7	50·0	58 58·8	18 58 41·58	− 0·61	+ 26·93	+ 26·93	− 3·88
	6646	δ Aquilæ	....	87 8	53·6	1·8	10·3	18·5	18 27·0	19 18 10·24	− 0·65	+ 26·87	+ 26·93	− 4·10
	6772	γ Aquilæ	....	79 42	2·9	11·0	19·6	28·0	39 36·5	19 39 19·60	− 0·62	+ 26·93	+ 26·93	− 4·00
	6802	α Aquilæ	....	81 28	24·0	32·1	40·8	49·0	43 57·4	19 43 40·66	− 0·63	+ 26·98	+ 26·93	− 4·05
July 25	6802	α Aquilæ	....	81 28	23·8	31·9	40·5	48·9	43 57·1	19 43 40·44	− 0·64	+ 27·21	+ 27·24	− 4·06
	6833	β Aquilæ	....	83 54	52·8	1·0	9·5	17·8	48 26·4	19 48 9·50	− 0·65	+ 27·25	+ 27·25	− 4·07
	6852	....	5·5	30 38	11·4	27·8	44·1	0·2	51 16·9	19 50 44·08	− 0·50	....	+ 27·25	− 3·67
	6941	....	6·0	69 15	18·6	27·4	36·4	45·2	4 54·4	20 4 36·40	− 0·61	....	+ 27·25	− 3·89

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1862.
1862.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
July 25	6966	....	5.0	64 48	44.0	53.0	2.3	11.4	9 21.0	20 9 2.34	− 0.59	....	+ 27.25	− 3.85
	7006	....	7.5	53 17	55.1	5.0	15.8	26.0	14 36.6	20 14 15.70	− 0.56	....	+ 27.25	− 3.77
	7014	....	6.0	85 4	41.1	49.5	58.0	6.2	16 14.6	20 15 57.88	− 0.66	....	+ 27.26	− 4.10
	7086	....	6.0	34 22	8.0	22.8	37.3	52.0	26 7.0	20 25 37.42	− 0.52	....	+ 27.26	− 3.81
	7220	η Cephei........	3.0	28 40	31.5	46.6	6.2	23.4	42 41.0	20 42 6.14	− 0.50	....	+ 27.26	− 3.96
	7256	32 Vulpeculæ........	....	62 26	59.2	6.6	16.0	27.3	48 37.0	20 48 18.02	− 0.59	+ 27.21	+ 27.26	− 3.87
	7285	....	....	82 59	37.0	45.3	53.9	2.0	53 10.8	20 52 53.80	− 0.65	....	+ 27.26	− 4.06
	7336	61¹ Cygni........	....	51 53	59.2	9.5	20.5	30.8	0 41.7	21 0 20.34	− 0.57	....	+ 27.26	− 4.04
	7354	(a)	7.0	68 4	38.7	47.3	56.4	5.2	4 14.5	21 3 56.42	− 0.60	....	+ 27.27	− 3.91
	7368	ζ Cygni........	....	60 18	22.0	31.4	41.0	50.2	7 0.3	21 6 40.98	− 0.58	+ 27.32	+ 27.27	− 3.87
	7380	α Equulei........	....	85 18	16.2	24.3	33.0	41.2	8 49.9	21 8 32.92	− 0.66	....	+ 27.27	− 4.07
	7410	....	6.0	66 41	9.1	18.4	27.2	36.3	14 45.7	21 14 27.34	− 0.60	....	+ 27.27	− 3.90
	7430	....	5.5	29 47	4.8	21.4	38.0	54.8	17 12.0	21 16 38.20	− 0.51	....	+ 27.27	− 4.08
	7450	....	6.0	71 11	22.0	30.6	39.4	48.1	19 57.0	21 19 39.42	− 0.61	....	+ 27.28	− 3.93
	7478	β Aquarii........	....	96 8	38.4	46.6	55.1	3.4	21 12.0	21 23 55.10	− 0.69	+ 27.25	+ 27.28	− 4.18
	7514	ξ Aquarii........	5.0	98 26	45.0	53.1	1.9	10.1	30 18.8	21 30 1.78	− 0.70	....	+ 27.28	− 4.22
	7528	....	5.5	70 20	55.0	3.6	12.5	21.4	32 30.2	21 32 12.64	− 0.62	....	+ 27.28	− 3.91
	7561	ε Pegasi........	....	80 43	45.0	53.2	1.9	10.1	37 18.9	21 37 1.82	− 0.64	+ 27.30	+ 27.28	− 3.96
July 26	6281	δ Ursæ Minoris........	....	3 24	46.5	4.0	26.0	45.5	21 9.0	18 16 26.20	+ 0.01	....	+ 27.40	− 2.00
	6355	α Lyræ........	....	51 20	31.6	41.9	52.8	3.8	32 13.9	18 31 52.64	− 0.57	+ 27.36	+ 27.40	− 3.45
	6429	β Lyræ........	....	56 47	16.0	26.0	36.0	45.9	44 56.0	18 44 35.98	− 0.58	+ 27.29	+ 27.40	− 3.56
	6595	ω Aquilæ........	....	78 38	40.6	49.0	57.5	6.0	11 14.6	19 10 57.54	− 0.65	....	+ 27.41	− 3.94
	6646	δ Aquilæ........	....	87 8	53.2	1.4	9.9	18.0	18 26.6	19 18 9.82	− 0.68	+ 27.33	+ 27.41	− 4.11
	6772	γ Aquilæ........	....	79 42	2.1	10.5	19.0	27.2	39 36.0	19 39 18.95	− 0.65	+ 27.61	+ 27.42	− 4.01
	6802	α Aquilæ........	....	81 28	23.4	31.8	40.2	48.5	43 57.0	19 43 40.18	− 0.66	+ 27.50	+ 27.42	− 4.06
	6833	β Aquilæ........	....	83 54	52.8	0.9	9.4	17.6	48 26.2	19 48 9.38	− 0.67	+ 27.40	+ 27.43	− 4.08
July 27	5708	κ Ophiuchi........	....	80 25	28.0	36.2	44.9	53.0	51 1.8	16 50 44.78	− 0.65	+ 27.62	+ 27.65	− 3.[illegible]
	5821	α Herculis........	....	75 27	40.8	49.2	58.0	6.4	8 15.1	17 7 57.90	− 0.65	+ 27.64	+ 27.66	− 3.51
	5941	α Ophiuchi........	....	77 20	51.4	59.8	8.4	16.8	28 25.6	17 28 8.40	− 0.65	+ 27.67	+ 27.66	− 3.64
	6021	μ Herculis........	....	62 12	21.0	30.2	40.0	49.1	40 58.8	17 40 39.82	− 0.60	+ 27.71	+ 27.67	− 3.39
July 28	6528	ζ Aquilæ........	....	76 19	23.7	32.0	40.8	49.1	58 57.9	18 58 40.70	− 0.64	+ 27.85	+ 27.89	− 3.89
	6646	δ Aquilæ........	....	87 8	52.8	1.0	9.5	17.5	18 26.[illegible]	19 18 9.36	− 0.68	+ 27.79	+ 27.90	− 4.11
	6772	γ Aquilæ........	....	79 42	1.8	10.1	18.7	27.0	39 35.7	19 39 18.66	− 0.65	+ 27.92	+ 27.90	− 4.02
	6802	α Aquilæ........	....	81 28	22.9	31.1	39.7	48.0	43 56.5	19 43 39.64	− 0.66	+ 28.05	+ 27.91	− 4.07
	6833	β Aquilæ........	....	83 54	52.0	0.2	9.0	17.2	48 25.8	19 48 8.84	− 0.67	+ 27.95	+ 27.91	− 4.09
	6934	θ Aquilæ........	....	91 12	31.2	39.4	48.0	56.1	4 4.7	20 3 47.88	− 0.69	....	+ 27.92	− 4.23
	7256	32 Vulpeculæ........	....	62 26	55.6	7.9	17.1	26.8	48 36.1	20 48 17.36	− 0.60	+ 27.91	+ 27.92	− 3.90
July 29	6355	(b) α Lyræ........		51 20	30.8	41.0	52.1	2.2	32 13.0	18 31 51.82	− 0.55	+ 28.15	+ 28.14	− 3.44
	6431	....	7.0	19 20	29.0	54.0	19.7	44.2	45 10.0	18 44 19.38	− 0.41	....	+ 28.14	− 4.[illegible]
	6468	....	5.5	56 13	5.0	15.0	25.2	35.0	49 45.1	18 49 25.06	− 0.57	....	+ 28.15	− 3.56
	6487	ι Aquilæ........	3.0	75 6	40.6	49.1	58.0	6.4	53 15.0	18 52 57.82	− 0.64	....	+ 28.15	− 3.65
	6527	....	7.0	71 3	8.6	17.2	26.1	35.0	58 43.9	18 58 26.16	− 0.61	....	+ 28.16	− 3.80
	6542	(c)	6.0	65 57	11.0	20.2	29.5	38.3	0 47.7	19 0 29.34	− 0.60	....	+ 28.16	− 3.72
	6567	....	8.0	58 34	45.9	55.4	5.5	15.0	5 24.9	19 5 5.34	− 0.59	....	+ 28.16	− 3.64
	6595	ω Aquilæ........	....	78 38	39.9	48.1	57.0	5.1	11 13.9	19 10 56.80	− 0.64	+ 28.11	+ 28.16	− 3.95
	6617	....	6.0	78 42	43.1	51.3	0.0	8.6	13 17.0	19 13 0.00	− 0.64	....	+ 28.16	− 3.96

(a) 2nd star. (b) Definition bad. Stars very unsteady. (c) The R. A. of this star apparently 30 secs. too great.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires I.	Wires II.	Wires III.	Wires IV.	Wires V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock Interpolated.	Correction to Mean R.A. Jan. 1, 1862.
1862.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
July 29	6644	h Aquilæ..................	5·0	78 20	43·0	51·2	0·0	8·2	18 17·0	19 17 59·88	− 0·63	....	+ 28·16	− 3·96
	6674	α Vulpeculæ..............	4·0	65 36	15·2	24·8	34·0	13·1	22 52·5	19 22 33·86	− 0·60	....	+ 28·17	− 3·78
	6701	μ Aquilæ..................	4·0	82 51	40·6	48·9	57·4	5·5	27 14·2	19 26 57·32	− 0·66	....	+ 28·17	− 4·04
	6720	....	5·0	84 54	43·0	51·0	59·4	7·7	32 16·1	19 31 59·14	− 0·66	....	+ 28·17	− 4·09
	6762	....	7·0	63 10	34·1	43·5	53·0	2·1	38 11·9	19 37 52·98	− 0·59	....	+ 28·17	− 3·79
	6791	....	7·5	74 38	42·3	50·5	59·1	7·8	42 16·2	19 41 59·24	− 0·63	....	+ 28·17	− 4·00
	6802	α Aquilæ..................	....	81 28	22·8	31·0	39·5	47·9	43 56·4	19 43 39·52	− 0·65	+ 28·17	+ 28·17	− 4·08
	6833	β Aquilæ..................	....	83 51	52·0	0·2	8·6	17·0	48 25·5	19 48 8·66	− 0·66	+ 28·12	+ 28·17	− 4·09
	6941	....	6·0	69 15	18·0	26·4	35·8	44·2	4 53·5	20 4 35·58	− 0·61	....	+ 28·17	− 3·91
	7000	....	8·0	12 34	2·6	40·0	19·0	56·5	13 35·0	20 12 18·62	− 0·34	....	+ 28·18	− 8·06
	7014	....	6·0	85 4	10·1	18·5	57·0	5·3	16 14·0	20 15 56·98	− 0·66	....	+ 28·18	− 4·13
	7088	....	5·0	79 8	56·9	5·0	13·9	22·0	26 30·7	20 26 13·70	− 0·64	....	+ 28·18	− 4·05
	7149	α Delphini................	3·0	74 33	33·0	41·4	50·3	58·9	33 7·5	20 32 50·16	− 0·64	....	+ 28·19	− 4·00
	7256	32 Vulpeculæ............	....	62 26	58·2	7·5	17·1	26·1	48 36·0	20 48 17·01	− 0·59	+ 28·23	+ 28·19	− 3·91
	7285	....	6·5	82 59	36·0	44·1	53·0	1·1	53 9·8	20 52 52·86	− 0·66	....	+ 28·19	− 4·10
	7368	ζ Cygni....................	....	60 18	21·0	30·5	40·1	49·6	6 59·5	21 6 40·14	− 0·58	+ 28·21	+ 28·20	− 3·92
Aug. 27	7561	ε Pegasi..................	....	80 43	33·0	41·3	50·0	58·2	37 6·9	21 36 49·88	− 0·66	+ 39·55	+ 39·50	− 4·27
	7627	16 Pegasi................	....	64 41	54·0	3·1	12·5	21·5	46 30·9	21 46 12·10	− 0·61	+ 39·48	+ 39·50	− 4·19
	7688	α Aquarii.................	....	90 57	50·8	58·9	7·3	15·5	58 24·0	21 58 7·30	− 0·69	+ 39·16	+ 39·50	− 4·39
	7908	ζ Pegasi..................	....	79 50	43·5	51·5	0·2	8·6	31 17·1	22 31 0·48	− 0·65	+ 39·57	+ 39·50	− 4·32
	8105	γ Piscium................	....	87 25	9·5	17·7	26·3	34·5	9 13·0	23 9 26·20	− 0·68	+ 39·52	+ 39·50	− 4·36
	8233	ι Piscium.................	....	85 4	0·1	8·3	16·7	25·0	32 33·5	23 32 16·72	− 0·67	+ 39·43	+ 39·50	− 4·32
Sept. 6	7688	α Aquarii.................	....	90 57	47·0	55·2	3·6	11·9	58 20·2	21 58 3·58	− 0·69	+ 43·19	+ 43·25	− 4·41
	7868	π Aquarii.................	....	90 47	21·0	29·3	37·7	45·9	27 54·3	22 27 37·64	− 0·69	+ 43·30	+ 43·26	− 4·44
	7908	(a) ζ Pegasi..............	....	79 50	39·7	48·0	56·6	4·9	34 13·6	22 33 56·56	− 0·65	+ 43·25	+ 43·26	− 4·38
	8034	α Pegasi..................	....	75 29	58·0	6·4	15·1	23·6	57 32·3	22 57 15·08	− 0·65	+ 43·28	+ 43·26	− 4·41
Sept. 7	7256	32 Vulpeculæ............	....	62 26	43·0	52·2	1·7	11·0	48 20·6	20 48 1·70	− 0·60	+ 43·55	+ 43·63	− 3·88
	7368	ζ Cygni....................	....	60 18	5·8	15·0	24·3	34·2	6 44·0	21 6 24·78	− 0·59	+ 43·62	+ 43·64	− 3·96
	7478	β Aquarii.................	....	96 8	22·2	30·4	39·0	47·2	23 55·8	21 23 38·92	− 0·71	+ 43·71	+ 43·65	− 4·44
	7561	ε Pegasi..................	....	80 43	28·9	37·2	45·9	54·0	37 2·6	21 36 45·72	− 0·66	+ 43·71	+ 43·66	− 4·27
Sept. 9	5821	α Herculis................	....	75 27	23·7	32·1	41·0	49·4	7 58·1	17 7 40·86	− 0·65	+ 44·04	+ 44·08	− 2·87
	7561	ε Pegasi..................	....	80 43	28·5	36·8	45·4	53·6	37 2·0	21 36 45·26	− 0·66	+ 44·17	+ 44·08	− 4·26
	7688	α Aquarii.................	....	90 57	46·1	54·2	2·8	10·9	58 19·4	21 58 2·68	− 0·69	+ 44·09	+ 44·08	− 4·41
	7868	π Aquarii.................	....	90 47	20·2	28·6	37·0	45·2	27 53·6	22 27 36·92	− 0·69	+ 44·03	+ 44·08	− 4·45
	7908	ζ Pegasi..................	....	79 50	38·9	47·1	55·9	4·0	34 12·8	22 33 55·74	− 0·65	+ 44·08	+ 44·08	− 4·39
	8034	α Pegasi..................	....	75 29	57·0	5·4	14·3	23·0	57 31·8	22 57 14·30	− 0·65	+ 44·07	+ 44·08	− 4·42
Sept. 10	7354	(b)	....	68 4	21·9	30·9	40·0	48·9	3 57·7	21 3 39·88	− 0·62	....	+ 44·10	− 3·99
	7368	ζ Cygni....................	....	60 18	5·0	14·7	24·3	33·9	6 43·5	21 6 24·28	− 0·59	+ 44·09	+ 44·10	− 3·93
	7450	....	7·0	71 11	5·3	13·9	22·9	31·3	19 40·4	21 19 22·76	− 0·62	....	+ 44·10	− 4·09
	7478	β Aquarii.................	....	96 8	22·0	30·1	38·5	46·7	23 55·2	21 23 38·50	− 0·71	+ 44·12	+ 44·10	− 4·43
	7497	....	7·5	88 45	46·0	54·0	2·5	10·6	27 19·0	21 27 2·42	− 0·68	....	+ 44·10	− 4·32
	7514	ξ Aquarii.................	....	98 26	28·5	36·9	45·4	53·5	30 2·0	21 29 45·26	− 0·72	....	+ 44·10	− 4·48
	7528	....	....	70 20	38·1	47·0	56·0	4·8	32 13·9	21 31 55·96	− 0·63	....	+ 44·10	− 4·11
	7561	ε Pegasi..................	....	80 43	28·5	36·9	45·3	53·5	37 2·2	21 36 45·28	− 0·66	+ 44·14	+ 44·10	− 4·26
	7590	....	7·0	73 24	34·6	43·0	51·9	0·3	40 9·2	21 39 51·60	− 0·63	....	+ 44·10	− 4·20
	7627	16 Pegasi................	....	64 41	49·6	58·5	8·0	16·9	46 26·4	21 46 7·88	− 0·61	+ 43·98	+ 44·10	− 4·17

(a) Very faint. (b) 2nd of two stars of 7 and 8 mags.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R. A. Jan. 1, 1862.
1862.				° '	s	s	s	s	m s	h m s	s	s	s	s
Sept. 10	7908	ζ Pegasi	....	79 50	38.9	47.2	55.8	4.1	31 12.8	22 33 55.76	− 0.65	+ 44.06	+ 44.10	− 4.39
Sept. 15	5821	α Herculis	....	75 27	23.2	31.6	40.1	48.9	7 57.5	17 7 40.32	− 0.64	+ 44.46	+ 44.48	− 2.76
	5941	α Ophiuchi	....	77 20	33.9	42.2	50.9	59.2	28 8.0	17 27 50.84	− 0.65	+ 44.52	+ 44.48	− 2.93
	7336	61[1] Cygni	....	51 53	41.9	52.2	3.0	13.4	0 24.0	21 0 2.00	− 0.56	....	+ 44.50	− 4.00
	7354 (a)	....	....	69 4	21.1	30.2	39.4	48.2	3 57.2	21 3 39.22	− 0.61	....	+ 44.50	− 3.94
	7368	ζ Cygni	....	60 16	1.6	14.1	23.9	33.3	6 43.0	21 6 23.78	− 0.58	+ 44.53	+ 44.51	− 3.88
	7380	α Equulei	....	85 16	59.0	7.2	15.9	24.0	8 32.3	21 8 15.68	− 0.66	....	+ 44.51	− 4.19
	7478	β Aquarii	....	96 8	21.5	29.6	38.0	46.3	23 55.0	21 23 35.08	− 0.71	+ 44.51	+ 44.51	− 4.40
	7496	....	....	42 8	13.9	26.0	35.8	50.8	27 3.5	21 26 38.60	− 0.53	....	+ 44.51	− 3.93
	7566	....	6.0	52 19	42.8	53.0	3.6	14.0	37 24.7	21 37 3.62	− 0.56	....	+ 44.51	− 4.01
	7590	....	7.0	73 24	31.0	42.3	51.4	59.9	40 8.7	21 39 51.26	− 0.62	....	+ 44.51	− 4.17
	7644	....	7.0	18 8	45.8	11.6	39.5	5.5	50 33.0	21 49 39.08	− 0.41	....	+ 44.51	− 4.73
	7759	....	6.0	29 53	15.6	32.3	49.0	5.7	7 22.4	22 6 49.00	− 0.48	....	+ 44.51	− 4.51
	7795	γ Aquarii	....	92 2	35.8	44.0	52.2	0.4	14 8.9	22 13 52.26	− 0.69	....	+ 44.52	− 4.44
	7908	ζ Pegasi	....	79 50	38.2	46.8	55.4	3.7	34 12.3	22 33 55.28	− 0.64	+ 44.53	+ 44.53	− 4.39
	7958	....	4.0	66 5	23.0	32.0	41.4	50.3	42 59.5	22 42 41.21	− 0.60	....	+ 44.53	− 4.39
	7970	....	....	98 16	28.5	37.0	45.7	53.9	45 2.4	22 44 45.50	− 0.71	....	+ 44.53	− 4.55
	7996	....	....	86 53	35.2	43.4	52.0	0.1	50 8.4	22 49 51.82	− 0.67	....	+ 44.53	− 4.15
	8034	α Pegasi	....	75 29	56.8	5.1	14.0	22.4	57 31.0	22 57 13.86	− 0.64	+ 44.51	+ 44.53	− 4.43
	8065	....	8.0	88 34	23.6	31.7	40.2	48.4	1 56.9	23 1 40.15	− 0.68	....	+ 44.53	− 4.47
Sept. 17	4729	α Bootis	....	70 8	22.0	30.9	39.6	48.4	8 57.5	14 8 39.68	− 0.62	+ 44.88	+ 44.80	− 1.85
	5821	α Herculis	....	75 27	22.8	31.2	40.0	48.4	7 57.8	17 7 49.04	− 0.64	+ 44.71	+ 44.84	− 2.23
	5941	α Ophiuchi	....	77 20	33.3	41.9	50.6	58.9	28 7.6	17 27 50.16	− 0.65	+ 44.86	+ 44.84	− 2.89
	7478	β Aquarii	....	96 8	21.0	29.2	37.6	46.0	23 54.7	21 23 37.74	− 0.71	+ 44.81	+ 44.84	− 4.39
	7566	....	6.0	52 19	42.3	52.7	3.1	13.8	37 24.5	21 37 3.28	− 0.56	....	+ 44.84	− 4.01
	7590	....	....	73 24	33.4	42.0	51.0	59.5	40 8.2	21 39 50.82	− 0.62	....	+ 44.84	− 4.16
	7627	16 Pegasi	....	64 41	48.6	57.8	7.0	16.1	46 25.5	21 46 7.00	− 0.61	+ 44.83	+ 44.84	− 4.14
	7644	....	7.0	18 8	44.8	11.6	38.5	4.8	50 32.5	21 [illegible] 35.41	− 0.41	....	+ 44.84	− 4.67
	7688	α Aquarii	....	90 57	45.1	53.4	2.0	10.1	58 18.5	21 58 1.82	− [illegible]	+ 44.93	+ 44.85	− 4.39
	7706	ι Pegasi	4.0	65 17	37.0	46.0	55.2	4.3	0 13.7	21 59 55.21	− 0.61	....	+ 44.85	− 4.20
	7759	....	5.5	29 53	15.4	31.8	45.8	5.0	7 22.0	22 6 48.6[illegible]	− 0.48	....	+ 44.85	− 4.49
	7795	γ Aquarii	3.0	92 2	35.2	13.4	52.0	0.2	14 8.6	22 13 51.8[illegible]	− 0.63	....	+ 44.85	− 4.44
	7868	η Aquarii	....	90 47	19.4	27.6	36.0	44.3	27 52.9	22 27 36.01	− 0.69	....	+ 44.85	− 4.15
	7909	ζ Pegasi	....	79 50	38.0	46.2	55.0	3.4	34 12.0	22 33 51.92	− 0.64	+ 44.91	+ 44.85	− 4.39
	7958	....	3.0	66 5	22.8	31.6	41.0	49.9	42 59.2	22 42 40.90	− 0.60	+ 44.89	+ 44.86	− 4.39
	7970	....	3.5	98 16	28.3	36.5	45.2	53.3	45 2.0	22 44 45.08	− 0.71	....	+ 44.86	− 4.53
	7996	....	7.5	86 53	34.8	43.0	51.4	59.7	50 8.1	22 49 51.40	− 0.67	....	+ 44.86	− 4.45
	8024	....	7.0	33 35	31.8	46.7	2.0	16.8	55 32.2	22 55 1.90	− 0.49	....	+ 44.86	− 4.96
	8034	α Pegasi	....	75 29	56.4	4.9	13.4	22.1	57 30.8	22 57 13.52	− 0.64	+ 44.86	+ 44.86	− 4.44
	8065	....	8.0	88 34	23.1	31.4	39.8	48.1	1 56.4	23 1 39.76	− 0.68	....	+ 44.86	− 4.47
	8083	....	6.5	33 33	30.0	44.9	0.2	15.0	6 30.2	23 6 0.06	− 0.49	....	+ 44.86	− 5.05
Sept. 18	7866	η Aquarii	....	90 47	19.5	27.7	36.2	44.3	27 52.9	22 27 36.12	− 0.69	+ 44.83	+ 44.90	− 4.45
	7909	ζ Pegasi	....	79 50	38.0	46.3	55.0	3.2	34 12.0	22 33 51.90	− 0.64	+ 44.91	+ 44.91	− 4.39
	7958	μ Pegasi	4.0	66 5	22.6	31.5	40.9	49.9	42 59.0	22 42 40.78	− 0.60	....	+ 44.91	− 4.39
	7970	λ Aquarii	4.0	98 16	28.3	36.6	45.0	53.3	45 1.9	22 44 45.02	− 0.71	....	+ 44.91	− 4.53
	7996	....	6.0	86 53	34.9	43.1	51.6	59.7	50 8.2	22 49 51.50	− 0.67	....	+ 44.91	− 4.45
	8024	....	6.5	33 35	31.6	46.5	1.9	16.8	55 32.0	22 55 1.80	− 0.49	....	+ 44.91	− 4.96
	8034	α Pegasi	....	75 29	56.3	4.8	13.5	21.9	57 30.6	22 57 13.42	− 0.64	+ 44.96	+ 44.91	− 4.44

(a) 2nd of two stars.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to		Wires. I.	II.	III.	IV.	V.		Reduction to Mean of Wires.			Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean B.A. Jan. 1, 1862.
				°	′	s	s	s	s	m	s	h	m	s	s	s	s	s
1862. Sept. 18	8065	....	8·0	88	34	23·1	31·3	39·8	48·0	1	56·5	23	1	39·74	− 0·68	....	+ 14·91	− 4·17
	8083	....	6·0	33	33	30·0	41·9	0·0	15·0	6	30·2	23	6	0·02	− 0·49	....	+ 14·91	− 5·07
	8105	γ Piscium	....	67	25	4·3	12·5	21·0	29·4	9	37·7	23	9	20·92	− 0·67	+ 14·94	+ 14·91	− 4·51
	8135	....	6·5	46	35	10·4	21·5	33·2	44·5	13	56·3	23	13	33·18	− 0·55	....	+ 14·91	− 4·74
	8147	....	7·0	70	9	56·0	4·8	13·8	22·6	15	31·2	23	15	13·68	− 0·62	....	+ 14·91	− 4·49
	8169	κ Piscium	....	89	27	55·0	3·3	11·9	20·0	19	28·3	23	19	11·70	− 0·68	+ 14·91	+ 14·91	− 4·50
	8233	ι Piscium	....	85	4	54·9	3·0	11·5	19·8	32	28·1	23	32	11·46	− 0·66	+ 14·87	+ 14·91	− 4·51
Sept. 19	7868	π Aquarii	....	90	17	19·0	27·2	35·9	44·0	27	52·3	22	27	35·68	− 0·69	+ 15·27	+ 15·27	− 4·45
	7906	ζ Pegasi	....	79	50	37·9	46·0	54·5	3·0	31	11·4	22	33	54·56	− 0·64	+ 15·25	+ 15·27	− 4·39
	7977	....	7·5	88	51	52·6	0·8	9·0	17·3	46	26·0	22	46	9·11	− 0·68	....	+ 15·28	− 4·46
	8024	....	....	33	35	31·1	46·5	1·8	16·2	55	34·8	22	55	1·54	− 0·19	....	+ 15·28	− 4·95
	8031	α Pegasi	....	75	24	56·0	4·4	13·1	21·5	57	30·3	22	57	13·06	− 0·64	+ 15·32	+ 15·29	− 4·44
	8083	....	6·5	33	33	20·9	44·5	59·9	11·6	6	30·0	23	5	59·78	− 0·19	....	+ 15·29	− 5·07
	8105	γ Piscium	....	87	25	3·9	12·0	20·6	28·9	9	37·4	23	9	20·10	− 0·67	+ 15·26	+ 15·29	− 4·51
	8135	....	....	46	35	9·9	21·3	32·9	41·2	13	55·8	23	13	32·82	− 0·55	....	+ 15·29	− 4·74
Sept. 22	5941	α Ophiuchi	....	77	20	31·4	39·8	48·6	56·9	28	5·5	17	27	48·41	− 0·64	+ 16·78	+ 16·88	− 2·80
	6021	α Herculis	....	62	12	0·9	10·1	19·6	29·0	40	38·5	17	10	19·62	− 0·58	....	+ 16·89	− 2·40
	6281	δ Ursæ Minoris	....	3	24	5·0	23·0	46·0	5·5	20	28·0	18	15	45·50	+ 0·30	....	+ 16·89	+ 18·84
	7688	α Aquarii	....	90	57	43·2	51·4	59·9	8·1	58	16·5	21	57	51·82	− 0·68	+ 16·89	+ 16·92	− 4·36
	7706	ι Pegasi	4·0	65	17	35·0	44·0	53·3	2·4	0	11·6	21	59	53·26	− 0·60	....	+ 16·92	− 4·16
	7759	(a)	5·5	29	53	13·0	29·5	46·4	3·0	7	19·9	22	6	46·36	− 0·46	....	+ 16·93	− 4·41
	7795	γ Aquarii	4·0	92	2	33·2	41·1	50·0	58·0	14	6·1	22	13	11·80	0·64	....	+ 16·93	− 4·42
	7868	π Aquarii	....	90	47	17·2	25·4	34·0	42·1	27	50·7	22	27	33·88	− 0·68	+ 17·01	+ 16·94	− 4·13
	7908	ζ Pegasi	....	79	50	35·9	44·2	52·9	1·2	34	9·8	22	33	52·80	− 0·63	+ 16·99	+ 16·94	− 4·38
	7977	....	7·0	88	51	50·8	58·9	7·4	15·8	46	[illegible]	22	46	7·41	− 0·67	....	+ 16·95	− 4·45
	8034	α Pegasi	....	75	29	54·2	2·8	11·4	19·9	57	28·7	22	57	11·40	− 0·63	+ 16·97	+ 16·95	− 4·41
	8083	....	5·5	33	33	27·8	42·6	57·9	12·6	6	28·0	23	5	57·75	− 0·17	....	+ 16·95	− 5·06
	8105	γ Piscium	....	67	25	2·1	10·6	19·0	27·0	9	35·8	23	9	18·90	− 0·66	+ 16·95	+ 16·95	− 4·51
	8135	....	7·0	46	35	8·1	19·4	31·2	42·4	13	54·0	23	13	34·02	− 0·54	....	+ 16·96	− 4·75
	8147	....	7·0	70	9	53·8	2·7	11·8	20·3	15	29·4	24	15	11·61	− 0·64	....	+ 16·96	− 4·59
	8169	κ Piscium	....	89	27	53·0	1·3	9·7	18·0	19	26·4	23	19	9·68	− 0·67	+ 16·95	+ 16·97	− 4·50
	8204	....	7·0	18	43	7·3	33·1	59·4	25·6	26	51·5	23	25	59·25	− 0·35	....	+ 16·97	− 6·68
	8233	ι Piscium	....	85	4	52·8	0·9	9·3	17·5	32	26·1	23	32	9·32	− 0·66	+ 17·02	+ 16·98	− 4·52
	8247	....	8·5	72	3	33·6	42·0	51·0	59·4	35	8·1	23	34	50·58	− 0·64	....	+ 16·98	− 4·55
	8263	....	8·0	86	29	43·2	51·5	59·9	8·1	40	16·7	23	39	59·85	− 0·67	....	+ 16·99	4·52
Sept. 23	5821	α Herculis	....	75	27	20·1	28·8	37·4	46·0	7	51·8	17	7	37·42	− 0·61	+ 47·18	+ 47·15	− 2·61
	5941	α Ophiuchi	....	77	20	31·0	39·3	48·0	56·4	28	5·0	17	27	17·94	− 0·62	+ 47·24	+ 47·16	− 2·75
	7478	β Aquarii	....	96	8	18·7	27·0	35·4	43·8	23	52·1	21	23	35·40	− 0·68	+ 47·10	+ 47·18	− 4·34
	7496	....	6·5	42	8	14·0	23·2	36·0	48·0	27	0·7	21	26	35·75	− 0·54	....	+ 47·18	− 3·80
	7566	....	6·0	52	19	39·9	50·1	0·9	11·2	37	22·0	21	37	0·82	− 0·51	....	+ 47·19	− 3·94
	7627	16 Pegasi	....	61	11	46·0	55·1	4·7	13·9	46	23·0	21	46	1·54	− 0·58	+ 47·20	+ 47·18	− 4·09
	7644	....	7·0	18	8	42·8	9·0	36·1	2·5	50	29·5	21	49	36·04	− 0·40	....	+ 47·18	− 4·46
	7688	α Aquarii	....	90	57	43·0	51·2	59·6	7·9	58	16·1	21	57	59·56	− 0·67	+ 47·14	+ 47·19	− 4·36
	7706	ι Pegasi	4·0	65	17	34·8	43·9	53·0	2·0	0	11·2	21	59	52·98	− 0·58	....	+ 47·19	− 4·16
	7868	π Aquarii	....	90	47	17·0	25·2	33·9	42·0	27	50·4	22	27	33·70	− 0·67	+ 47·21	+ 47·20	− 4·43
	7977	....	7·0	88	51	50·8	58·9	7·2	15·5	46	24·0	22	46	7·28	− 0·66	....	+ 47·22	− 4·45
	8034	α Pegasi	....	75	29	54·0	2·5	11·2	19·7	57	28·4	22	57	11·16	− 0·61	+ 47·18	+ 47·22	− 4·43

(a) Definition bad.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1862.
1862.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Sept. 23	8091	....	7·5	62 38	13·0	22·2	31·9	41·1	7 50·7	23 7 31·78	− 0·58	....	+47·21	− 4·51
	8105	γ Piscium.........	....	57 25	2·0	10·3	18·7	26·9	9 35·4	23 9 18·66	− 0·65	+47·18	+47·21	− 4·51
	8147	....	....	70 9	53·9	2·4	11·3	20·2	15 29·1	23 15 11·38	− 0·60	....	+47·21	− 4·50
	8204	....	....	18 43	7·5	33·0	59·4	24·8	26 51·5	23 25 59·21	− 0·40	....	+47·20	− 6·67
	8233	ι Piscium.........	....	85 4	52·5	0·8	9·2	17·4	32 26·0	23 32 9·18	− 0·65	+47·16	+47·20	− 4·53
	8252	....	7·0	37 34	14·3	27·8	42·0	55·2	36 8·9	23 35 41·64	− 0·49	....	+47·20	− 5·20
Sept. 25	8233	ι Piscium.........	....	85 4	52·4	0·8	9·2	17·4	32 26·0	23 32 9·16	− 0·63	+47·16	+47·20	− 4·53
	8331	ω Piscium.........	....	83 51	14·9	23·0	31·6	39·9	51 48·4	23 51 31·56	− 0·62	+47·15	+47·20	− 4·55
	4	α Andromedæ.........	....	61 37	14·9	24·2	33·8	43·1	0 52·8	0 0 33·76	− 0·56	+47·16	+47·20	− 4·75
	26	γ Pegasi.........	....	75 32	8·9	17·4	26·0	34·4	5 43·3	0 5 26·00	− 0·60	+47·16	+47·20	− 4·61
Sept. 30	6281	δ Ursæ Minoris.........	....	3 24	2·[illegible]	19·5	42·5	1·0	20 24·5	18 15 41·90	− 0·42	....	+47·81	+22·25
	6355	α Lyræ.........	....	51 20	9·3	20·0	30·9	41·5	31 52·2	18 31 30·78	− 0·50	+47·90	+47·81	− 2·20
	6528	ζ Aquilæ.........	....	76 19	2·9	11·2	20·0	28·3	58 37·0	18 58 19·88	− 0·55	....	+47·84	− 3·13
	7688	α Aquarii.........	....	90 57	42·0	50·2	58·6	7·0	58 15·4	21 57 58·61	− 0·59	+47·92	+47·84	− 4·30
	7868	η Aquarii.........	....	90 47	16·4	24·6	32·9	41·2	27 49·8	22 27 32·98	− 0·59	+47·82	+47·84	− 4·40
	7908	ζ Pegasi.........	....	79 50	35·0	43·3	52·0	0·2	34 8·9	22 33 51·88	− 0·56	+47·81	+47·84	− 4·35
	8034	α Pegasi.........	....	75 29	53·4	1·8	10·6	19·0	57 27·8	22 57 10·52	− 0·55	+47·75	+47·84	− 4·42
Oct. 6	8034	α Pegasi.........	....	75 29	51·6	0·0	8·8	17·0	57 26·0	22 57 8·68	− 0·67	+49·69	+49·75	− 4·40
	8091	....	8·0	62 38	10·6	19·9	29·5	38·7	7 48·1	23 7 29·36	− 0·62	....	+49·75	− 4·47
	8137	....	7·0	28 45	55·0	12·5	30·0	47·0	14 4·8	23 13 29·86	− 0·43	....	+49·76	− 5·29
	8169	κ Piscium.........	....	89 27	50·3	58·5	7·0	15·0	19 23·8	23 19 6·92	− 0·74	+49·77	+49·76	− 4·49
	8204	....	7·0	18 43	4·5	30·0	50·6	22·0	26 49·0	23 25 56·46	− 0·32	....	+49·76	− 6·52
	8233	ι Piscium.........	....	85 4	50·0	58·2	6·8	15·0	32 23·5	23 32 6·70	− 0·72	+49·72	+49·76	− 4·54
	8247	....	7·0	72 3	30·6	39·4	48·4	56·9	35 5·9	23 34 48·24	− 0·66	....	+49·76	− 4·56
	8269	....	8·0	86 20	40·5	48·7	57·2	5·3	40 14·0	23 39 57·11	− 0·72	....	+49·76	− 4·53
	8298	....	7·0	13 7	29·2	4·8	42·5	18·0	45 55·5	23 44 12·00	− 0·19	....	+49·76	− 8·47
	4	α Andromedæ.........	....	61 37	12·3	21·6	31·2	40·6	0 50·2	0 0 31·18	− 0·62	+49·84	+49·77	− 4·79
	28	....	6·0	49 41	15·4	26·1	37·5	48·2	5 53·1	0 5 37·26	− 0·57	....	+49·77	− 5·05
	42	....	....	86 28	51·2	59·5	8·0	16·1	8 24·8	0 8 7·92	− 0·72	....	+49·77	− 4·59
	57	....	6·5	89 2	41·4	49·6	58·0	6·2	10 14·8	0 9 58·00	− 0·74	....	+49·77	− 4·58
	68	....	6·5	22 54	39·0	0·0	22·0	44·0	14 5·2	0 13 21·84	− 0·30	....	+49·77	− 6·88
	83	....	6·0	37 40	28·9	42·1	56·1	9·5	17 23·1	0 16 55·98	− 0·50	....	+49·77	− 5·60
	112	12 Ceti.........	....	94 40	58·8	6·8	15·4	23·6	22 32·1	0 22 15·34	− 0·77	+49·77	+49·77	− 4·58
	133	....	6·5	70 17	24·8	33·5	42·5	51·0	26 0·0	0 25 42·36	− 0·65	....	+49·77	− 4·76
	149	....	7·0	77 30	44·6	53·1	1·8	10·0	28 18·9	0 28 1·72	− 0·68	....	+49·77	− 4·68
	164	ι Andromedæ.........	5·0	61 21	13·0	22·4	32·0	41·4	30 51·0	0 30 31·96	− 0·62	....	+49·77	− 4·92
	177	....	7·0	81 81	3·0	11·3	19·9	28·0	33 36·9	0 33 19·82	− 0·70	....	+49·77	− 4·66
	360	(a) α Ursæ Minoris.........	....	1 26	48·5	22·5	8·0	36·0	20 18·0	1 9 2·60	− 2·93	....	+49·77	−74·32
	420	θ Ceti.........	....	98 51	6·0	14·4	23·1	31·4	16 40·0	1 16 22·98	− 0·77	....	+49·78	− 4·52
Oct. 7	8331	ω Piscium.........	....	83 51	12·4	20·5	29·0	37·2	51 45·9	23 51 29·00	− 0·69	+49·80	+49·76	− 4·57
	8364	....	....	32 12	34·8	50·0	6·0	21·2	57 36·9	23 57 5·78	− 0·46	....	+49·75	− 5·71
	8372	(b)	....	32 17	49·0	4·5	20·4	35·9	58 51·8	23 58 20·32	− 0·46	....	+49·75	− 5·72
	18	....	7·0	31 3	5·5	21·5	38·0	53·8	3 10·1	0 2 37·78	− 0·45	....	+49·75	− 5·86
	26	γ Pegasi.........	....	75 32	6·3	14·8	23·5	32·0	5 40·9	0 5 23·50	− 0·65	+49·75	+49·74	− 4·65
	42	....	8·0	86 28	51·0	59·1	8·0	16·1	8 24·7	0 8 7·78	− 0·69	....	+49·74	− 4·59
	57	....	8·0	89 2	41·3	49·5	58·0	6·1	10 14·8	0 9 57·94	− 0·71	....	+49·74	− 4·58

(a) Very unsteady. (b) Double.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1862.
				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
1862. Oct. 7	68	....	7·0	22 54	39·4	0·4	22·0	43·0	11 5·0	0 13 21·96	− 0·38	....	+49·74	− 6·88
	83	....	7·0	37 40	28·9	42·4	56·0	9·5	17 23·5	0 16 56·06	− 0·48	....	+49·74	− 5·61
	98	....	7·0	74 42	19·1	27·7	36·5	44·9	19 53·8	0 19 36·40	− 0·65	....	+49·74	− 4·69
	112	12 Ceti........................	....	94 40	58·8	6·9	15·4	23·6	22 32·0	0 22 15·31	− 0·73	+49·74	+49·74	− 4·59
	133	....	9·0	70 17	21·9	33·6	42·5	51·0	26 0·1	0 25 42·12	− 0·62	....	+49·73	− 4·76
	149	....	7·0	77 30	44·6	53·0	1·9	10·1	28 18·9	0 28 1·74	− 0·66	....	+49·73	− 4·69
	164	ι Andromedæ........................	....	61 24	13·0	22·4	32·0	41·2	30 51·0	0 30 31·92	− 0·59	....	+49·72	− 4·92
	177	(a)	....	81 21	3·0	11·2	20·0	28·2	33 36·9	0 33 19·86	− 0·67	....	+49·72	− 4·66
	360	α Ursæ Minoris........................	....	1 26	53·0	21·0	5·0	35·5	20 18·5	1 9 3·20	+ 2·60	....	+49·71	−74·47
	420	θ¹ Ceti........................	....	98 51	6·3	14·6	23·1	31·3	16 40·0	1 16 23·06	− 0·75	....	+49·71	− 4·53
	453	η Piscium........................	....	75 19	4·8	13·1	22·0	30·6	23 39·3	1 23 21·96	− 0·65	+49·67	+49·71	− 4·81
Oct. 8	4	α Andromedæ........................	....	61 37	12·5	21·8	31·2	40·7	0 50·1	0 0 31·26	− 0·58	+49·72	+49·70	− 4·79
	18	....	7·0	31 3	5·3	21·5	37·9	53·9	3 10·0	0 2 37·72	− 0·45	....	+49·70	− 5·56
	26	γ Pegasi........................	....	75 32	6·4	14·8	23·6	32·0	5 40·9	0 5 23·51	− 0·63	+49·69	+49·70	− 4·65
	48	....	8·0	76 49	37·2	45·6	54·1	2·9	9 11·6	0 8 54·34	− 0·62	....	+49·70	− 4·65
	68	....	7·0	22 54	39·0	0·5	22·0	43·2	14 5·0	0 13 21·94	− 0·40	....	+49·70	− 6·88
	83	....	6·5	37 40	28·9	42·1	56·0	9·4	17 23·5	0 16 55·98	− 0·48	....	+49·70	− 5·61
	98	....	7·0	74 42	19·2	27·8	36·5	45·5	19 53·0	0 19 36·58	− 0·63	....	+49·70	− 4·70
	112	12 Ceti........................	....	94 40	58·8	6·9	15·4	23·8	22 32·1	0 22 15·40	− 0·69	+49·64	+49·70	− 4·59
	149	....	....	77 30	44·9	53·0	1·9	10·0	28 19·0	0 28 1·76	− 0·62	....	+49·70	− 4·69
	164	ι Andromedæ........................	4·0	61 21	13·0	22·1	32·0	41·2	30 51·0	0 30 31·92	− 0·57	....	+49·69	− 4·92
	182	....	7·0	31 58	22·0	37·6	53·2	8·9	34 25·0	0 33 53·34	− 0·45	....	+49·69	− 6·18
	218	η Cassiopeæ........................	3·0	32 52	33·0	48·0	3·6	18·9	40 34·2	0 40 3·54	− 0·46	....	+49·69	− 6·17
	259	μ Andromedæ........................	3·0	52 12	1·2	11·9	22·2	32·9	48 43·5	0 48 22·34	− 0·53	....	+49·69	− 5·24
	288	ι Piscium........................	....	82 48	45·9	54·1	2·8	10·9	55 19·4	0 55 2·62	− 0·65	+49·72	+49·69	− 4·68
	334	β Andromedæ........................	2·0	55 4	56·8	6·7	17·0	27·0	1 37·2	1 1 16·91	− 0·55	....	+49·69	− 5·22
	360	α Ursæ Minoris........................	....	1 26	54·0	24·5	8·0	36·0	20 18·5	1 9 4·20	+ 1·73	....	+49·69	−74·61
	420	θ¹ Ceti........................	....	98 51	6·5	14·8	23·1	31·5	16 40·0	1 16 23·18	− 0·72	....	+49·69	− 4·54
	453	η Piscium........................	....	75 19	4·8	13·1	22·0	30·5	23 39·2	1 23 21·92	− 0·63	+49·70	+49·69	− 4·82
Oct. 9	112	12 Ceti........................	....	94 40	58·6	6·8	15·2	23·4	22 32·0	0 22 15·20	− 0·72	+49·87	+49·85	− 4·59
	288	ι Piscium........................	....	82 48	45·9	54·1	2·5	10·8	55 19·2	0 55 2·50	− 0·67	+49·87	+49·85	− 4·69
	360	α Ursæ Minoris........................	....	1 26	52·5	25·0	6·5	35·0	20 18·5	1 9 3·50	+ 2·39	....	+49·85	−74·74
	420	θ¹ Ceti........................	....	98 51	6·1	14·4	23·0	31·2	16 40·0	1 16 22·94	− 0·71	....	+49·85	− 4·55
	453	η Piscium........................	....	75 19	4·9	13·1	21·9	30·2	23 39·1	1 23 21·84	− 0·65	+49·81	+49·85	− 4·83
Oct. 18	8233	ι Piscium........................	....	85 1	51·4	59·6	8·1	16·3	32 24·9	23 32 8·10	− 0·67	+48·23	+48·19	− 4·50
	8331	ω Piscium........................	....	83 51	14·0	22·2	30·6	39·0	51 47·5	23 51 30·66	− 0·67	+48·10	+48·18	− 4·55
	4	α Andromedæ........................	....	61 37	14·0	23·1	32·9	42·2	0 51·9	0 0 32·82	− 0·57	+48·14	+48·17	− 4·78
	26	γ Pegasi........................	....	75 32	7·9	16·4	25·0	33·5	5 42·2	0 5 25·00	− 0·63	+48·23	+48·16	− 4·65
Oct. 20	360	α Ursæ Minoris........................	....	1 26	56·5	29·0	8·0	38·5	20 21·0	1 9 6·60	+ 2·73	....	+46·95	−75·24
	420	θ¹ Ceti........................	....	98 51	9·0	17·4	26·0	34·1	16 42·9	1 16 25·88	− 0·74	....	+46·95	− 4·61
	453	η Piscium........................	....	75 19	7·6	16·0	24·9	33·2	23 42·0	1 23 21·78	− 0·64	+46·94	+46·94	− 4·91
	518	ο Piscium........................	....	85 10	17·0	25·2	33·6	41·9	33 50·4	1 33 33·62	− 0·67	+46·92	+46·94	− 4·77
	577	β Arietis........................	....	69 49	2·4	11·0	20·1	28·9	46 37·9	1 46 20·06	− 0·61	+46·93	+46·94	− 5·07
	648	α Arietis........................	....	67 9	24·9	33·6	42·9	51·7	59 1·0	1 58 42·82	− 0·60	+46·97	+46·93	− 5·18
Oct. 23	8233	ι Piscium........................	....	85 4	53·9	2·1	10·8	19·0	32 27·6	23 32 10·68	− 0·68	+45·63	+45·65	− 4·47
	8331	ω Piscium........................	....	83 51	16·4	24·8	33·2	41·4	51 50·0	23 51 33·16	− 0·68	+45·59	+45·65	− 4·53

(a) Another and smaller star in field.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1862.
1862				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Oct. 23	4	α Andromedae	....	61 37	16·5	25·8	35·2	44·5	0 54·1	0 0 35·22	− 0·58	+45·72	+45·65	− 4·75
	26	γ Pegasi	....	75 32	10·5	18·8	27·6	36·0	5 44·9	0 5 27·56	− 0·64	+45·67	+45·65	− 4·64
Oct. 26	8169	κ Piscium	....	89 27	55·8	4·0	12·5	20·8	19 29·1	23 19 12·44	− 0·68	+44·08	+44·15	− 4·38
	8233	ι Piscium	....	85 4	55·4	3·6	12·0	20·2	32 28·9	23 32 12·02	− 0·66	+44·25	+44·15	− 4·45
	8331	ω Piscium	....	83 51	18·0	26·1	34·8	42·9	51 51·5	23 51 34·66	− 0·65	+44·05	+44·15	− 4·52
	4	α Andromedae	....	61 37	17·9	27·1	36·9	46·0	0 55·8	0 0 36·74	− 0·56	+44·17	+44·15	− 4·74
	26	γ Pegasi	....	75 32	11·9	20·3	29·0	37·5	5 46·2	0 5 28·96	− 0·62	+44·22	+44·15	− 4·63
Oct. 28	360	α Ursae Minoris	....	1 26	0·0	31·5	11·0	43·5	20 25·0	1 9 10·20	+ 1·96	....	+43·39	−74·56
	420	θ Ceti	....	98 51	12·9	21·0	29·7	37·8	16 16·3	1 16 29·54	− 0·60	....	+43·38	− 4·63
	518	ι Piscium	....	85 10	20·5	28·8	37·2	45·4	33 53·9	1 33 37·16	− 0·63	+43·38	+43·38	− 4·81
	648	α Arietis	....	67 9	28·8	37·4	46·5	55·6	59 4·8	1 58 46·62	− 0·57	+43·21	+43·37	− 5·25
	704	67 Ceti	....	97 1	11·1	19·6	28·0	36·2	9 44·9	2 9 28·02	− 0·68	+43·42	+43·36	− 4·69
	760	ξ² Ceti	....	82 10	54·8	3·0	11·7	20·0	20 28·4	2 20 11·58	− 0·68	+43·52	+43·36	− 4·93
Oct. 29	288	ε Piscium	....	82 48	52·9	1·0	9·4	17·8	55 26·2	0 55 9·46	− 0·67	+42·96	+42·98	− 4·74
	334	δ Andromedae	....	55 4	3·5	13·2	23·9	33·9	1 44·1	1 1 23·72	− 0·55	....	+42·97	− 5·30
	360	α Ursae Minoris	....	1 26	57·0	28·5	10·0	42·0	20 26·0	1 9 8·70	+ 3·52	....	+42·98	−74·42
	420	θ Ceti	....	98 51	13·0	21·2	29·9	38·1	16 46·8	1 16 29·80	− 0·75	....	+42·97	− 4·63
	455	....	7·0	73 43	42·6	51·0	59·9	8·4	24 17·2	1 23 59·82	− 0·63	....	+42·96	− 4·97
	472	....	8·0	80 43	46·0	56·1	4·6	12·9	27 21·2	1 27 4·56	− 0·71	....	+42·96	− 4·74
	514	....	7·0	60 36	55·8	5·0	14·8	24·0	33 33·9	1 33 14·70	− 0·58	....	+42·96	− 5·32
	538	....	6·0	73 14	11·8	20·1	29·0	37·5	38 46·3	1 38 28·94	− 0·63	....	+42·96	− 6·03
	547	(a)	....	42 45	41·7	51·0	6·2	18·3	40 31·0	1 40 6·24	− 0·48	....	+42·96	− 6·15
	562	....	7·0	39 10	0·0	13·2	26·5	39·5	43 42·9	1 43 26·42	− 0·46	....	+42·95	− 6·42
	577	β Arietis	....	69 49	6·4	15·1	24·0	32·9	46 42·0	1 46 24·08	− 0·61	+42·97	+42·95	− 5·13
	620	....	7·0	25 31	7·2	26·4	46·0	4·7	54 24·8	1 53 45·82	− 0·35	....	+42·95	− 8·15
	648	α Arietis	....	67 9	29·0	37·8	47·0	55·8	59 5·0	1 58 46·92	− 0·61	+42·96	+42·94	− 5·20
	704	67 Ceti	....	97 1	11·9	20·2	28·6	37·0	9 45·4	2 9 28·62	− 0·71	+42·88	+42·94	− 4·69
	760	ξ² Ceti	....	82 10	55·5	3·7	12·1	20·5	20 29·0	2 20 12·16	− 0·75	+43·02	+42·94	− 4·94
Nov. 4	518	ι Piscium	....	85 10	22·4	30·7	39·1	47·3	33 56·0	1 33 39·10	− 0·59	+41·41	+41·44	− 4·82
	538	....	7·0	73 11	13·0	21·7	30·1	39·0	38 47·9	1 38 30·40	− 0·54	....	+41·44	− 5·05
	547	(a)	....	42 45	43·5	55·6	8·0	20·0	40 32·4	1 40 7·90	− 0·43	....	+41·44	− 6·17
	562	....	6·0	39 10	1·8	14·7	28·0	41·0	43 54·5	1 43 28·00	− 0·42	....	+41·44	− 6·45
	577	β Arietis	....	69 49	7·9	16·5	25·5	34·3	46 43·6	1 46 25·56	− 0·53	+41·44	+41·44	− 5·16
	588	....	5·5	26 1	18·8	37·8	56·9	15·5	49 35·0	1 48 56·80	− 0·34	....	+41·44	− 8·03
	620	....	7·0	25 31	8·8	27·5	47·4	6·2	54 26·0	1 53 47·18	− 0·34	....	+41·44	− 8·19
	648	α Arietis	....	67 9	30·5	39·3	48·3	57·2	59 6·6	1 58 48·38	− 0·52	+41·44	+41·44	− 5·29
	694	....	8·0	26 11	1·5	20·0	39·2	57·9	8 16·9	2 7 39·10	− 0·35	....	+41·44	− 6·28
	704	67 Ceti	....	97 1	13·4	21·6	30·1	38·3	9 47·0	2 9 30·08	− 0·64	+41·36	+41·44	− 4·73
	738	....	7·0	80 19	54·8	3·0	11·5	19·9	16 28·5	2 16 11·51	− 0·57	....	+41·44	− 5·01
	760	ξ² Ceti	....	82 10	56·9	5·0	13·7	22·0	20 30·6	2 20 13·64	− 0·65	+41·48	+41·44	− 4·98
	776	....	5·5	88 10	29·4	37·6	46·0	54·2	24 2·8	2 23 46·00	− 0·61	....	+41·44	− 4·86
	793	....	6·0	83 45	38·4	46·6	55·1	3·5	28 12·0	2 27 55·12	− 0·59	....	+41·44	− 4·90
	949	α Ceti	....	86 25	11·5	19·7	28·2	36·4	54 45·0	2 54 28·16	− 0·60	+41·45	+41·44	− 4·93
	962	ι Persei	4·0	40 53	8·0	20·6	33·6	46·0	58 59·0	2 58 33·41	− 0·43	....	+41·44	− 6·88
	980	....	6·5	63 36	21·8	31·1	40·4	49·7	1 59·2	3 1 40·44	− 0·50	....	+41·44	− 5·59
	1055	....	8·0	68 25	41·6	49·0	58·3	6·8	16 16·1	3 15 58·36	− 0·53	....	+41·44	− 5·44
	1087	f Tauri	5·0	77 31	22·7	31·0	39·8	48·0	22 56·9	3 22 39·68	− 0·56	....	+41·44	− 5·16

(a) Double—8 and 10 mags.

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Date	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires.					Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock		Correction to Mean R.A., Jan. 1, 1862.
					I.	II.	III.	IV.	V.			observed.	interpolated.	
					s.	s.	s.	s.	m s.	h m s.	s.	s.	s.	s.
1862.														
Nov. 4	1101	....	7·5	58 45	8·7	18·1	28·3	37·7	26 47·8	3 26 28·12	− 0·43	....	+ 41·44	− 5·84
	1126	11 Tauri	7·0	65 6	38·4	47·5	56·8	5·9	32 15·1	3 31 56·74	− 0·51	....	+ 41·44	− 5·58
	1166	η Tauri	....	66 17	24·0	32·6	42·0	50·8	38 59·9	3 38 41·86	− 0·52	+ 41·38	+ 41·44	− 5·53
	1282	....	7·0	41 15	30·8	43·1	56·0	8·2	3 21·3	4 2 55·88	− 0·43	....	+ 41·44	− 7·05
	1318	....	....	33 49	35·7	50·8	5·8	20·6	10 35·9	4 10 5·76	− 0·39	....	+ 41·44	− 7·90
	1347	....	7·5	65 54	16·6	25·7	35·0	44·0	14 53·1	4 11 34·88	− 0·52	....	+ 41·44	− 5·51
	1376	ι Tauri	....	71 6	40·5	49·2	58·1	6·7	20 15·9	4 19 58·06	− 0·54	+ 41·49	+ 41·44	− 5·35
	1420	α Tauri	....	73 45	7·4	15·9	24·6	33·1	27 42·0	4 27 24·60	− 0·54	+ 41·48	+ 41·44	− 5·24
Nov. 5	518	(a) ι Piscium	....	85 10	22·1	30·5	39·2	47·1	33 56·0	1 33 39·10	− 0·58	+ 41·41	+ 41·49	− 4·83
	577	β Arietis	....	69 49	8·0	16·4	25·8	34·2	46 13·3	1 46 25·54	− 0·52	+ 41·45	+ 41·49	− 5·16
	648	α Arietis	....	67 9	30·2	39·0	48·4	57·2	59 6·2	1 58 48·20	− 0·51	+ 41·62	+ 41·49	− 5·30
	837	γ Ceti	....	87 18	16·6	24·6	33·1	41·4	35 49·9	2 35 33·12	− 0·50	+ 41·51	+ 41·49	− 4·89
	949	α Ceti	....	60 25	11·5	19·7	28·1	36·3	54 44·8	2 54 28·08	− 0·58	+ 41·52	+ 41·49	− 4·94
	1166	η Tauri	....	66 17	23·7	32·1	41·0	50·8	39 0·0	3 38 41·76	− 0·51	+ 41·49	+ 41·49	− 5·55
	1420	α Tauri	....	73 45	7·5	15·8	24·7	33·1	27 42·1	4 27 24·61	− 0·53	+ 41·45	+ 41·49	− 5·26
Nov. 6	704	67 Ceti	....	97 1	13·8	21·9	30·1	38·4	9 47·0	2 9 30·24	− 0·63	+ 41·19	+ 41·30	− 4·73
	718	....	7·0	33 21	8·1	23·2	38·5	53·6	12 8·9	2 11 38·46	− 0·40	....	+ 41·30	− 7·30
	736	....	7·5	80 19	54·9	3·4	11·8	20·0	16 28·4	2 16 11·64	− 0·55	....	+ 41·30	− 5·02
	760	ξ² Ceti	....	82 10	57·0	5·3	13·9	22·1	20 30·6	2 20 13·78	− 0·63	+ 41·33	+ 41·31	− 4·99
	761	....	7·0	81 1	21·0	29·2	37·9	46·1	21 54·8	2 21 37·80	− 0·56	....	+ 41·31	− 5·02
	776	....	6·0	88 19	29·4	37·8	46·1	54·1	24 2·9	2 23 46·12	− 0·59	....	+ 41·31	− 4·88
	793	....	7·0	83 15	38·8	46·9	55·4	3·4	28 12·2	2 27 55·34	− 0·57	....	+ 41·31	− 4·97
	837	γ Ceti	....	87 18	16·8	25·0	33·2	41·6	35 50·0	2 35 33·32	− 0·59	+ 41·32	+ 41·31	− 4·90
	881	ε Arietis	6·0	75 27	0·0	8·3	17·0	25·5	43 34·4	2 43 17·01	− 0·53	....	+ 41·31	− 5·19
	891	(b)	....	81 4	29·5	37·7	46·2	54·4	45 3·0	2 44 46·16	− 0·57	....	+ 41·31	− 4·98
	949	α Ceti	....	86 25	11·5	19·7	28·3	36·4	54 45·0	2 54 28·18	− 0·58	+ 41·43	+ 41·31	− 4·95
	962	ι Persei	....	40 53	3·2	20·9	33·8	46·2	58 59·1	2 58 33·64	− 0·42	....	+ 41·31	− 6·91
	980	....	6·0	63 40	22·1	31·3	40·8	49·9	1 59·2	3 1 40·06	− 0·50	....	+ 41·31	− 5·61
	1055	....	7·5	68 29	40·4	49·4	58·5	7·4	16 16·3	3 15 58·31	− 0·52	....	+ 41·31	− 5·[illegible]
	1087	f Tauri	4·5	77 34	23·0	31·3	40·0	48·3	22 57·0	3 22 39·92	− 0·54	....	+ 41·31	− 5·15
	1126	11 Tauri	7·0	65 9	38·5	47·8	57·0	6·0	32 15·4	3 31 56·96	− 0·50	....	+ 41·31	− 5·60
	1166	η Tauri	....	66 17	21·0	32·8	42·0	50·9	39 0·0	3 38 41·94	− 0·51	+ 41·32	+ 41·31	− 5·56
	1282	....	7·0	41 17	30·9	43·2	56·0	8·5	3 21·2	4 2 55·96	− 0·42	....	+ 41·31	− 7·10
	1309	ε¹ Eridani	....	97 53	2·4	10·8	19·2	27·4	8 36·0	4 8 19·16	− 0·63	....	+ 41·31	− 4·64
	1328	γ Tauri	....	74 44	3·9	12·4	21·1	29·6	11 38·2	4 11 21·04	− 0·53	....	+ 41·31	− 5·26
	1347	....	9·0	65 54	17·0	25·8	35·2	44·0	14 53·5	4 14 35·10	− 0·51	....	+ 41·30	− 5·58
	1361	....	7·0	71 16	1·9	10·6	19·7	28·0	16 37·0	4 16 19·44	− 0·52	....	+ 41·30	− 5·37
	1376	ι Tauri	....	71 6	40·8	49·4	58·4	7·0	20 16·0	4 19 58·32	− 0·52	+ 41·27	+ 41·30	− 5·39
	1420	α Tauri	....	73 45	7·5	16·0	24·9	33·5	27 42·0	4 27 24·78	− 0·53	+ 41·33	+ 41·30	− 5·28
Nov. 11	6772	γ Aquilæ	....	79 42	50·0	58·3	7·0	15·3	39 24·0	19 39 6·92	− 0·54	+ 38·30	+ 38·33	− 2·77
	6802	α Aquilæ	....	81 28	11·0	19·3	28·0	36·2	43 45·0	19 43 27·90	− 0·55	+ 38·48	+ 38·33	− 2·87
	6833	β Aquilæ	....	83 54	40·6	48·8	57·3	5·4	48 14·0	19 47 57·22	− 0·56	+ 38·29	+ 38·33	− 2·92
	453	(c) η Piscium	....	75 19	16·3	25·0	33·8	42·2	23 51·0	1 23 33·66	− 0·54	+ 38·01	+ 38·03	− 4·96
	472	(d)	7·5	89 43	52·9	1·0	9·4	17·6	27 26·0	1 27 9·38	− 0·59	....	+ 38·02	− 4·75
	514	....	7·0	60 36	0·6	10·0	19·7	29·0	33 38·8	1 33 19·62	− 0·48	....	+ 38·02	− 5·35
	538	....	6·0	73 14	16·4	25·0	33·8	42·3	38 51·4	1 38 33·78	− 0·53	....	+ 38·01	− 5·06
	562	....	6·0	39 10	5·0	18·0	31·5	44·4	43 57·9	1 43 31·36	− 0·39	....	+ 38·01	− 6·45
	5777	β Arietis	....	69 49	11·1	20·0	29·0	37·9	46 46·9	1 46 28·98	− 0·51	+ 38·01	+ 38·01	− 5·17

(a) Definition very bad. (b) Double—each 10th mag. Observed middle point between them. (c) Definition bad all night. (d) Faint.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance ref. to	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1862.
				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
1862. Nov. 11	620	....	6·0	25 31	12·0	31·1	50·8	9·8	54 23·5	1 53 50·64	− 0·33	....	+ 38·00	− 6·20
	648	α Arietis............	....	67 9	33·9	42·6	51·9	0·8	59 10·0	1 58 51·84	− 0·51	+ 38·00	+ 38·00	− 5·32
	738	....	7·5	80 19	58·0	6·3	15·0	23·2	16 31·9	2 16 14·85	− 0·54	....	+ 38·00	− 5·04
	760	ξ² Ceti............	....	82 10	0·1	8·6	17·0	25·3	20 31·0	2 20 17·00	− 0·63	+ 38·14	+ 37·99	− 5·02
	764	....	7·0	81 1	24·1	32·3	41·0	49·3	21 58·0	2 21 40·94	− 0·55	....	+ 37·99	− 5·04
	776	....	6·0	88 19	32·9	41·0	49·6	57·8	24 6·1	2 23 49·48	− 0·58	....	+ 37·98	− 4·90
	793	....	7·0	83 45	42·0	50·2	58·5	7·0	28 15·1	2 27 58·68	− 0·56	....	+ 37·98	− 5·00
	881	ν Arietis............	6·0	75 27	3·2	11·8	20·4	29·0	43 37·9	2 43 20·46	− 0·54	....	+ 37·97	− 5·23
	920	....	7·0	68 54	9·0	17·9	27·0	35·7	50 44·9	2 50 26·90	− 0·51	....	+ 37·96	− 5·45
	949	α Ceti............	....	86 25	15·0	23·2	31·6	40·0	54 48·5	2 54 31·66	− 0·57	+ 37·98	+ 37·96	− 4·99
	962	ι Persei............	....	40 53	11·9	24·3	37·1	49·5	59 2·8	2 58 37·15	− 0·41	....	+ 37·95	− 6·98
	980	....	7·0	63 36	25·4	34·6	44·0	53·2	2 2·6	3 1 13·96	− 0·49	....	+ 37·95	− 5·66
	1055	....	8·0	68 25	44·0	52·5	1·9	10·5	16 19·5	3 16 1·68	− 0·51	....	+ 37·94	− 5·52
	1087	f Tauri............	4·0	77 31	26·2	34·6	43·2	51·9	23 0·5	3 22 43·28	− 0·53	....	+ 37·94	− 5·21
	1101	....	6·0	58 45	12·2	22·0	32·0	41·3	26 51·1	3 26 31·72	− 0·47	....	+ 37·93	− 5·94
	1126	11 Tauri............	6·0	65 6	42·0	51·0	0·2	9·4	32 18·9	3 32 0·30	− 0·50	....	+ 37·93	− 5·65
	1282	....	7·0	41 15	34·4	46·9	59·8	12·0	3 25·0	4 2 59·62	− 0·41	....	+ 37·91	− 7·21
	1309	ο² Eridani............	4·0	97 54	6·8	14·0	22·8	31·0	8 39·4	4 8 22·60	− 0·63	....	+ 37·91	− 4·71
	1328	γ Tauri............	3·0	74 41	7·4	16·0	24·7	33·1	11 42·0	4 11 21·64	− 0·54	....	+ 37·90	− 5·34
	1347	....	4·0	65 54	20·4	29·3	38·4	47·6	14 56·9	4 14 38·52	− 0·50	....	+ 37·89	− 5·67
	1361	....	6·0	71 16	5·3	14·0	23·0	31·6	16 40·6	4 16 22·90	− 0·52	....	+ 37·89	− 5·46
	1376	ε Tauri............	....	71 6	44·4	53·0	2·0	10·6	20 19·5	4 20 1·90	− 0·52	+ 37·78	+ 37·88	− 5·48
	1420	α Tauri............	....	73 45	11·1	19·7	28·2	36·9	27 45·6	4 27 28·34	− 0·53	+ 37·86	+ 37·88	− 5·37
	1459	....	6·5	34 38	50·2	4·6	19·7	34·0	36 48·9	4 36 19·18	− 0·36	....	+ 37·87	− 8·00
	1491	....	5·0	81 19	16·1	25·0	33·3	41·8	42 50·1	4 42 33·32	− 0·55	....	+ 37·87	− 5·10
	1501	....	6·5	34 23	26·5	43·0	58·0	12·3	45 27·8	4 44 57·92	− 0·38	....	+ 37·87	− 6·04
	1520	ι Aurigæ............	....	57 2	9·5	19·2	29·5	39·1	47 49·2	4 47 29·30	− 0·47	+ 37·90	+ 37·87	− 6·07
Nov. 12	6772	γ Aquilæ............	....	79 42	51·1	59·3	8·0	16·4	39 25·0	19 39 7·96	− 0·53	+ 37·24	+ 37·17	− 2·76
	6802	α Aquilæ............	....	81 28	12·4	20·5	29·2	37·5	43 46·1	19 43 29·20	− 0·54	+ 37·16	+ 37·17	− 2·86
	6833	β Aquilæ............	....	83 54	41·6	50·0	58·4	6·7	48 15·2	19 47 58·38	− 0·55	+ 37·11	+ 37·17	− 2·91
	949	(a) α Ceti............	....	86 25	16·1	24·4	33·0	41·2	54 49·5	2 54 32·84	− 0·56	+ 36·80	+ 36·75	− 5·00
	986	δ Arietis............	....	70 46	56·1	4·9	13·8	22·5	3 31·5	3 3 13·76	− 0·51	+ 36·76	+ 36·73	− 5·44
	1166	η Tauri............	....	66 17	28·5	37·4	46·8	55·7	39 4·9	3 38 46·66	− 0·49	+ 36·67	+ 36·72	− 5·65
	1376	ε Tauri............	....	71 6	45·5	54·0	3·0	11·9	20 20·9	4 20 3·06	− 0·51	+ 36·62	+ 36·70	− 5·50
	1420	α Tauri............	....	73 45	12·2	20·8	29·5	38·0	27 46·8	4 27 29·46	− 0·52	+ 36·75	+ 36·70	− 5·39
Nov. 14	949	(a) α Ceti............	....	86 25	18·4	26·8	35·1	43·1	54 52·0	2 54 35·12	− 0·56	+ 34·53	+ 34·48	− 5·01
	986	δ Arietis............	....	70 46	58·4	7·0	16·0	24·9	3 33·9	3 3 16·04	− 0·50	+ 34·48	+ 34·47	− 5·45
	1166	η Tauri............	....	66 17	30·8	39·9	49·0	57·8	39 7·0	3 38 48·90	− 0·49	+ 34·46	+ 34·46	− 5·68
	1376	ε Tauri............	....	71 6	47·6	56·3	5·2	14·0	20 23·2	4 20 5·26	− 0·50	+ 34·45	+ 34·44	− 5·33
	1420	α Tauri............	....	73 45	14·6	23·1	31·9	40·5	27 49·2	4 27 31·86	− 0·52	+ 34·39	+ 34·43	− 5·43
Nov. 15	453	ε Piscium............	....	75 19	20·5	29·2	38·0	46·4	23 55·1	1 23 37·84	− 0·51	+ 33·79	+ 33·74	− 4·95
	518	ν Piscium............	....	85 10	30·0	38·3	46·9	55·0	34 3·5	1 33 46·71	− 0·54	+ 33·73	+ 33·73	− 4·83
	577	β Arietis............	....	69 49	15·6	24·4	33·2	42·0	46 51·1	1 46 33·30	− 0·48	+ 33·67	+ 33·72	− 5·18
	648	α Arietis............	....	67 9	38·8	47·0	56·2	5·0	59 14·2	1 58 56·08	− 0·46	+ 33·72	+ 33·72	− 5·33
	704	67 Ceti............	....	97 1	21·0	29·2	37·8	46·0	9 54·6	2 9 37·72	− 0·59	+ 33·70	+ 33·71	− 4·76
	760	ξ² Ceti............	....	82 10	4·6	13·0	21·4	29·8	20 38·3	2 20 21·42	− 0·59	+ 33·69	+ 33·70	− 5·03

(a) Definition very bad.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations	Correction of Clock observed.	Correction of Clock Interpolated.	Correction to Mean R.A. Jan. 1, 1862.
1862.				° ′	s	s	s	s	m s	h m s	s	s	s	s
Nov. 17	6772	γ Aquilæ	....	79 42	55·9	4·1	12·7	21·1	39 29·9	19 39 12·74	− 0·50	+ 32·36	+ 32·36	− 2·69
	6802	α Aquilæ	....	81 28	17·0	25·3	34·0	42·2	43 51·0	19 43 33·90	− 0·51	+ 32·36	+ 32·35	− 2·79
	6833	β Aquilæ	....	83 54	46·4	54·5	3·0	11·3	48 20·0	19 48 3·01	− 0·52	+ 32·35	+ 32·34	− 2·84
	704	67 Ceti	....	97 1	22·6	30·9	39·2	47·6	9 56·0	2 9 39·26	− 0·57	+ 32·14	+ 32·10	− 4·76
	837	γ Ceti	....	87 18	26·0	34·1	42·6	50·8	35 59·2	2 35 42·54	− 0·53	+ 32·11	+ 32·03	− 4·97
	949	α Ceti	....	86 25	20·9	29·1	37·7	45·9	54 54·2	2 54 37·56	− 0·52	+ 32·07	+ 32·09	− 5·03
	1166	η Tauri	....	66 17	33·2	42·1	51·4	0·2	39 9·8	3 38 51·34	− 0·45	+ 32·02	+ 32·08	− 5·72
	1376	ε Tauri	....	71 6	50·1	58·8	7·8	16·4	20 25·5	4 20 7·72	− 0·47	+ 32·01	+ 32·07	− 5·58
	1420	α Tauri	....	73 45	16·9	25·4	34·1	42·6	27 51·5	4 27 34·16	− 0·48	+ 32·10	+ 32·06	− 5·48
Nov. 18	6772	γ Aquilæ	....	79 42	56·7	4·9	13·4	22·0	39 30·4	19 39 13·48	− 0·49	+ 31·60	+ 31·64	− 2·68
	6802	α Aquilæ	....	81 28	17·8	26·1	34·6	43·0	43 51·4	19 43 34·58	− 0·49	+ 31·65	+ 31·63	− 2·78
	6833	β Aquilæ	....	83 54	47·0	55·2	3·8	12·0	48 20·7	19 48 3·74	− 0·50	+ 31·62	+ 31·62	− 2·83
	648	α Arietis	....	67 9	40·2	49·2	58·3	7·3	59 16·5	1 58 58·30	− 0·45	+ 31·49	+ 31·47	− 5·33
	837	γ Ceti	....	87 18	26·8	34·9	43·2	51·4	35 59·9	2 35 43·24	− 0·51	+ 31·39	+ 31·46	− 4·97
	949	α Ceti	....	86 25	21·5	29·9	38·2	46·3	54 55·0	2 54 38·18	− 0·51	+ 31·44	+ 31·45	− 5·03
	986	δ Arietis	....	70 46	1·5	10·0	19·1	27·9	3 36·8	3 3 19·06	− 0·46	+ 31·46	+ 31·44	− 5·49
	1166	η Tauri	....	66 17	33·8	42·9	52·0	1·0	39 10·1	3 38 51·96	− 0·45	+ 31·41	+ 31·42	− 5·73
Dec. 4	1420	(a) α Tauri	....	73 45	31·2	39·7	48·5	57·0	28 5·9	4 27 48·46	− 0·41	+ 17·95	+ 17·95	− 5·70
	1520	ι Aurigæ	....	57 2	29·9	39·4	49·8	59·2	48 9·5	4 47 49·56	− 0·36	+ 17·95	+ 17·94	− 6·50
	1681	(b) β Tauri	....	61 30	4·0	13·5	23·4	32·3	17 42·0	5 17 22·98	− 0·38	+ 17·91	+ 17·91	− 6·27
	1883	α Orionis	....	82 37	13·1	21·4	30·0	38·2	47 47·0	5 47 29·94	− 0·44	+ 17·96	+ 17·94	− 5·38
	6281	δ Ursæ Minoris S. P.	....	3 24	6·0	29·5	48·0	11·5	20 31·0	6 15 49·20	− 0·88	....	+ 17·93	+ 45·39
	2163	γ Geminorum	....	73 29	15·3	23·6	32·6	41·1	29 50·0	6 29 32·56	− 0·41	....	+ 17·93	− 5·61
Dec. 5	1520	ι Aurigæ	....	57 2	30·0	39·9	50·0	59·8	48 10·0	4 47 49·94	− 0·39	+ 17·62	+ 17·63	− 6·51
	1681	β Tauri	....	61 30	4·1	13·6	23·3	32·8	17 42·4	5 17 23·30	− 0·41	+ 17·64	+ 17·63	− 6·29
	1730	δ Orionis	....	90 23	28·9	37·1	45·5	53·8	25 2·1	5 24 45·48	− 0·52	+ 17·65	+ 17·62	− 5·18
	1765	ι Orionis	....	91 17	44·0	52·2	0·7	9·0	29 17·5	5 29 0·68	− 0·52	+ 17·66	+ 17·62	− 5·15
	1883	α Orionis	....	82 37	13·6	21·8	30·4	38·7	47 47·1	5 47 30·32	− 0·49	+ 17·64	+ 17·62	− 5·39
	1958	κ Orionis	....	75 13	12·9	21·3	30·0	38·4	59 47·2	5 59 29·96	− 0·47	....	+ 17·62	− 5·63
	6281	(c) δ Ursæ Minoris S. P.	....	3 24	6·0	30·5	49·0	12·0	20 31·0	6 15 49·70	− 1·49	....	+ 17·61	+ 45·60
	2163	γ Geminorum	....	73 29	15·6	24·2	33·0	41·5	29 50·4	6 29 32·94	− 0·46	+ 17·43	+ 17·61	− 5·63
Dec. 6	949	α Ceti	....	86 25	35·8	43·9	52·3	0·4	55 9·0	2 54 52·26	− 0·53	+ 17·41	+ 17·36	− 5·08
	986	δ Arietis	....	70 46	15·8	24·4	33·3	42·0	3 51·0	3 3 33·30	− 0·46	+ 17·29	+ 17·35	− 5·56
	1166	η Tauri	....	66 17	48·0	57·0	6·2	15·1	39 24·6	3 39 6·16	− 0·44	+ 17·32	+ 17·34	− 5·87
	1376	ε Tauri	....	71 6	5·0	13·8	22·9	31·4	20 40·4	4 20 22·70	− 0·45	+ 17·24	+ 17·33	− 5·81
	1420	α Tauri	....	73 45	31·9	40·2	49·1	57·7	28 6·5	4 27 49·08	− 0·48	+ 17·42	+ 17·32	− 5·72
Dec. 10	1623	(a) β Orionis	....	98 21	26·8	35·0	43·7	52·0	8 0·7	5 7 43·64	− 0·63	+ 16·40	+ 16·39	− 5·02
	1730	δ Orionis	....	90 23	30·2	38·4	46·9	55·1	25 3·7	5 24 46·86	− 0·59	+ 16·40	+ 16·38	− 5·24
	1958	κ Orionis	....	75 13	14·1	22·6	31·5	40·0	59 48·9	5 59 31·42	− 0·52	+ 16·38	+ 16·37	− 5·72
	2163	γ Geminorum	....	73 29	17·0	25·4	34·3	42·9	29 51·8	6 29 34·28	− 0·51	+ 16·31	+ 16·36	− 5·74
Dec. 11	6772	γ Aquilæ	....	79 42	11·9	20·2	28·9	37·1	39 45·6	19 39 28·78	− 0·54	+ 16·18	+ 16·17	− 2·51
	6802	α Aquilæ	....	81 28	33·1	41·4	50·0	58·2	44 6·8	19 43 49·90	− 0·55	+ 16·23	+ 16·16	− 2·62
	6833	β Aquilæ	....	83 54	2·1	10·7	19·3	27·5	48 36·0	19 48 19·18	− 0·57	+ 16·08	+ 16·15	− 2·66
	1376	ε Tauri	....	71 6	6·4	14·9	24·0	32·8	20 41·6	4 20 23·94	− 0·50	+ 16·09	+ 16·11	− 5·85
	1420	α Tauri	....	73 45	33·0	41·6	50·5	59·0	28 7·3	4 27 50·40	− 0·51	+ 16·17	+ 16·11	− 5·76

(a) Definition very bad. (b) Faint. (c) Faint.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1862.
1862.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Dec. 11	1434	....	5·0	77 45	59·9	8·1	16·9	25·0	30 34·0	4 30 16·78	− 0·53	....	+ 16·11	− 5·74
	1459	....	....	34 38	12·6	27·0	41·9	56·2	37 11·1	4 36 41·74	− 0·25	....	+ 16·11	− 8·63
	1491	....	5·0	81 19	38·9	46·9	55·5	3·9	43 12·5	4 42 55·54	− 0·55	....	+ 16·11	− 5·51
	1501	....	6·5	34 23	50·8	5·2	20·2	34·8	45 50·0	4 45 20·20	− 0·26	....	+ 16·11	− 8·71
	1520	ι Aurigæ..........................	....	57 2	31·9	41·5	51·7	1·4	48 11·5	4 47 51·60	− 0·42	+ 16·06	+ 16·11	− 6·58
	1765	ε Orionis..........................	....	91 17	46·0	54·0	2·4	10·6	29 19·1	5 29 2·42	− 0·60	+ 16·08	+ 16·11	− 5·23
	1883	α Orionis..........................	....	82 37	15·2	23·4	32·0	40·2	47 49·0	5 47 31·96	− 0·56	+ 16·17	+ 16·11	− 5·49
	6281	δ Ursæ Minoris S. P.....	....	3 24	8·5	32·0	51·0	13·5	20 33·0	6 15 51·60	− 2·89	....	+ 16·11	+ 46·71
	2163	γ Geminorum..................	....	73 20	17·2	25·8	34·6	43·0	29 52·0	6 29 34·52	− 0·51	....	+ 16·11	− 5·76
Dec. 17	1463	....	7·0	66 37	58·0	7·0	16·2	25·1	37 34·4	4 37 16·14	− 0·42	....	+ 13·22	− 6·11
	1491	....	5·5	81 19	41·5	49·9	58·5	6·8	43 15·3	4 42 58·40	− 0·48	....	+ 13·21	− 5·55
	1501	....	7·0	34 23	53·8	8·4	23·2	37·8	45 52·8	4 45 23·20	− 0·28	....	+ 13·21	− 8·77
	1520	ι Aurigæ..........................	....	57 2	34·7	44·3	54·6	4·2	48 14·4	4 47 54·44	− 0·39	+ 13·25	+ 13·21	− 6·64
	1626	....	7·5	49 41	35·0	45·9	57·0	7·7	9 18·8	5 8 56·88	− 0·35	....	+ 13·20	− 7·10
	1656	....	7·0	81 42	49·0	57·2	5·7	14·0	14 22·7	5 14 5·72	− 0·48	....	+ 13·20	− 5·58
	1681	β Tauri..........................	....	61 30	9·0	18·2	27·9	37·3	17 46·9	5 17 27·86	− 0·41	+ 13·24	+ 13·20	− 6·45
	1703	....	8·0	73 40	47·8	56·4	5·2	13·8	20 22·6	5 20 5·16	− 0·46	....	+ 13·19	− 5·88
	1730	δ Orionis..........................	....	90 23	33·6	41·8	50·1	58·3	25 6·8	5 24 50·12	− 0·53	+ 13·16	+ 13·19	− 5·32
	1765	ε Orionis..........................	....	91 17	48·8	57·0	5·3	13·6	29 22·0	5 29 5·34	− 0·53	+ 13·16	+ 13·18	− 5·30
Dec. 19	1623	β Orionis..........................	....	98 21	30·9	39·1	47·5	55·9	8 4·5	5 7 47·58	− 0·51	+ 12·41	+ 12·45	− 5·09
	1681	β Tauri..........................	....	61 30	9·8	19·0	28·6	38·1	17 47·6	5 17 28·62	− 0·38	+ 12·47	+ 12·44	− 6·17
	1730	δ Orionis..........................	....	90 23	34·2	42·4	51·0	59·1	25 7·6	5 24 50·86	− 0·49	+ 12·39	+ 12·43	− 5·33
	1765	ε Orionis..........................	....	91 17	49·4	57·7	6·1	14·3	29 22·8	5 29 6·06	− 0·49	+ 12·41	+ 12·43	− 5·31
	1883	α Orionis..........................	....	82 37	18·9	27·1	35·6	44·0	47 52·6	5 47 35·64	− 0·45	+ 12·48	+ 12·42	− 5·59
	1958	ν Orionis..........................	....	75 13	18·5	26·9	35·5	44·0	59 52·9	5 59 35·56	− 0·43	....	+ 12·42	− 5·65
	6281	δ Ursæ Minoris S. P.....	....	3 24	9·5	33·0	52·0	15·0	20 34·0	6 15 52·70	− 1·27	....	+ 12·41	+ 47·81
	2163	γ Geminorum..................	....	73 29	21·0	29·4	38·2	47·1	29 55·6	6 29 38·26	− 0·42	+ 12·40	+ 12·40	− 5·90
Dec. 20	1376	ε Tauri..........................	....	71 6	10·8	19·3	28·2	37·0	20 46·0	4 20 28·26	− 0·41	+ 11·73	+ 11·84	− 5·90
	1520	ι Aurigæ..........................	....	57 2	36·0	45·9	56·0	5·6	48 15·9	4 47 55·88	− 0·36	+ 11·60	+ 11·83	− 6·66
	1681	β Tauri..........................	....	61 30	10·4	19·8	29·1	38·6	17 48·2	5 17 29·22	− 0·38	+ 11·88	+ 11·81	− 6·48
	1730	δ Orionis..........................	....	90 23	34·8	43·0	51·4	59·6	25 8·8	5 24 51·36	− 0·49	+ 11·90	+ 11·81	− 5·31
	1765	ε Orionis..........................	....	91 17	50·0	58·2	6·6	14·9	29 23·4	5 29 6·62	− 0·49	+ 11·86	+ 11·80	− 5·32
Dec. 22	1681	β Tauri..........................	....	61 30	11·9	21·1	30·8	40·0	17 49·9	5 17 30·74	− 0·38	+ 10·37	+ 10·38	− 6·49
	1730	δ Orionis..........................	....	90 23	36·2	44·4	53·0	1·2	25 9·6	5 24 52·88	− 0·49	+ 10·40	+ 10·38	− 5·35
	1765	ε Orionis..........................	....	91 17	51·5	59·7	8·1	16·3	29 24·8	5 29 8·08	− 0·49	+ 10·42	+ 10·37	− 5·34
	1826	....	6·0	80 31	56·7	4·9	13·5	21·9	39 30·4	5 39 13·48	− 0·44	....	+ 10·37	− 5·69
	1883	α Orionis..........................	....	82 37	21·0	29·3	38·0	46·2	47 54·8	5 47 37·86	− 0·45	+ 10·29	+ 10·36	− 5·62
	6281	δ Ursæ Minoris S. P.....	....	3 24	11·0	35·0	53·0	17·0	20 35·5	6 15 54·30	− 1·27	....	+ 10·36	+ 48·11
	2163	γ Geminorum..................	....	73 29	23·1	31·5	40·4	49·0	29 57·8	6 29 40·36	− 0·42	....	+ 10·35	− 5·95
	2238	....	6·0	66 15	15·4	24·2	33·6	42·6	43 51·9	6 43 33·54	− 0·39	....	+ 10·35	− 6·23
	2363	....	7·0	65 4	39·2	48·1	57·5	6·6	6 15·9	7 5 57·46	− 0·38	....	+ 10·34	− 6·23
	2410	δ Geminorum..................	....	67 46	31·0	39·8	49·0	57·9	12 6·9	7 11 48·92	− 0·40	+ 10·31	+ 10·34	− 6·09
	2463	....	7·0	62 11	43·0	52·4	2·0	11·2	20 20·8	7 20 1·88	− 0·37	....	+ 10·33	− 6·32
	2488	....	7·0	43 32	3·5	15·3	27·8	39·6	26 51·9	7 26 27·62	− 0·31	....	+ 10·33	− 7·52
	2522	α Canis Minoris..............	....	84 26	43·5	51·7	0·1	8·5	32 16·9	7 32 0·14	− 0·45	+ 10·34	+ 10·32	− 5·40
	2555	β Geminorum..................	....	61 39	29·4	38·9	48·4	57·8	37 7·2	7 36 49·34	− 0·37	+ 10·30	+ 10·32	− 6·22

Date.	No. in British Association Catalogue	Object Observed	Magnitude observed	North Polar Distance set to.	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	interpolated.	Correction to Mean R.A. Jan. 1, 1862.
				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
1862. Dec. 23	1626	....	6·5	49 41	38·6	49·2	0·3	11·1	9 22·4	5 9 0·32	− 0·34	....	+ 9·91	− 7·25
	1656	....	6·0	81 42	52·5	0·5	9·2	17·4	14 26·0	5 14 9·12	− 0·46	....	+ 9·91	− 5·63
	1681	β Tauri	....	61 30	12·5	21·8	31·2	40·6	17 50·2	5 17 31·26	− 0·39	+ 9·87	+ 9·90	− 6·50
	1696	(a)	....	87 11	57·1	5·5	14·0	22·2	19 30·7	5 19 13·96	− 0·49	....	+ 9·90	− 5·45
	1730	δ Orionis	....	90 23	36·6	45·0	53·3	1·6	25 10·0	5 24 53·30	− 0·50	+ 9·99	+ 9·90	− 5·36
	1766	....	4·0	80 47	59·0	7·2	15·9	24·1	29 32·8	5 29 15·80	− 0·46	....	+ 9·90	− 5·68
	1826	....	7·0	80 31	57·0	5·4	14·0	22·2	39 31·0	5 39 13·92	− 0·46	....	+ 9·89	− 5·70
	1883	α Orionis	....	82 37	21·7	29·9	38·4	46·6	47 55·1	5 47 38·31	− 0·47	+ 9·84	+ 9·89	− 5·63
	1907	....	6·0	44 5	46·8	55·1	3·8	12·2	51 21·0	5 51 3·78	0·32	....	+ 9·89	− 5·83
	1930	....	7·0	72 10	33·6	42·1	51·1	59·6	55 8·6	5 54 51·00	− 0·43	....	+ 9·88	− 6·02
	1962	....	8·0	65 45	12·5	21·1	30·8	39·6	0 49·0	6 0 30·60	− 0·40	....	+ 9·88	− 6·32
	2002	η Geminorum	4·0	67 27	11·8	20·5	29·9	38·6	6 47·9	6 6 29·74	− 0·41	....	+ 9·88	− 6·24
	6281	δ Ursæ Minoris S. P.	....	3 21	12·0	36·0	54·0	16·5	20 36·0	6 15 54·90	− 1·47	....	+ 9·87	+ 18·20
	2163	γ Geminorum	....	73 29	23·6	32·0	40·9	49·5	29 58·2	6 29 40·84	− 0·43	....	+ 9·87	− 5·96
Dec. 24	1765	ι Orionis	....	91 17	52·5	0·6	8·8	17·0	29 25·6	5 29 8·00	− 0·53	+ 9·65	+ 9·57	− 5·35
	2163	γ Geminorum	....	73 29	24·0	32·4	41·2	49·9	29 58·9	6 29 41·28	− 0·45	+ 9·48	+ 9·56	− 5·97
	2410	δ Geminorum	....	67 46	31·9	40·6	49·9	58·6	12 7·9	7 11 49·78	− 0·43	+ 9·52	+ 9·56	− 6·13
	2485	α² Geminorum	....	57 49	25·1	34·9	44·9	54·6	26 4·5	7 25 44·80	− 0·39	+ 9·56	+ 9·55	− 0·55
	2522	α Canis Minoris	....	84 26	41·2	52·5	1·0	9·2	32 17·8	7 32 0·94	− 0·49	+ 9·61	+ 9·55	− 5·43
	2555	β Geminorum	....	61 39	30·3	39·8	49·2	58·5	37 8·1	7 36 49·18	− 0·40	+ 9·53	+ 9·54	− 6·26
Dec. 26	1420	α Tauri	....	73 45	40·1	48·9	57·9	6·1	28 15·0	4 27 57·60	− 0·47	+ 9·00	+ 8·99	− 5·83
	1459	....	6·5	34 38	19·8	34·2	49·0	3·6	37 18·5	4 36 40·02	− 0·27	....	+ 8·99	− 8·71
	1491	....	....	81 19	46·0	54·2	2·9	11·1	43 19·9	4 43 2·82	− 0·50	....	+ 8·98	− 5·58
	1501	....	6·0	34 23	58·0	12·4	27·6	42·0	45 57·0	4 45 27·40	− 0·28	....	+ 8·98	− 5·81
	1520	ι Aurigæ	....	57 2	39·1	48·8	59·0	8·8	48 18·9	4 47 58·92	− 0·40	+ 8·82	+ 8·97	− 6·69
	1681	β Tauri	....	61 30	13·7	22·8	32·4	41·5	17 51·1	5 17 32·30	− 0·42	+ 8·89	+ 8·96	− 6·53
	1703	....	7·0	73 40	52·2	0·5	9·6	18·1	20 27·0	5 20 9·18	− 0·47	....	+ 8·96	− 5·96
	1730	δ Orionis	....	90 23	37·8	46·0	54·4	2·6	25 11·1	5 24 54·38	− 0·55	+ 8·98	+ 8·96	− 5·39
	1766	....	5·0	80 47	59·9	8·3	16·9	25·1	29 33·8	5 29 16·80	− 0·50	....	+ 8·96	− 5·70
	1826	....	6·0	80 31	58·0	6·3	15·0	23·2	39 32·0	5 39 14·90	− 0·50	....	+ 8·96	− 5·72
	1893	....	6·0	80 31	33·3	41·8	50·1	58·7	49 7·3	5 48 50·30	− 0·50	....	+ 8·96	− 5·73
	1907	....	6·0	44 5	47·7	56·1	5·0	13·3	51 22·0	5 51 4·82	− 0·32	....	+ 8·96	− 5·86
	1932	....	7·5	51 25	46·0	56·6	7·4	17·9	55 28·8	5 55 7·34	− 0·37	....	+ 8·95	− 7·22
	6281	δ Ursæ Minoris S. P.	....	3 21	13·0	37·0	55·5	18·5	20 37·0	6 15 56·20	− 2·14	....	+ 8·95	+ 18·41
	2163	γ Geminorum	....	73 29	24·4	33·0	41·9	50·5	29 59·4	6 29 41·84	− 0·47	....	+ 8·95	− 6·01
	2184	....	7·0	73 29	4·4	13·0	21·9	30·4	33 39·2	6 33 21·78	− 0·47	....	+ 8·95	− 6·00
	2292	....	6·0	79 12	1·0	9·5	18·0	26·6	53 35·0	6 53 18·02	− 0·49	....	+ 8·95	− 5·76
	2306	....	5·5	78 52	39·7	18·0	56·8	5·0	56 13·6	6 55 56·62	− 0·49	....	+ 8·95	− 5·77
	2329	....	7·0	74 16	59·1	7·8	16·3	25·0	0 33·8	7 0 16·40	− 0·47	....	+ 8·95	− 5·93
	2363	....	....	65 4	40·7	49·7	59·0	8·0	6 17·4	7 5 58·96	− 0·43	....	+ 8·95	− 6·30
	2379	....	5·5	40 18	36·0	48·8	1·9	14·2	8 27·5	7 8 1·68	− 0·31	....	+ 8·95	− 8·06
	2410	δ Geminorum	....	67 46	32·2	41·1	50·2	59·0	12 8·3	7 11 50·16	− 0·44	+ 9·19	+ 8·95	− 6·17
	2463	....	6·0	62 12	44·5	53·9	3·4	12·7	20 22·1	7 20 3·32	− 0·41	....	+ 8·95	− 6·40
	2488	....	7·5	43 32	4·9	16·8	29·2	41·0	26 53·5	7 26 29·08	− 0·32	....	+ 8·94	− 7·62
	2522	α Canis Minoris	....	84 26	45·0	53·2	1·7	10·0	32 18·5	7 32 1·68	− 0·51	+ 8·93	+ 8·94	− 5·47
	2555	β Geminorum	....	61 39	31·0	40·1	50·0	59·2	37 8·9	7 36 49·84	− 0·41	+ 8·93	+ 8·94	− 6·31

(a) Double.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to	Wires. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1862.
				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
1862.														
Dec. 29	1376	ι Tauri	....	71 6	15·0	23·4	32·4	41·1	20 50·0	4 20 32·38	− 0·45	+ 7·66	+ 7·72	− 5·91
	1420	α Tauri	....	73 45	41·6	50·0	58·9	7·2	28 16·2	4 27 58·78	− 0·46	+ 7·81	+ 7·72	− 5·83
	1434	....	5·0	77 45	8·1	16·6	25·3	33·8	30 42·2	4 30 25·20	− 0·47	....	+ 7·72	− 5·68
	1463	....	6·5	66 37	3·7	12·2	21·3	30·9	37 40·0	4 37 21·71	− 0·43	....	+ 7·72	− 6·15
	1491	....	5·0	81 19	47·1	55·4	4·0	12·3	43 21·0	4 43 3·96	− 0·50	....	+ 7·71	− 5·53
	1501	....	7·0	34 23	59·2	13·9	29·0	43·3	45 58·4	4 45 28·70	− 0·26	....	+ 7·71	− 8·81
	1520	ι Aurigæ	....	57 2	40·2	50·0	0·2	10·0	48 20·0	4 48 0·08	− 0·38	+ 7·65	+ 7·71	− 6·69
	1893	....	7·0	80 31	35·0	43·2	52·0	0·1	49 8·8	5 48 51·82	− 0·49	....	+ 7·70	− 5·76
	1907	....	6·0	44 5	49·0	57·3	6·1	14·4	51 23·1	5 51 5·98	− 0·31	....	+ 7·70	− 5·88
	1932	....	7·5	51 25	47·4	58·0	8·9	19·3	55 30·0	5 55 8·72	− 0·36	....	+ 7·69	− 7·25
	2022	....	6·0	80 0	12·0	20·2	28·9	37·0	9 45·5	6 9 28·72	− 0·48	....	+ 7·69	− 5·79
Dec. 30	1166	η Tauri	....	66 17	58·1	7·0	16·1	25·0	39 34·4	3 39 16·12	− 0·41	+ 7·35	+ 7·34	− 5·87
	1318	....	....	33 49	10·9	25·6	40·5	55·2	11 10·4	4 10 40·52	− 0·24	....	+ 7·34	− 8·58
	1347	....	....	65 51	51·2	0·4	9·5	18·5	15 27·8	4 15 9·48	− 0·41	....	+ 7·34	− 6·08
	1376	ι Tauri	....	71 6	15·0	23·9	32·9	41·4	20 50·2	4 20 32·68	− 0·44	+ 7·34	+ 7·34	− 5·90
	1420	α Tauri	....	73 45	41·9	50·6	59·2	7·9	28 16·6	4 27 59·24	− 0·45	+ 7·33	+ 7·34	− 5·82
	1434	....	5·0	77 45	6·6	17·0	25·7	34·0	30 42·8	4 30 25·62	− 0·47	....	+ 7·34	− 5·68
	1459	....	....	34 38	21·1	35·8	50·6	5·0	37 19·9	4 36 50·52	− 0·24	....	+ 7·34	− 8·70
	1626	....	7·0	49 41	41·0	51·9	3·0	13·7	9 24·6	5 9 2·64	− 0·34	....	+ 7·34	− 7·29
	1656	....	6·0	81 42	54·9	3·0	11·8	20·0	14 28·8	5 14 11·70	− 0·49	....	+ 7·34	− 5·66
	1681	β Tauri	....	61 30	15·0	24·3	34·0	43·2	17 52·9	5 17 33·68	− 0·40	+ 7·31	+ 7·34	− 6·55
	1696	....	....	87 11	0·0	8·2	16·7	25·0	19 33·4	5 19 16·66	− 0·52	....	+ 7·34	− 5·49
	1932	....	6·5	51 25	47·8	58·1	9·0	19·6	55 30·3	5 55 8·96	− 0·35	....	+ 7·54	− 7·26
	1962	....	8·0	65 45	14·9	24·0	33·3	42·2	0 51·5	6 0 33·18	− 0·41	....	+ 7·34	− 6·39
	2002	ε Geminorum	....	67 27	14·1	23·0	32·2	41·1	6 50·4	6 6 32·16	− 0·43	....	+ 7·34	− 6·31
	2022	....	5·5	80 0	12·1	20·3	29·1	37·4	9 46·1	6 9 29·00	− 0·48	....	+ 7·34	− 5·80
	6281	δ Ursæ Minoris S. P.	....	3 24	15·0	38·5	57·5	20·0	20 38·5	6 15 5[illegible]·90	− 2·44	....	+ 7·34	+ 48·59
	2163	γ Geminorum	....	73 29	26·0	34·6	43·6	52·0	30 1·0	6 29 43·44	− 0·45	....	+ 7·34	− 6·05
	2238	....	6·0	66 15	18·5	27·5	36·9	45·5	43 55·0	6 43 36·68	− 0·41	....	+ 7·34	− 6·35
	2292	....	6·0	79 12	2·7	11·0	19·8	28·0	53 36·8	6 53 19·66	− 0·48	....	+ 7·34	− 5·82
	2306	....	5·0	78 52	41·2	49·6	58·1	6·7	56 15·1	6 55 58·11	− 0·48	....	+ 7·34	− 5·82
	2329	....	7·0	71 16	1·0	9·4	18·0	26·8	0 35·5	7 0 18·14	− 0·45	....	+ 7·34	− 5·99
	2363	....	7·0	65 4	42·3	51·5	0·8	9·9	6 19·0	7 6 0·70	− 0·41	....	+ 7·34	− 6·37
	2379	....	5·5	40 18	37·9	50·6	3·6	16·0	8 29·3	7 8 3·48	− 0·28	....	+ 7·34	− 8·15
	2410	δ Geminorum	....	67 46	34·0	43·0	52·0	0·9	12 10·0	7 11 51·98	− 0·43	+ 7·42	+ 7·34	− 6·21
	2555	β Geminorum	....	61 39	32·7	42·0	51·6	0·9	37 10·4	7 36 51·52	− 0·39	+ 7·30	+ 7·34	− 6·55

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ROYAL OBSERVATORY, EDINBURGH.

Individual Observations of Mean Right Ascensions of the Stars observed at the Royal Observatory, Edinburgh, in the Year 1862, reduced to January 1, 1862.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
B.A.C. 4, α Andromedæ.				
			° '	h. m. s.
Jan. 23	0·06	(1·0)	61 40	0 1 15·59
28	0·07			15·60
Sept. 25	0·73			15·65
Oct. 6	0·76			15·54
8	0·77			15·59
18	0·79			15·64
23	0·81			15·64
26	0·82			15·59
B.A.C. 16.				
Oct 7	0·76	7·0	31 6	0 3 21·22
8	0·77	7·0		21·11
B.A.C. 26, γ Pegasi.				
Jan. 23	0·06	(2·0)	75 35	0 6 7·96
28	0·07			7·96
Sept. 25	0·73			7·99
Oct. 7	0·76			7·94
8	0·77			7·96
18	0·79			7·88
23	0·81			7·93
26	0·82			7·88
B.A.C. 28.				
Oct. 6	0·76	6·0	49 44	0 6 21·41
B.A.C. 42.				
Oct. 6	0·76		86 31	0 8 52·38
7	0·76	8·0		52·24
B.A.C. 48.				
Oct. 8	0·77	8·0	76 51	0 9 38·77
B.A.C. 57.				
			° '	h. m. s.
Oct. 6	0·76	6·5	89 5	0 10 42·45
7	0·76	8·0		42·39
B.A.C. 68.				
Oct. 6	0·76	6·5	22 56	0 14 4·34
7	0·76	7·0		4·44
8	0·77	7·0		4·36
B.A.C. 83.				
Oct. 6	0·76	6·0	37 43	0 17 39·65
7	0·76	7·0		39·71
8	0·77	6·5		39·59
B.A.C. 98.				
Oct. 7	0·76	7·0	74 44	0 20 20·80
8	0·77	7·0		20·95
B.A.C. 112, 12 Ceti.				
Oct. 6	0·76	(6·0)	94 43	0 22 59·76
7	0·76			59·76
8	0·77			59·82
9	0·77			59·74
B.A.C. 133.				
Oct. 6	0·76	8·5	70 20	0 26 26·72
7	0·76	9·0		26·77
B.A.C. 149.				
Oct. 6	0·76	7·0	77 33	0 28 46·13
7	0·76	7·0		46·13
8	0·77			46·15
B.A.C. 164, ε Andromedæ.				
			° '	h. m. s.
Oct. 6	0·76	5·0	61 26	0 31 16·19
7	0·76			16·13
8	0·77	4·0		16·12
B.A.C. 177.				
Oct. 6	0·76	(7·0)	81 23	0 34 4·23
7	0·76			4·25
B.A.C. 182.				
Oct. 8	0·77	7·0	32 0	0 34 36·40
B.A.C. 218, η Cassiopeæ.				
Oct. 8	0·77	3·0	32 55	0 40 46·60
B.A.C. 259, μ Andromedæ.				
Oct. 8	0·77	3·0	52 15	0 49 6·26
B.A.C. 288, ε Piscium.				
Oct. 8	0·77	(4·0)	82 52	0 55 46·98
9	0·77			46·99
29	0·82			47·03
B.A.C. 334, β Andromedæ.				
Oct. 8	0·77	2·0	55 6	1 2 0·86
29	0·82			0·84
B.A.C. 420, θ Ceti.				
Oct. 6	0·76	(3·0)	98 54	1 17 7·47
7	0·76			7·49

B.A.C. 420, θ¹ Ceti.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Oct. 8	0·77	(3·0)	° ' 98 54	h. m. s. 1 17 7·61
9	0·77			7·50
20	0·80			7·48
26	0·82			7·60
29	0·82			7·39

B.A.C. 453, κ Piscium.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Oct. 7	0·76	(4·0)	75 22	1 24 6·21
8	0·77			6·16
9	0·77			6·21
20	0·80			6·17
Nov. 11	0·86			6·19
15	0·87			6·12

B.A.C. 455.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Oct. 29	0·82	7·0	73 45	1 24 37·18

B.A.C. 472.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Oct. 29	0·82	8·0	89 45	1 27 42·07
Nov. 11	0·86			42·06

B.A.C. 514.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Oct. 29	0·82	7·0	60 38	1 33 51·76
Nov. 11	0·86			51·81

B.A.C. 518, ν Piscium.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Oct. 20	0·80	(5·0)	85 13	1 34 15·12
28	0·82			15·10
Nov. 4	0·84			15·13
5	0·84			15·18
15	0·87			15·10

B.A.C. 538.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Oct. 29	0·82	6·0	73 16	1 39 6·24
Nov. 4	0·84	7·0		6·25
11	0·86			6·20

B.A.C. 547.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Oct. 29	0·82	(6·0)	42 47	1 40 42·56
Nov. 4	0·84			42·74

B.A.C. 562.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Oct. 29	0·82	7·0	° ' 39 12	h. m. s. 1 44 2·49
Nov. 4	0·84	6·0		2·57
11	0·86			2·53

B.A.C. 577, δ Arietis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Oct. 20	0·80	(3·0)	69 52	1 47 1·32
29	0·82			1·29
Nov. 4	0·84			1·31
5	0·84			1·35
11	0·86			1·31
15	0·87			1·36

B.A.C. 588.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Nov. 4	0·84	5·5	26 3	1 49 29·87

B.A.C. 620.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Oct. 29	0·82	7·0	25 34	1 54 20·27
Nov. 4	0·84	7·0		20·09
11	0·86			20·11

B.A.C. 648, α Arietis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Mar. 3	0·17	(2·0)	67 11	1 59 24·04
Oct. 20	0·80			23·97
28	0·82			24·17
29	0·82			23·99
Nov. 4	0·84			24·01
5	0·84			23·88
11	0·86			24·01
15	0·87			24·01
18	0·88			23·99

B.A.C. 694.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Nov. 4	0·84	8·0	26 13	2 8 11·01

B.A.C. 704, 67 Ceti.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Oct. 28	0·82	(6·0)	97 4	2 10 6·01
29	0·82			6·13
Nov. 4	0·84			6·15
6	0·85			6·18
15	0·87			6·08
17	0·88			6·03

B.A.C. 718.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Nov. 6	0·85	7·0	° ' 33 23	h. m. s. 2 12 12·06

B.A.C. 738.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Nov. 4	0·84	7·0	80 21	2 16 47·40
6	0·85	7·5		47·37
11	0·86	7·5		47·30

B.A.C. 760, ξ² Ceti.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Oct. 28	0·82	(4·0)	82 10	2 20 49·33
29	0·82			49·41
Nov. 4	0·84			49·45
6	0·85			49·47
11	0·86			49·34
15	0·87			49·50

B.A.C. 764.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Nov. 6	0·85	7·0	81 3	2 22 13·53
11	0·86	7·0		13·34

B.A.C. 776.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Nov. 4	0·84	5·5	88 21	2 24 21·97
6	0·85	6·0		21·96
11	0·86			21·98

B.A.C. 793.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Nov. 4	0·84	6·0	83 47	2 28 31·01
6	0·85	7·0		31·11
11	0·86	7·0		31·10

B.A.C. 837, γ Ceti.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Nov. 5	0·84	(3·0)	87 21	2 36 9·13
6	0·85			9·14
17	0·88			9·13
18	0·88			9·22

B.A.C. 881, ε Arietis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Nov. 6	0·85	6·0	75 29	2 43 52·63
11	0·86	6·0		52·66

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
			° ′	h. m. s.
B.A.C. 891.				
Nov. 6	0·85	(8·0)	84 6	2 45 21·92
B.A.C. 920.				
Nov. 11	0·86	7·0	68 56	2 50 58·90
B.A.C. 949, α Ceti.				
Nov. 4	0·84	(2·5)	86 27	2 55 4·07
5	0·84			4·05
6	0·85			3·96
11	0·86			4·06
12	0·86			4·03
14	0·87			4·03
17	0·88			4·10
18	0·88			4·09
Dec. 6	0·93			4·03
B.A.C. 962, ι Persei.				
Nov. 4	0·84	4·0	40 55	2 59 7·57
6	0·85			7·62
11	0·86			7·74
B.A.C. 980.				
Nov. 4	0·84	6·5	63 38	3 2 15·79
6	0·85	6·0		15·86
11	0·86	7·0		15·76
B.A.C. 986, δ Arietis.				
Nov. 12	0·86	(4·0)	70 48	3 3 44·54
14	0·87			44·56
18	0·88			14·55
Dec. 6	0·93			44·63
B.A.C. 1055.				
Nov. 4	0·84	8·0	66 27	3 16 33·83
6	0·85	7·5		33·67
11	0·86	8·0		33·59
B.A.C. 1087, f Tauri.				
Nov. 4	0·84	5·0	77 32	3 23 15·40
6	0·85	4·5		15·51
11	0·86	4·0		15·45
B.A.C. 1101.				
Nov. 4	0·84	7·5	58 47	3 27 3·23
11	0·86	6·0		3·24
B.A.C. 1126. 11 Tauri.				
Nov. 4	0·84	7·0	65 7	3 32 32·09
6	0·85	7·0		32·17
11	0·86	6·0		32·05
B.A.C. 1166, η Tauri.				
Nov. 4	0·84	(3·0)	66 19	3 39 17·25
5	0·84			17·19
6	0·85			17·18
12	0·86			17·24
14	0·87			17·19
17	0·88			17·25
18	0·88			17·20
Dec. 6	0·93			17·21
30	0·99			17·18
B.A.C. 1282.				
Nov. 4	0·84	7·0	41 16	4 3 29·84
6	0·85	7·0		29·75
11	0·86	7·0		29·91
B.A.C. 1309, e³ Eridani.				
Nov. 6	0·85		97 52	4 8 55·20
11	0·86	4·0		55·17
B.A.C. 1316.				
Nov. 4	0·84	(6·0)	33 50	4 10 38·91
Dec. 30	0·99			39·04
B.A.C. 1328, γ Tauri.				
Nov. 6	0·85		74 43	4 11 56·56
11	0·86	3·0		56·66
B.A.C. 1347.				
Nov. 4	0·84	7·5	65 55	4 15 10·26
6	0·85	9·0		10·31
11	0·86			10·24
Dec. 30	0·99			10·33
B.A.C. 1361.				
Nov. 6	0·85	7·0	71 17	4 16 54·85
11	0·86	6·0		54·81
B.A.C. 1376, ε Tauri.				
Nov. 4	0·84	(4·0)	71 8	4 20 33·63
6	0·85			33·71
11	0·86			33·76
12	0·86			33·75
14	0·87			33·67
17	0·88			33·74
Dec. 6	0·93			33·77
11	0·94			33·70
20	0·97			33·79
29	0·99			33·74
30	0·99			33·68
B.A.C. 1420, α Tauri.				
April 1	0·25	(1·0)	73 46	4 28 0·28
Nov. 4	0·84			0·26
5	0·84			0·34
6	0·85			0·27
11	0·86			0·32
12	0·86			0·25
14	0·87			0·34
17	0·88			0·26
Dec. 4	0·92			0·30
6	0·93			0·20
11	0·94			0·24
26	0·98			0·29
29	0·99			0·21
30	0·99			0·31
B.A.C. 1434.				
Dec. 11	0·94	5·0	77 46	4 30 26·62
29	0·99	5·0		26·77
30	0·99			26·81
B.A.C. 1459.				
Nov. 11	0·86	6·5	34 39	4 36 48·99
Dec. 11	0·94			48·97
26	0·98			49·03
30	0·99			48·92

B.A.C. 1463.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
			° ′	h. m. s.
Dec. 17	0·96	7·0	66 38	4 37 22·63
29	0·99			22·58

B.A.C. 1491.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Nov. 11	0·86	5·0	81 20	4 43 5·54
Dec. 11	0·94			5·59
17	0·96			5·58
26	0·98			5·72
29	0·99			5·58

B.A.C. 1501.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Nov. 11	0·86	6·5	34 24	4 45 27·37
Dec. 11	0·94			27·34
17	0·96			27·36
26	0·98			27·29
29	0·99			27·40

B.A.C. 1520, ι Aurigæ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Nov. 11	0·86	(3·0)	57 3	4 48 0·63
Dec. 4	0·92			0·64
5	0·92			0·67
11	0·94			0·71
17	0·96			0·62
20	0·97			0·69
26	0·98			0·80
29	0·99			0·72

B.A.C. 1623, β Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 5	0·01	(1·0)	98 22	5 7 54·37
Dec. 10	0·94			54·38
19	0·96			54·43

B.A.C. 1626.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Dec. 17	0·96	7·5	49 41	5 9 2·64
23	0·97	6·5		2·64
30	0·99			2·55

B.A.C. 1656.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Dec. 17	0·96	7·0	81 42	5 14 12·86
23	0·97	6·0		12·94
30	0·99			12·89

B.A.C. 1681, β Tauri.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
			° ′	h. m. s.
Jan. 3	0·01	(2·0)	61 30	5 17 34·21
5	0·01			34·15
6	0·01			34·20
April 30	0·33			34·33
Dec. 4	0·92			34·27
5	0·92			34·23
17	0·96			34·20
19	0·96			34·21
20	0·97			34·17
22	0·97			34·25
23	0·97			34·27
26	0·98			34·31
30	0·99			34·27

B.A.C. 1696.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Dec. 23	0·97	(7·5)	67 11	5 19 17·92
30	0·99			17·99

B.A.C. 1703.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 6	0·01	7·0	73 41	5 20 12·03
Dec. 17	0·96			12·01
26	0·98			12·01

B.A.C. 1730, δ Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 3	0·01	(2·0)	90 24	5 24 57·51
5	0·01			57·44
6	0·01			57·48
Dec. 5	0·92			57·40
10	0·94			57·41
17	0·96			57·46
19	0·96			57·47
20	0·97			57·34
22	0·97			57·42
23	0·97			57·34
26	0·98			57·41

B.A.C. 1765, ι Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 5	0·01	(2·0)	91 16	5 29 12·76
6	0·01			12·70
Dec. 5	0·92			12·63
11	0·94			12·70
17	0·96			12·69

B.A.C. 1765, ι Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
			° ′	h. m. s.
Dec. 19	0·96	(2·0)	91 18	5 29 12·69
20	0·97			12·61
22	0·97			12·62
24	0·98			12·59

B.A.C. 1766.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 3	0·01	4·5	80 47	5 29 19·59
Dec. 23	0·97	4·0		19·56
26	0·98	5·0		19·56

B.A.C. 1826.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Dec. 22	0·97	6·0	80 32	5 39 17·72
23	0·97	7·0		17·65
26	0·98	6·0		17·64

B.A.C. 1883, α Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 6	0·01	(1·0)	82 37	5 47 42·04
9	0·02			42·06
April 28	0·32			42·16
Dec. 4	0·92			42·06
5	0·92			42·06
11	0·94			42·02
19	0·96			42·02
22	0·97			42·15
23	0·97			42·13

B.A.C. 1893.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 3	0·01	7·0	60 31	5 48 53·11
Dec. 26	0·98	6·0		53·03
29	0·99	7·0		53·27

B.A.C. 1907.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Dec. 23	0·97	6·0	77 13	5 51 7·52
26	0·98	6·0		7·60
29	0·99	6·0		7·49

B.A.C. 1930.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 3	0·01	8·0	72 20	5 54 54·18
Dec. 23	0·97	7·0		54·13

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Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
B.A.C. 1932				
Dec. 26	0·98	7·5	51° 25′	5h 55m 8s·70
29	0·99	7·5		8·80
30	0·99	6·5		8·69
B.A.C. 1958, ν Orionis.				
Dec. 5	0·92	(5·0)	75 13	5 59 41·48
10	0·94			41·55
19	0·96			41·70
B.A.C. 1962.				
Jan. 3	0·01	8·0	65 45	6 0 33·83
Dec. 23	0·97			33·76
30	0·99	8·0		33·72
B.A.C. 2002, η Geminorum.				
Dec. 23	0·97	4·0	67 27	6 6 32·97
30	0·99			32·76
B.A.C. 2022.				
Dec. 29	0·99	6·0	80 0	6 9 30·14
30	0·99	5·5		30·06
B.A.C. 2047, μ Geminorum.				
Jan. 8	0·02	(3·0)	67 25	6 14 36·68
18	0·05			36·77
B.A.C. 2046.				
Jan. 3	0·01	6·0	33 39	6 14 46·62
B.A.C. 2083.				
Jan. 3	0·01	6·0	16 12	6 20 28·28
B.A.C. 2163, γ Geminorum.				
Jan. 3	0·01	(2·0)	73 29	6 29 44·38
8	0·02			44·34
9	0·02			44·37
18	0·05			44·30
29	0·08			44·29

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
B.A.C. 2163, γ Geminorum				
Dec. 4	0·92	(2·0)	73° 29′	6h 29m 44s·47
5	0·92			44·46
10	0·94			44·39
11	0·94			44·36
19	0·96			44·34
22	0·97			44·34
23	0·97			44·32
24	0·98			44·42
26	0·98			44·31
30	0·99			44·28
B.A.C. 2184.				
Jan. 3	0·01	7·0	73 28	6 33 24·31
8	0·02			24·19
9	0·02			24·30
Dec. 26	0·98	7·0		24·26
B.A.C. 2238				
Jan. 3	0·01	7·0	66 14	6 43 37·38
Dec. 22	0·97	6·0		37·27
30	0·99	6·0		37·26
B.A.C. 2292.				
Dec. 26	0·98	6·0	79 11	6 53 20·72
30	0·99	6·0		20·70
B.A.C. 2306.				
Dec. 26	0·88	5·5	78 51	6 55 59·31
30	0·99	5·0		59·18
B.A.C. 2329.				
Dec. 26	0·98	7·0	74 15	7 0 18·95
30	0·99	7·0		19·04
B.A.C. 2363				
Dec. 22	0·97	7·0	65 3	7 6 1·19
26	0·98			1·18
30	0·99	7·0		1·26
B.A.C. 2379.				
Dec. 26	0·98	5·5	40 17	7 8 2·26
30	0·99	5·5		2·39

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
B.A.C. 2410, δ Geminorum.				
Jan. 2	0·00	(3·0)	67° 46′	7h 11m 52s·82
8	0·02			52·66
9	0·02			52·70
24	0·06			52·70
25	0·07			52·74
29	0·08			52·66
Feb. 9	0·11			52·77
Dec. 22	0·97			52·77
24	0·98			52·78
26	0·98			52·50
30	0·99			52·65
B.A.C. 2462, β Canis Minoris.				
Jan. 3	0·01	4·0	81 26	7 19 39·96
8	0·02	4·0		39·84
9	0·02	4·0		39·83
B.A.C. 2463.				
Jan. 24	0·06	7·0	62 10	7 20 5·43
Dec. 22	0·97	7·0		5·52
26	0·98	6·0		5·46
B.A.C. 2485, α² Geminorum.				
Jan. 3	0·01	(2·0)	57 49	7 25 47·43
8	0·02			47·44
18	0·05			47·41
25	0·06			47·48
28	0·07			47·37
29	0·08			47·40
Feb. 9	0·11			47·39
Dec. 24	0·98			47·41
B.A.C. 2488.				
Jan. 9	0·02	6·0	43 31	7 26 30·10
24	0·06	7·0		30·02
Dec. 22	0·97	7·0		30·12
26	0·98	7·5		30·08
B.A.C. 2522, α Canis Minoris.				
Jan. 2	0·00	(1·0)	84 26	7 32 4·63
3	0·01			4·66
8	0·02			4·56
9	0·02			4·61
24	0·06			4·55

B.A.C. 2522, α Canis Minoris.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
			° ′	h m s
Jan. 25	0·06	(1·0)	84 26	7 32 4·54
28	0·07			4·64
29	0·08			4·55
Feb. 11	0·11			4·65
Dec. 22	0·97			4·61
24	0·98			4·57
26	0·98			4·64

B.A.C. 2555, β Geminorum.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 2	0·00	(1·0)	61 39	7 36 51·94
3	0·01			52·08
8	0·02			52·14
9	0·02			52·12
18	0·95			52·03
24	0·06			52·11
25	0·07			52·07
28	0·07			51·98
29	0·08			52·00
Feb. 9	0·11			52·04
11	0·11			52·05
Dec. 22	0·97			52·07
24	0·98			52·06
26	0·98			52·06
30	0·99			52·09

B.A.C. 2586.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 2	0·00	7·0	61 27	7 41 23·81
3	0·01	7·0		23·92
8	0·02	7·0		23·95

B.A.C. 2672, 6 Cancri.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 2	0·00	(5·5)	61 49	7 55 2·27
3	0·01			2·34
8	0·02			2·27
24	0·06			2·37
25	0·07			2·27
28	0·07			2·32
Feb. 9	0·11			2·27
11	0·11			2·23

B.A.C. 2683.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 3	0·01	7·0	70 46	7 56 46·59
8	0·02	7·0		46·64

B.A.C. 2688.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
			° ′	h m s
Jan. 2	0·00	(7·0)	62 4	7 57 9·40

B.A.C. 2737.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 2	0·00	7·0	74 58	8 3 13·55
3	0·01	7·0		13·71
8	0·02	6·0		13·62

B.A.C. 2748.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 3	0·01	7·0	75 35	8 4 38·85
8	0·02	7·0		38·77
24	0·06	7·0		38·80

B.A.C. 2761.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 2	0·00	7·0	76 32	8 6 40·58
3	0·01	7·0		40·64
8	0·02	7·0		40·60
24	0·06	7·5		40·59

B.A.C. 2778, β Cancri.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 2	0·00		80 23	8 9 1·66
3	0·01	4·5		1·78
8	0·02	4·0		1·78
24	0·06	4·0		1·71

B.A.C. 2862, η Cancri.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 2	0·00	(6·0)	69 6	8 24 43·38

B.A.C. 2867.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 3	0·01	7·0	79 28	8 25 9·09
8	0·02	7·0		9·16

B.A.C. 2882.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 3	0·01	6·0	29 35	8 27 54·59
8	0·02	5·5		54·50
24	0·06	7·0		54·55

B.A.C. 2937, γ Cancri.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 3	0·01	6·5	68 2	8 35 17·89
8	0·02	6·0		17·72
24	0·06	5·0		17·78

B.A.C. 2971, ι Hydræ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
			° ′	h m s
Jan. 3	0·01	(4·0)	83 5	8 39 27·86
8	0·02			27·93
24	0·06			27·85
28	0·07			28·00
Feb. 11	0·11			27·95
Mar. 9	0·18			27·89

B.A.C. 2988.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 8	0·02		34 32	8 42 46·19
24	0·06	8·0		46·26

B.A.C. 3013.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 24	0·06	7·0	84 9	8 45 6·77

B.A.C. 3055, α Cancri.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 24	0·06	5·0	77 36	8 50 56·24

B.A.C. 3083.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 24	0·06	7·5	38 27	8 55 35·11

B.A.C. 3103.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 24	0·06	7·5	72 20	8 58 31·23

B.A.C. 3133.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 24	0·06	7·0	85 34	9 5 0·16

B.A.C. 3157.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 24	0·06	7·0	29 38	9 9 53·96

B.A.C. 3171, 83 Cancri.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 28	0·07	(6·0)	71 43	9 11 16·47
Mar. 3	0·17			16·49
9	0·18			16·46

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B.A.C. 3223, α Hydræ.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. ° ′	Mean Right Ascension, January 1, 1862. h. m. s.
Jan. 23	0·06	(2·0)	98 4	9 20 48·28
Feb. 11	0·11			48·32
18	0·13			48·23
Mar. 3	0·17			48·30
9	0·18			48·26
10	0·19			48·32

B.A.C. 3312, ο Leonis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Mar. 3	0·17	(4·0)	79 29	9 33 46·84

B.A.C. 3331, ε Leonis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 23	0·06	(3·0)	65 36	9 38 0·99
24	0·06			0·80
Feb. 6	0·10			0·74
11	0·11			0·81
18	0·13			0·81
Mar. 3	0·17			0·75
9	0·18			0·80
10	0·19			0·71
11	0·19			0·85
April 28	0·32			0·81

B.A.C. 3371, μ Leonis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Mar. 3	0·17	3·0	63 20	9 44 54·45
11	0·19			54·67

B.A.C. 3375.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Feb. 11	0·11	6·0	54 22	9 45 22·86
Mar. 4	0·17	6·5		22·74

B.A.C. 3380.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Mar. 11	0·19	(6·0)	83 23	9 46 28·00

B.A.C. 3415, π Leonis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 23	0·06	(4·5)	81 18	9 52 55·08
Feb. 6	0·10			55·12
18	0·13			55·18
Mar. 4	0·17			55·07
20	0·21			55·09

B.A.C. 3418.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. ° ′	Mean Right Ascension, January 1, 1862. h. m. s.
Mar. 3	0·17	8·0	80 23	9 53 41·94

B.A.C. 3420.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Feb. 11	0·11	7·0	57 48	9 54 3·42

B.A.C. 3431.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Feb. 11	0·11	7·0	56 53	9 56 13·07
Mar. 20	0·21	7·5		13·03

B.A.C. 3459, α Leonis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Jan. 23	0·06	(1·0)	77 22	10 1 1·06
Feb. 6	0·10			1·19
11	0·11			1·16
18	0·13			1·18
20	0·14			1·13
Mar. 3	0·17			1·20
4	0·17			1·13
10	0·19			1·21
11	0·19			1·13
20	0·21			1·18

B.A.C. 3484.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Feb. 11	0·11	7·5	57 53	10 6 14·40
20	0·14			14·40
Mar. 4	0·17			14·43
11	0·19			14·42

B.A.C. 3523, γ^1 Leonis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Feb. 6	0·10	(2·0)	69 28	10 12 21·59
20	0·14			21·52
Mar. 3	0·17			21·57
11	0·19			21·60

B.A.C. 3528.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Feb. 11	0·11	5·0	6 45	10 13 54·40

B.A.C. 3529.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Mar. 4	0·17	7·0	82 52	10 13 18·90

B.A.C. 3592.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. ° ′	Mean Right Ascension, January 1, 1862. h. m. s.
Feb. 11	0·11	7·0	87 48	10 22 37·19
Mar. 4	0·17	8·0		37·15
10	0·19			37·17

B.A.C. 3609, ρ Leonis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Feb. 6	0·10	(4·0)	79 59	10 25 32·62
11	0·11			32·54
20	0·14			32·62
Mar. 4	0·17			32·54
10	0·19			32·51
11	0·19			32·56

B.A.C. 3662.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Feb. 11	0·11	7·0	78 32	10 34 24·78
20	0·14	7·5		24·71

B.A.C. 3708, *l* Leonis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Feb. 11	0·11	(6·0)	78 44	10 42 0·10
20	0·14			0·08
Mar. 4	0·17			0·13
April 6	0·26			0·09

B.A.C. 3726.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Feb. 11	0·11	6·0	88 14	10 45 8·31
20	0·14	7·0		8·25
Mar. 4	0·17	6·0		8·20

B.A.C. 3768.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Feb. 20	0·14		85 38	10 53 25·98
Mar. 4	0·17	5·0		26·01

B.A.C. 3780.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
Feb. 20	0·14	7·5	81 40	10 56 30·77
Mar. 4	0·17	7·0		30·70

B.A.C. 3788, χ Leonis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
April 6	0·26	(5·0)	81 55	10 57 53·74
12	0·28			53·77

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
B.A.C. 3821.				
Feb. 20	0·14	5·0	° ′ 20 58	h m s 11 3 19·69
B.A.C. 3834, δ Leonis.				
Mar. 11	0·19	(2·5)	68 43	11 6 45·68
April 6	0·26			45·90
12	0·28			45·95
B.A.C. 3836.				
Feb. 20	0·14	6·0	87 0	11 6 47·94
B.A.C. 3869.				
Feb. 20	0·14	6·0	71 48	11 15 15·51
B.A.C. 3900, τ Leonis.				
Feb. 20	0·14	4·0	86 23	11 20 50·28
B.A.C. 3946, υ Leonis.				
Feb. 20	0·14	(4·5)	90 4	11 29 52·98
Mar. 3	0·17			52·97
April 6	0·26			52·98
11	0·27			53·11
B.A.C. 3995, β Leonis.				
Feb. 20	0·14	(2·5)	74 39	11 42 1·12
Mar. 10	0·19			1·17
20	0·21			1·12
April 6	0·26			1·16
11	0·27			1·04
12	0·28			1·10
19	0·30			1·10
B.A.C. 4052, π Virginis.				
April 11	0·27	5·0	82 37	11 53 47·95
B.A.C. 4145, η Virginis.				
Mar. 4	0·17	(3·5)	89 54	12 12 50·78
April 11	0·27			50·80
16	0·29			50·75
17	0·29			50·76
19	0·30			50·78
22	0·30			50·81

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
B.A.C. 4199.				
April 16	0·29	7·0	° ′ 63 19	h m s 12 20 44·12
B.A.C. 4205.				
April 16	0·29	6·5	63 0	12 21 44·44
B.A.C. 4231.				
April 16	0·29	8·0	64 47	12 26 39·66
B.A.C. 4340, δ Virginis.				
April 16	0·29	4·0	85 51	12 48 39·15
B.A.C. 4364.				
April 16	0·29	7·0	67 59	12 54 49·85
B.A.C. 4421, β Comæ.				
April 16	0·29	4·0	61 25	13 5 25·75
B.A.C. 4503.				
April 16	0·29	7·0	85 25	13 22 14·70
B.A.C. 4526.				
April 16	0·29	6·0	64 55	13 26 15·91
30	0·33			15·92
B.A.C. 4532, ζ Virginis.				
April 12	0·28	(4·0)	89 53	13 27 39·77
16	0·29			39·65
17	0·29			39·73
19	0·30			39·81
30	0·33			39·66
B.A.C. 4552.				
April 30	0·33	(5·0)	53 0	13 31 19·70
B.A.C. 4575.				
April 30	0·33	(6·0)	66 36	13 37 12·61

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
B.A.C. 4648, η Bootis.				
April 1	0·25	(3·0)	° ′ 70 55	h m s 13 48 6·89
4	0·25			6·92
11	0·27			6·79
16	0·29			6·86
17	0·29			6·87
22	0·30			6·91
29	0·32			6·77
30	0·33			6·78
May 2	0·33			6·87
B.A.C. 4672, τ Virginis.				
April 1	0·25	(4·5)	87 47	13 54 37·51
4	0·25			37·51
17	0·29			37·56
30	0·33			37·57
May 2	0·33			37·55
B.A.C. 4678.				
May 2	0·33	7·0	57 40	13 56 25·96
B.A.C. 4716, κ Virginis.				
May 2	0·33	6·0	99 38	14 5 32·30
B.A.C. 4723.				
May 2	0·33	7·0	60 15	14 7 46·38
B.A.C. 4729, α Bootis.				
April 1	0·25	(1·0)	70 6	14 9 22·07
4	0·25			22·03
17	0·29			22·10
22	0·30			22·05
29	0·32			22·10
May 2	0·33			21·92
Sept. 17	0·71			22·01
B.A.C. 4756.				
May 2	0·33	7·0	37 20	14 13 41·11
B.A.C. 4797.				
May 2	0·33	6·5	53 11	14 22 33·57

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
B.A.C. 4808, ζ Bootis.				
April 4	0·25	(4·0)	59 1	14 25 52·86
22	0·30			52·92
29	0·32			53·02
30	0·33			52·95
May 2	0·33			52·89
13	0·36			52·80
B.A.C. 4876, ε Bootis.				
April 4	0·25	(3·0)	62 21	14 38 57·69
22	0·30			57·66
28	0·32			57·53
29	0·32			57·62
30	0·33			57·59
May 2	0·33			57·57
20	0·38			57·69
June 26	0·48			57·70
B.A.C. 4942.				
May 2	0·33	7·0	49 48	14 51 8·54
B.A.C. 4969, ψ Bootis.				
April 16	0·29	(5·0)	62 31	14 58 32·03
28	0·32			32·00
May 13	0·36			32·00
June 3	0·42			32·14
B.A.C. 4992.				
May 2	0·33	6·0	34 55	15 2 20·44
June 3	0·42			20·48
B.A.C. 5000.				
April 16	0·29	6·0	56 24	15 5 3·51
28	0·32	6·5		3·48
B.A.C. 5001.				
May 2	0·33	7·0	60 15	15 5 5·79
June 3	0·42	7·0		5·73
B.A.C. 5034, β Libræ.				
April 16	0·29	(2·5)	98 52	15 9 35·03
28	0·32			35·03
May 2	0·33	(2·5)	98 52	15 9 35·12
20	0·38			34·98
June 3	0·42			35·02
B.A.C. 5071.				
April 28	0·32	6·0	37 35	15 16 1·84
May 2	0·33	6·0		1·84
20	0·38	6·0		1·77
B.A.C. 5091.				
April 28	0·32	6·0	26 10	15 20 20·96
May 2	0·33	6·0		20·73
20	0·38	6·0		20·83
B.A.C. 5143, α Coronæ Borealis.				
April 22	0·30	(2·5)	62 49	15 28 50·76
28	0·32			50·75
30	0·33			50·71
May 2	0·33			50·75
13	0·36			50·70
14	0·36			50·85
20	0·38			50·74
June 3	0·42			50·82
4	0·42			50·67
6	0·43			50·75
11	0·45			50·73
B.A.C. 5196, α Serpentis.				
April 22	0·30	(2·5)	83 8	15 37 28·32
28	0·32			28·27
30	0·33			28·35
May 2	0·33			28·43
13	0·36			28·45
20	0·38			28·34
June 3	0·42			28·29
4	0·42			28·25
6	0·43			28·36
14	0·45			28·29
B.A.C. 5245, ε Serpentis.				
May 2	0·33	(3·0)	85 6	15 43 56·39
14	0·36			56·41
20	0·38			56·34
B.A.C. 5284, γ Serpentis.				
May 2	0·33	(3·0)	73 53	15 50 4·60
14	0·36			4·61
20	0·38			4·60
B.A.C. 5414, δ Ophiuchi.				
April 28	0·32	(3·0)	93 20	16 7 7·02
May 2	0·33			7·01
14	0·36			6·87
June 3	0·42			6·82
4	0·42			7·02
6	0·43			6·86
14	0·45			6·90
B.A.C. 5452.				
May 14	0·36	6·0	68 32	16 14 5·24
June 3	0·42	6·0		5·34
6	0·43	7·0		5·16
B.A.C. 5460, γ Herculis.				
June 3	0·42	4·0	70 31	16 15 50·08
6	0·43			49·99
B.A.C. 5493.				
May 14	0·36		87 20	16 19 53·03
20	0·38	6·0		53·17
B.A.C. 5504.				
May 14	0·36		74 20	16 21 48·08
20	0·38	7·5		48·19
B.A.C. 5507.				
June 3	0·42	7·0	74 16	16 22 7·28
4	0·42	7·0		7·37
5	0·43	7·0		7·26
B.A.C. 5527.				
May 14	0·36	7·0	69 13	16 24 34·23
20	0·38	6·0		34·36
June 3	0·42	6·0		34·31

B.A.C. 5529.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. ° ′	Mean Right Ascension, January 1, 1862. h. m. s.
June 4	0·42	8·0	78 17	16 25 18·07
6	0·43	8·0		18·08

B.A.C. 5537.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
May 14	0·36	7·0	79 20	16 27 1·40
20	0·38	7·0		1·47
June 3	0·42	7·0		1·40

B.A.C. 5597.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
May 20	0·38	6·5	64 52	16 35 17·43
June 4	0·42	6·0		17·51
6	0·43	6·0		17·62

B.A.C. 5604, ζ Herculis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
May 14	0·36	(3·0)	58 9	16 36 5·08
June 14	0·45			5·08

B.A.C. 5615.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
May 14	0·36		53 13	16 38 9·26
June 3	0·42	6·0		9·27
4	0·42	6·5		9·32

B.A.C. 5620.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
June 6	0·43	6·0	74 0	16 39 7·68

B.A.C. 5634.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
June 3	0·42	7·0	[illegible] 37	16 41 36·88
4	0·42			36·84
6	0·43	7·0		36·77

B.A.C. 5686.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
May 14	0·36	7·5	74 22	16 47 5·94
June 3	0·42			5·97
4	0·42	7·5		5·98

B.A.C. 5708, κ Ophiuchi.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
June 3	0·42	(4·0)	80 24	16 51 8·23
4	0·42			8·23
6	0·43			8·33
14	0·45			8·27
17	0·46			8·26
July 27	0·57			8·26

B.A.C. 5716.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. ° ′	Mean Right Ascension, January 1, 1862. h. m. s.
June 3	0·42	7·0	74 20	16 52 23·33
6	0·43			23·34
17	0·46			23·35

B.A.C. 5726.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
June 3	0·42	7·0	83 12	16 53 45·78
4	0·42	6·0		45·77
17	0·46	7·0		45·70

B.A.C. 5732.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
June 3	0·42	6·0	74 51	16 55 16·80
6	0·43			16·75
17	0·46	7·0		16·76

B.A.C. 5776.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
June 3	0·42	[illegible]·0	41 0	17 1 10·39
4	0·42	6·0		10·25

B.A.C. 5777.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
May 14	0·36	8·0	54 29	17 1 45·06
June 17	0·46			45·02

B.A.C. 5787.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
June 3	0·42	6·5	79 46	17 3 9·89
4	0·42	7·0		9·83
17	0·46			9·72

B.A.C. 5821, α Herculis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
June 3	0·42	(3·5)	75 27	17 8 21·40
4	0·42			21·41
6	0·43			21·39
14	0·45			21·44
17	0·46			21·36
July 9	0·52			21·37
27	0·57			21·40
Sept. 9	0·69			21·42
15	0·70			21·40
17	0·71			21·51
23	0·73			21·35

B.A.C. 5863.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. ° ′	Mean Right Ascension, January 1, 1862. h. m. s.
June 17	0·46	4·5	37 21	17 15 29·91
July 9	0·52			29·94

B.A.C. 5893, ν Ophiuchi.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
June 17	0·46	4·0	85 44	17 19 40·12

B.A.C. 5917.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
June 3	0·42	5·0	29 51	17 23 54·74
17	0·46	5·0		54·63
July 9	0·52	6·0		54·61

B.A.C. 5941, α Ophiuchi.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
June 3	0·42	(2·0)	77 20	17 28 31·89
17	0·46			31·66
July 1	0·50			31·78
9	0·52			31·78
14	0·53			31·74
27	0·57			31·77
Sept. 15	0·70			31·74
17	0·71			31·76
22	0·72			31·88
[illegible]	0·73			31·70

B.A.C. 5996, β Ophiuchi.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
June 17	0·46	3·0	85 22	17 36 39·22
July 9	0·52			39·38
14	0·53			39·38

B.A.C. 6021, μ Herculis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
June 17	0·46	(4·0)	62 12	17 41 3·49
July 1	0·50			3·60
4	0·50			3·62
9	0·52			3·54
14	0·53			3·60
16	0·54			3·52
27	0·57			3·50
Sept. 22	0·72			3·53

B.A.C. 6035.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
June 17	0·46	7·0	8[illegible] 6	17 43 37·43
July 9	0·52	7·0		37·50

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
B.A.C. 6123.				
June 17	0·46	5·0	° ′ 87 28	h. m. s. 17 58 29·63
B.A.C. 6143.				
June 17	0·46	4·0	80 27	18 0 48·38
B.A.C. 6213.				
June 3	0·42	6·0	82 48	18 12 29·21
B.A.C. 6302, χ Draconis.				
June 17	0·46	(4·5)	17 19	18 23 30·73
B.A.C. 6355, α Lyræ.				
Jan. 2	0·00	(1·0)	51 21	18 32 16·08
June 3	0·42			15·96
4	0·42			15·91
17	0·46			16·09
26	0·48			15·85
July 1	0·50			15·98
14	0·53			15·88
16	0·54			15·87
26	0·56			16·02
29	0·57			15·97
Sept. 30	0·74			15·92
B.A.C. 6429, β Lyræ.				
June 17	0·46	(3·0)	56 48	18 44 59·07
26	0·48			59·22
July 4	0·50			59·24
14	0·53			59·15
22	0·55			59·19
26	0·56			59·24
B.A.C. 6431.				
July 29	0·57	7·0	19 21	18 44 42·77
B.A.C. 6468.				
June 17	0·46	6·0	56 12	18 49 48·98
July 14	0·53	6·0		49·12
29	0·57	5·5		49·08
B.A.C. 6480.				
June 17	0·46	6·0	57 16	h. m. s. 18 51 51·13
July 14	0·53	6·0		51·16
16	0·54			51·00
B.A.C. 6487, ι Aquilæ.				
June 17	0·46	3·0	75 7	18 53 21·55
July 14	0·53	4·0		21·57
29	0·57			21·48
B.A.C. 6527.				
June 17	0·46	7·5	71 4	18 58 49·89
July 29	0·57			49·91
B.A.C. 6528, ζ Aquilæ.				
June 26	0·48	(3·0)	76 20	18 59 4·01
July 14	0·53			4·03
24	0·56			4·02
28	0·57			4·06
Sept. 30	0·74			4·04
B.A.C. 6542.				
June 17	0·46	7·0	65 57	19 0 53·35
July 29	0·57	6·0		53·18
B.A.C. 6567.				
June 17	0·46	8·0	58 35	19 5 29·32
July 22	0·55	7·5		29·32
29	0·57	8·0		29·27
B.A.C. 6595, ω Aquilæ.				
June 26	0·48	(5·0)	78 39	19 11 20·31
July 22	0·55			20·26
26	0·56			20·36
29	0·57			20·37
B.A.C. 6602.				
June 17	0·46	6·0	67 13	19 11 53·45
B.A.C. 6617.				
June 17	0·46	6·0	78 43	19 13 23·70
July 22	0·55	7·0		23·63
29	0·57	6·0		23·56
B.A.C. 6644.				
July 22	0·55	6·0	° ′ 78 21	h. m. s. 19 18 23·42
29	0·57	5·0		23·45
B.A.C. 6646, δ Aquilæ.				
June 17	0·46	(3·5)	87 9	19 18 32·44
26	0·48			32·38
July 16	0·54			32·43
21	0·55			32·51
24	0·56			32·42
26	0·56			32·44
28	0·57			32·47
B.A.C. 6674, α Vulpeculæ.				
June 17	0·46	5·0	65 37	19 22 57·75
July 16	0·54			57·72
29	0·57	4·0		57·67
B.A.C. 6701, μ Aquilæ.				
July 16	0·54	•	82 55	19 27 20·88
22	0·55	5·0		20·66
29	0·57	4·0		20·79
B.A.C. 6720.				
July 16	0·54		84 55	19 32 22·62
22	0·55	6·0		22·97
29	0·57	5·0		22·86
B.A.C. 6762.				
July 16	0·54		63 12	19 38 16·76
22	0·55	7·0		16·75
29	0·57	7·0		16·77
B.A.C. 6772, γ Aquilæ.				
June 26	0·48	(3·0)	79 43	19 39 41·86
July 4	0·50			41·81
21	0·55			41·85
23	0·56			41·90
24	0·56			41·91
26	0·56			41·72
28	0·57			41·89

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
B.A.C. 6772, γ Aquilæ.				
Nov. 11	0·86	(3·0)	79° 13′	19h 39m 41s·94
12	0·86			41·84
17	0·88			41·91
18	0·88			41·95
Dec. 11	0·94			41·90
B.A.C. 6791.				
July 22	0·55	7·0	78 40	19 42 22·79
29	0·57	7·5		22·78
B.A.C. 6802, α Aquilæ.				
June 26	0·48	(1·5)	81 30	19 44 2·88
July 16	0·54			2·99
21	0·55			2·87
22	0·55			2·95
23	0·56			2·89
24	0·56			2·91
25	0·56			2·98
26	0·56			2·88
28	0·57			2·82
29	0·57			2·96
Nov. 11	0·86			2·81
12	0·86			2·97
17	0·88			2·95
18	0·88			2·94
Dec. 11	0·94			2·89
B.A.C. 6833, β Aquilæ.				
June 26	0·48	(3·5)	83 56	19 48 31·99
July 21	0·55			31·98
22	0·55			32·03
23	0·56			31·99
25	0·56			32·03
26	0·56			32·06
28	0·57			31·99
29	0·57			32·08
Nov. 11	0·86			32·07
12	0·86			32·09
17	0·88			32·02
18	0·88			32·03
Dec. 11	0·94			32·10
B.A.C. 6852.				
July 16	0·54	6·0	30 39	19 51 6·91
23	0·56			7·24
25	0·56	5·5		7·16
B.A.C. 6934, θ Aquilæ.				
July 23	0·56	4·0	91° 14′	20h 4m 10s·83
28	0·57			10·88
B.A.C. 6941.				
July 16	0·54	(7·0)	69 16	20 4 58·86
25	0·56			59·15
29	0·57			59·23
B.A.C. 6966.				
July 23	0·56	5·0	64 50	20 9 25·10
25	0·56	5·0		25·15
B.A.C. 7000.				
July 23	0·56	7·0	12 35	20 12 38·28
29	0·57			38·10
B.A.C. 7006.				
July 25	0·56	7·5	53 18	20 14 38·62
B.A.C. 7014.				
July 25	0·53	6·0	85 5	20 16 20·38
29	0·57			20·37
B.A.C. 7066.				
July 23	0·56	7·0	34 24	20 25 0·19
25	0·56	6·0		0·35
B.A.C. 7088, ι Delphini.				
July 16	0·54	(4·0)	79 10	20 26 37·17
29	0·57	5·0		37·19
B.A.C. 7149, α Delphini.				
July 16	0·54	(3·5)	74 34	20 33 13·59
29	0·57			13·71
B.A.C. 7150				
July 14	0·53		79 14	20 33 14·98
23	0·56	7·0		14·92
B.A.C. 7220, η Cephei.				
July 14	0·53	3·0	28° 42′	20h 42m 28s·84
23	0·56			28·91
25	0·56	3·0		28·94
B.A.C. 7256, 32 Vulpeculæ.				
July 14	0·53	(4·5)	62 28	20 48 40·74
21	0·55			40·79
23	0·56			40·77
25	0·56			40·82
28	0·57			40·78
29	0·57			40·73
Sept. 7	0·68			40·85
B.A.C. 7285.				
July 14	0·53		83 1	20 53 16·24
23	0·56			16·24
25	0·56			16·35
29	0·57	6·5		16·19
B.A.C. 7336, 61¹ Cygni.				
July 14	0·53	(5·5)	51 56	21 0 42·88
23	0·56			42·88
25	0·56			42·99
Sept. 15	0·70			42·84
B.A.C. 7354.				
July 25	0·56	7·0	68 6	21 4 19·18
Sept. 10	0·69			19·37
15	0·70			19·17
B.A.C. 7368, ζ Cygni				
July 21	0·55	(3·0)	60 20	21 7 3·87
22	0·55			3·84
23	0·56			3·98
25	0·56			3·80
29	0·57			3·84
Sept. 7	0·68			3·87
10	0·69			3·86
15	0·70			3·83
B.A.C. 7380, α Equulei.				
July 23	0·56	6·0	85 19	21 8 55·40
25	0·56			55·46
Sept. 15	0·70			55·34

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
B.A.C. 7410.				
			° ′	h. m. s.
July 22	0·55		66 43	21 14 50·14
23	0·56	5·5		50·16
25	0·56	6·0		50·11
B.A.C. 7430.				
July 23	0·56	6·0	29 49	21 17 0·92
25	0·56	5·5		0·88
B.A.C. 7450.				
July 22	0·55		71 13	21 20 2·11
25	0·56	6·0		2·16
Sept. 10	0·69	7·0		2·15
B.A.C. 7478, β Aquarii.				
July 21	0·55	(3·0)	96 11	21 24 17·52
22	0·55			17·49
23	0·56			17·52
25	0·56			17·51
Sept. 7	0·68			17·42
10	0·69			17·46
15	0·70			17·48
17	0·71			17·48
23	0·73			17·56
B.A.C. 7496.				
July 23	0·56	7·5	42 10	21 27 18·67
Sept. 15	0·70			18·65
23	0·73	6·5		18·65
B.A.C. 7497.				
July 22	0·55	7·5	88 47	21 27 41·50
Sept. 10	0·69	7·5		41·52
B.A.C. 7514, ξ Aquarii.				
July 23	0·56		98 28	21 30 24·13
25	0·56	5·0		24·14
Sept. 10	0·69			24·16
B.A.C. 7528.				
July 23	0·56		70 22	21 32 35·36
25	0·56	5·5		35·39
Sept. 10	0·69			35·29
B.A.C. 7561, ε Pegasi.				
			° ′	h. m. s.
Jan. 9	0·02	(2·5)	80 45	21 37 24·46
July 23	0·56			24·36
25	0·56			24·48
Aug. 27	0·65			24·45
Sept. 7	0·68			24·45
9	0·69			24·42
10	0·69			24·46
B.A.C. 7566.				
Sept. 15	0·70	6·0	52 21	21 37 43·53
17	0·71	6·0		43·55
23	0·73	6·0		43·52
B.A.C. 7590.				
Sept. 10	0·69	7·0	73 26	21 40 31·07
15	0·70	7·0		30·98
17	0·71			30·88
B.A.C. 7627, 16 Pegasi.				
Aug. 27	0·65	(5·5)	64 43	21 46 47·10
Sept. 10	0·69			47·20
17	0·71			47·09
23	0·73			47·05
B.A.C. 7644.				
Sept. 15	0·70	7·0	18 10	21 50 18·45
17	0·71	7·0		18·20
23	0·73	7·0		18·36
B.A.C. 7688, α Aquarii.				
Aug. 27	0·65	(3·0)	90 59	21 58 41·72
Sept. 6	0·68			41·73
9	0·69			41·66
17	0·71			41·59
22	0·72			41·70
23	0·73			41·72
30	0·74			41·59
B.A.C. 7706, ι Pegasi.				
Sept. 17	0·71	4·0	65 20	22 0 35·28
22	0·72	4·0		35·42
23	0·73	4·0		35·43
B.A.C. 7759.				
			° ′	h. m. s.
Sept. 15	0·70	6·0	29 56	22 7 28·52
17	0·71	5·5		28·48
22	0·72	5·5		28·42
B.A.C. 7795, γ Aquarii.				
Sept. 15	0·70		92 5	22 14 31·65
17	0·71	3·0		31·60
22	0·72	4·0		31·62
B.A.C. 7868, π Aquarii.				
Sept. 6	0·68	(4·0)	90 50	22 28 15·77
9	0·69			15·86
17	0·71			15·75
18	0·71			15·88
19	0·71			15·81
22	0·72			15·71
23	0·73			15·80
30	0·74			15·83
B.A.C. 7908, ζ Pegasi.				
Jan. 9	0·02	(3·0)	79 53	22 34 34·88
Aug. 27	0·65			34·71
Sept. 6	0·68			34·79
9	0·69			34·78
10	0·69			34·82
15	0·70			34·79
17	0·71			34·75
18	0·71			34·78
19	0·71			34·80
22	0·72			34·73
30	0·74			34·81
B.A.C. 7958, μ Pegasi.				
Sept. 15	0·70	4·0	66 7	22 43 20·78
17	0·71	3·0		20·77
18	0·71	4·0		20·70
B.A.C. 7970, λ Aquarii.				
Sept. 15	0·70		98 18	22 45 24·77
17	0·71	3·5		24·68
18	0·71	4·0		24·69

(2 c)

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1862.
			° ′	h m s
B.A.C. 7977.				
Sept. 19	0·71	7·5	88 53	22 46 49·28
22	0·72	7·0		49·27
23	0·73	7·0		49·39
B.A.C. 7996.				
Sept. 15	0·70		88 55	22 50 31·23
17	0·71	7·5		31·14
18	0·71	6·0		31·29
B.A.C. 8024.				
Sept. 17	0·71	7·0	33 38	22 55 41·31
18	0·71	6·5		41·26
19	0·71			41·38
B.A.C. 8034, α Pegasi.				
Jan. 9	0·02	(2·0)	75 32	22 57 53·23
23	0·06			53·31
Sept. 6	0·68			53·28
9	0·69			53·31
15	0·70			53·32
17	0·71			53·30
18	0·71			53·25
19	0·71			53·27
22	0·72			53·28
23	0·73			53·34
30	0·74			53·39
Oct. 6	0·76			53·36
B.A.C. 8065.				
Sept. 15	0·70	8·0	88 36	23 2 19·54
17	0·71	8·0		19·47
18	0·71	8·0		19·50
B.A.C. 8083.				
Sept. 17	0·71	6·5	33 35	23 5 39·35
18	0·71	6·0		39·37
19	0·71	6·5		39·51
22	0·72	5·5		39·20
B.A.C. 8091.				
Sept. 23	0·73	7·5	62 40	23 8 13·90
Oct. 6	0·76			14·02
B.A.C. 8105, γ Piscium.				
Aug. 27	0·65	(4·5)	87 28	23 10 0·66
Sept. 18	0·71			0·65
19	0·71			0·71
22	0·72			0·68
23	0·73			0·71
B.A.C. 8135.				
Sept. 18	0·71	6·5	46 38	23 14 12·80
19	0·71			12·82
22	0·72	7·0		12·69
B.A.C. 8137.				
Oct. 6	0·76	7·0	28 47	23 14 13·90
B.A.C. 8147.				
Sept. 18	0·71	7·0	70 12	23 15 53·48
22	0·72	7·0		53·49
23	0·73			53·49
B.A.C. 8169, κ Piscium.				
Sept. 18	0·71	(5·5)	89 30	23 19 51·43
22	0·72			51·48
Oct. 6	0·76			51·45
26	0·82			51·53
B.A.C. 8204.				
Sept. 22	0·72	7·0	18 46	23 26 39·19
23	0·73			39·37
Oct. 6	0·76	7·0		39·38
B.A.C. 8233, ι Piscium.				
Aug. 27	0·65	(4·5)	85 7	23 32 51·23
Sept. 18	0·71			51·20
B.A.C. 8233, ι Piscium.				
Sept. 22	0·72	(4·5)	85 7	23 32 51·12
23	0·73			51·20
25	0·73			51·20
Oct. 6	0·76			51·20
18	0·79			51·12
23	0·81			51·18
26	0·82			51·06
B.A.C. 8247.				
Sept. 22	0·72	8·5	72 6	23 35 32·70
Oct. 6	0·76	7·0		32·73
B.A.C. 8252.				
Sept. 23	0·73	7·0	37 37	23 36 23·15
B.A.C. 8269.				
Sept. 22	0·72	8·0	86 32	23 40 41·68
Oct. 6	0·76	8·0		41·65
B.A.C. 8298.				
Oct. 6	0·76	7·0	13 10	23 45 23·10
B.A.C. 8331, ω Piscium.				
Sept. 25	0·73	(4·5)	83 54	23 52 13·59
Oct. 7	0·76			13·50
18	0·79			13·62
23	0·81			13·60
26	0·82			13·64
B.A.C. 8364.				
Oct. 7	0·76	(7·0)	32 14	23 57 49·36
B.A.C. 8372.				
Oct. 7	0·76	(6·5)	32 20	23 59 3·69

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EXPLANATION OF THE EDINBURGH TRANSIT OBSERVATIONS FOR 1862; AND THE METHODS OF THEIR REDUCTION.

Pages 131 to 156 contain the Transit Observations of stars for 1862, similarly with those for 1849, where the methods of reduction are more fully described; the variable data for the present year being as below.

The star observations were taken almost wholly by Mr Alexander Wallace, M.A., the First Assistant Astronomer. They were actually more numerous than here recorded, because, with a view chiefly to economy in printing, all days of observation with less than four standard stars have been struck out; also parts of a day far removed from the chief observing hours of the night; also those periods of the year when either the Instrumental corrections were uncertain, or the Clock going badly. The said observations, however, had been already computed in our MS. books, and have often served useful temporary purposes, as for approximate clock-corrections and instrumental errors.

The Micrometer observations for instrumental corrections have, on the other hand, always been taken by the Astronomer, and he has also decided on the quantities for computation to be adopted for each day of star observation.

Intervals of the Wires.

From 10 observations of α Ursæ Minoris, above and below the Pole, in the year 1862, the intervals of the wires and their Equatorial distances from their mean or middle point were found to be, the star being above the Pole,-

		s.	
Wire	I.	+ 16·636	Equatorial
...	II.	+ 8·414	
...	III.	− 0·068	
...	IV.	− 8·232	
...	V.	− 16·750	

These values, immaterially different from those of 1861, have been employed in the reductions throughout the year; using for Polaris (whose Declination varied between 88° 34′ 21″ and 88° 35′ 11″) the following quantities or those adapted to a declination of 88° 34′, with the amount of alteration due to each additional second of Declination added under the term n'',—

		m.	s.		s.
Wire	I.	+ 11	5·32	+ n ×	·131
...	II.	+ 5	36·44	+ n ×	·066
...	III.	− 0	2·72		
...	IV.	− 5	29·14	− n ×	·065
...	V.	− 11	9·89	− n ×	·131

Declination 88° 34′

and for δ Ursæ Minoris (whose Declination varied between 86° 35′ 51″ and 86° 36′ 32″) the following quantities, or those adapted to a declination of 86° 36′,

with the amount of alteration due to each additional second of Declination added under the term n'',—

			m.	s.				s.	
Wire	I.	+	4	40·52	+	n''	×	·023	Declination 86° 36′
...	II.	+	2	21·82	+	n	×	·012	
...	III.	−	0	1·14					
...	IV.	−	2	18·79	−	n	×	·012	
...	V.	−	4	42·44	−	n	×	·023	

The correction generally for the imperfect transit of a star, whose North Polar Distance is not very small, being

$$= \frac{\text{Sum of Equatorial intervals for the Wires observed}}{\text{Number of Wires}} \times \text{cosecant of Stars N.P.D.},$$

this quantity being applied to the mean of whatever wires were observed.

With close Polar stars, the *Sine* is used in place of the *Arc*.

The signs and order of the Wires are to be changed when the star is below the Pole.

In the column entitled "Reduction to the Mean of the Wires," either the simple arithmetical mean of the Wires—if 5 were observed—is entered; or, if a less number, the reduced mean according to the method already explained and the quantities above given.

CORRECTIONS FOR INSTRUMENTAL DEVIATIONS.

These deviations are three in number, and are severally termed, Collimation error, Level error, and Azimuth error.

The Collimation error is the deviation, of the line joining the optical centre of the object-glass and the Mean of the Wires, from the plane perpendicular to the axis of rotation; and is *mechanically* positive, or is positive as a correction for all objects at all altitudes both above and below the horizon, when the object-glass deviates to the east of the said plane:—0^s·012, the diurnal aberration, is included, for practical convenience, in the sum representing the collimation.

The Level error is the angle of inclination of the axis of rotation to the horizon, measured in a vertical plane; and is *mechanically* positive, as a correction, for all objects above the horizon, negative for those below, when the Western end is higher than the other.

The Azimuthal error is the angle of deviation of the axis of rotation (presumed approximately horizontal) from the East and West line, measured in a horizontal plane; and is *mechanically* positive as a correction for all objects South of the Zenith, or Nadir, and negative for those North of the same, when the Western end of said axis deviates towards the South.

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COLLIMATION AND LEVEL ERRORS.

These are determined, as explained in former years, by special observations made from time to time with the collimating eye-piece, and by measuring micrometrically the distance between the Middle wire and its reflected image in reversed positions of the transit-instrument's axis.

For dates between the epochs of observation, the errors have been assumed to vary as the time, except where the readings of the earth-thermometers, as noticed in the Introduction, have indicated a modification thereof to be probably desirable.

AZIMUTHAL ERROR.

Of the three usual methods for determining the azimuthal position of a transit-instrument; viz. by a Polar star combined with an Equatorial star, by two successive transits of a Polar star above and below the Pole, or by three consecutive transits of a Polar star, the first plan has alone been adopted; for although the two latter have the advantage of being independent of the Right Ascension assumed for the stars, yet they can only be employed with safety when the stability of the instrument can be depended on through the twelve or twenty-four hours during which the observations extend.

Now grave doubts had long existed on this head; and, as set forth both in the Introduction to this volume and the Report to the Board of Visitors for 1870, towards the end of the volume, see pp. R 50 to R 57, they have since been proved to be only too well founded. The following therefore is the formula which has always been adopted, enabling, for each transit of a Polar star observed, a comparatively instantaneous determination of the Azimuthal error then to be made:—

$$\text{Azimuthal error} = \frac{\text{R.A. 1st} \ast - \text{R.A. 2d} \ast - (\text{obs. tr. 1st} \ast - \text{obs. tr. 2d} \ast) - \text{clock's loss in the interval}}{\left(\frac{\sin \text{Z.D. South}}{\sin \text{N.P.D.}}\ \text{1st} \ast\right) - \left(\frac{\sin \text{Z.D. South}}{\sin \text{N.P.D.}}\ \text{2d} \ast\right)}$$

In the course of the year 35 combinations of either α, or δ, Ursæ Minoris and a Clock star were obtained, from which the Azimuth error at these epochs was computed, and for dates between them the error was made to vary nearly as the time, modified in some cases by the temperature and the annual curve shown in Plate III.

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TABLE I.

ADOPTED INSTRUMENTAL CORRECTIONS, EXPRESSED IN SECONDS OF TIME FOR CONVENIENCE OF APPLICATION TO TIME OBSERVATIONS.

Date.	Collimation.	Level.	Azimuth.
1862.	s	s	s
Jan. 2	−0·16	+0·17	−0·08
3	−0·16	+0·17	−0·09
4	−0·16	+0·17	−0·10
5	−0·16	+0·17	−0·12
6	−0·16	+0·17	−0·15
8	−0·16	+0·17	−0·15
9	−0·16	+0·17	−0·20
10	−0·16	+0·17	−0·23
11	−0·16	+0·17	−0·20
14	−0·16	+0·18	−0·17
17	−0·16	+0·18	−0·14
18	−0·16	+0·18	−0·11
22	−0·16	+0·18	−0·08
23	−0·16	+0·18	−0·09
24	−0·16	+0·18	−0·10
25	−0·16	+0·18	−0·10
28	−0·16	+0·17	−0·11
29	−0·16	+0·17	−0·12
30	−0·16	+0·16	−0·13
Feb. 4	−0·16	+0·15	−0·14
5	−0·16	+0·15	−0·14
6	−0·16	+0·15	−0·15
8	−0·16	+0·14	−0·15
9	−0·16	+0·14	−0·16
11	−0·16	+0·14	−0·18
18	−0·16	+0·13	−0·19
20	−0·16	+0·12	−0·20
22	−0·16	+0·11	−0·21
28	−0·16	+0·14	−0·22
March 3	−0·16	+0·15	−0·23
4	−0·16	+0·15	−0·24
9	−0·17	+0·11	−0·25
10	−0·17	+0·10	−0·26
11	−0·17	+0·09	−0·27
13	−0·17	+0·09	−0·28
15	−0·17	+0·09	−0·29
19	−0·17	+0·09	−0·30
20	−0·17	+0·09	−0·32
22	−0·17	+0·09	−0·35
31	−0·17	+0·08	−0·37
April 1	−0·17	+0·08	−0·39
4	−0·17	+0·08	−0·40
6	−0·17	+0·07	−0·41
8	−0·18	+0·07	−0·44
10	−0·18	+0·07	−0·47

Date.	Collimation.	Level.	Azimuth.
1862.	s	s	s
April 11	−0·18	+0·07	−0·50
12	−0·18	+0·07	−0·39
13	−0·18	+0·07	−0·38
16	−0·18	+0·07	−0·38
17	−0·18	+0·06	−0·38
19	−0·18	+0·04	−0·38
20	−0·18	+0·04	−0·38
22	−0·18	+0·02	−0·37
27	−0·18	0·00	−0·40
28	−0·18	0·00	−0·42
29	−0·18	0·00	−0·45
30	−0·18	0·00	−0·47
May 2	−0·18	0·00	−0·48
3	−0·18	0·00	−0·48
8	−0·18	0·00	−0·48
9	−0·18	0·00	−0·48
13	−0·18	0·00	−0·49
14	−0·18	0·00	−0·49
15	−0·18	0·00	−0·50
17	−0·18	0·00	−0·50
18	−0·18	0·00	−0·51
20	−0·18	0·00	−0·51
21	−0·18	0·00	−0·52
24	−0·18	0·00	−0·52
25	−0·18	0·00	−0·53
26	−0·18	0·00	−0·53
27	−0·18	0·00	−0·54
June 3	−0·18	+0·03	−0·54
4	−0·18	+0·03	−0·49
5	−0·18	+0·03	−0·54
6	−0·18	+0·06	−0·55
7	−0·18	+0·03	−0·56
8	−0·18	+0·03	−0·57
14	−0·18	+0·01	−0·58
16	−0·18	+0·01	−0·58
17	−0·18	0·00	−0·60
21	−0·18	−0·01	−0·60
26	−0·18	−0·02	−0·60
29	−0·18	−0·04	−0·60
July 1	−0·18	−0·05	−0·58
2	−0·18	−0·06	−0·57
4	−0·18	−0·07	−0·56
9	−0·18	−0·09	−0·54
14	−0·18	−0·10	−0·54
16	−0·18	−0·10	−0·52

Date.	Collimation.	Level.	Azimuth.
1862	s	s	s
July 21	−0·18	−0·11	−0·50
22	−0·18	−0·12	−0·46
23	−0·18	−0·11	−0·48
24	−0·18	−0·11	−0·50
25	−0·18	−0·11	−0·52
26	−0·18	−0·11	−0·54
27	−0·18	−0·11	−0·54
28	−0·18	−0·11	−0·54
29	−0·18	−0·10	−0·54
Aug. 2	−0·18	−0·09	−0·54
8	−0·18	....	−0·54
19	−0·18	....	−0·54
20	−0·18	....	−0·54
21	−0·18	....	−0·54
22	−0·18	−0·09	−0·54
27	−0·18	−0·11	−0·54
Sept. 6	−0·18	−0·11	−0·54
7	−0·18	−0·11	−0·54
8	−0·18	−0·11	−0·54
9	−0·18	−0·11	−0·54
10	−0·18	−0·11	−0·54
14	−0·18	−0·10	−0·54
15	−0·18	−0·10	−0·54
17	−0·18	−0·10	−0·54
18	−0·18	−0·10	−0·54
19	−0·18	−0·10	−0·54
22	−0·18	−0·09	−0·54
23	−0·18	−0·09	−0·52
25	−0·18	−0·09	−0·50
26	−0·18	−0·09	−0·49
27	−0·18	−0·09	−0·47
29	−0·18	−0·08	−0·46
30	−0·18	−0·08	−0·44
Oct. 4	−0·18	−0·08	−0·52
6	−0·19	−0·08	−0·61
7	−0·19	−0·07	−0·58
8	−0·19	−0·07	−0·54
9	−0·19	−0·07	−0·57
12	−0·19	−0·07	−0·57
15	−0·19	−0·06	−0·57
18	−0·19	−0·06	−0·57
20	−0·19	−0·06	−0·57
23	−0·19	−0·06	−0·58
24	−0·19	−0·06	−0·60
26	−0·19	−0·05	−0·56

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Date.	Collimation.	Level.	Azimuth.	Date.	Collimation.	Level.	Azimuth.	Date.	Collimation.	Level.	Azimuth.
1862.	s.	s.	s.	1862	s.	s.	s.	1862.	s.	s.	s.
Oct. 28	−0·19	−0·05	−0·52	Nov. 15	−0·19	−0·01	−0·44	Dec. 8	−0·19	+0·03	−0·49
29	−0·19	−0·05	−0·59	16	−0·19	−0·01	−0·43	10	−0·19	+0·04	−0·51
30	−0·19	−0·04	−0·55	17	−0·19	0·00	−0·42	11	−0·19	+0·05	−0·53
				18	−0·19	0·00	−0·41	13	−0·19	+0·04	−0·48
Nov. 1	−0·19	−0·01	−0·50	21	−0·19	+0·01	−0·40	17	−0·19	+0·04	−0·43
3	−0·19	−0·03	−0·49	24	−0·19	+0·01	−0·39	19	−0·19	+0·04	−0·38
4	−0·19	−0·03	−0·49	25	−0·19	+0·01	−0·38	20	−0·19	+0·04	−0·38
5	−0·19	−0·03	−0·48	27	−0·19	+0·01	−0·37	22	−0·19	+0·04	−0·38
6	−0·19	−0·03	−0·48					23	−0·19	+0·04	−0·40
7	−0·19	−0·03	−0·48	Dec. 4	−0·19	+0·03	−0·36	24	−0·19	+0·04	−0·43
9	−0·19	−0·03	−0·47	5	−0·19	+0·03	−0·42	26	−0·19	+0·04	−0·46
11	−0·19	−0·02	−0·47	6	−0·19	+0·03	−0·45	29	−0·19	+0·05	−0·46
12	−0·19	−0·02	−0·46	7	−0·19	+0·03	−0·47	30	−0·19	+0·06	−0·46
14	−0·19	−0·02	−0·45								

The correction to the star observations of times of Transit, for each of the above three instrumental deviations successively, is,

$$\text{Collimation correction} \times \frac{1}{\sin \text{Star's North Polar Distance}},$$

the sign being positive for a star above the Pole, and negative when it crosses the Meridian below the Pole.

$$\text{Level correction} \times \frac{\cos \text{Star's Zenith Distance South}}{\sin \text{Star's North Polar Distance}},$$

the sign being positive for a star above the Pole, and negative when it crosses the Meridian below the Pole. And

$$\text{Azimuthal correction} \times \frac{\sin \text{Star's Zenith Distance South}}{\sin \text{Star's North Polar Distance}},$$

the sign being positive for a star above the Pole *and* to the South of the Zenith, also for a star below the Pole and North of the Zenith; but negative when above the Pole and to the North of the Zenith.

CORRECTION OF THE CLOCK.

For computing the errors of the Clock and the Azimuthal errors of the Transit Instrument, the following Table of the Mean Right Ascensions of the principal stars for January 1, 1862, has been employed, and was kindly communicated at the time by G. B. Airy, Esq., Astronomer Royal, as being the same employed by him for reducing the Greenwich Observations of 1862.

TABLE II.

MEAN RIGHT ASCENSIONS ADOPTED OF STANDARD STARS.

Star's Name.	Assumed Mean Right Ascension, January 1, 1862.	Correction to Nautical Almanac.	Star's Name.	Assumed Mean Right Ascension, January 1, 1862.	Correction to Nautical Almanac.
	h. m. s.	s		h. m. s.	s
α Andromedæ	0 1 15·61	+0·06	κ Geminorum	6 6 32·80	....
γ Pegasi	0 6 7·95	+0·05	μ Geminorum	6 14 36·69	+0·01
ι Ceti	0 12 23·74	....	β Canis Majoris	6 16 37·49	....
12 Ceti	0 22 59·76	−0·03	ν Geminorum	6 20 46·18	....
ε Andromedæ	0 31 16·19	....	γ Geminorum	6 29 44·34	−0·03
β Ceti	0 36 39·62	+0·07	Cephei 51	6 34 40·38	+2·28
μ Andromedæ	0 49 0·22	....	Sirius	6 39 3·95	−0·17
ε Piscium	0 55 47·01	−0·02	θ Canis Majoris	6 47 46·70	....
β Andromedæ	1 2 0·87	....	ε Canis Majoris	6 53 12·17	+0·01
Polaris	1 8 40·77	+0·35	γ Canis Majoris	6 57 30·91	−0·02
θ Ceti	1 17 7·52	+0·02	51 Geminorum	7 5 26·71	....
η Piscium	1 24 6·17	+0·05	δ Geminorum	7 11 52·74	0·00
ν Piscium	1 34 15·10	+0·01	β Canis Minoris	7 19 39·92	....
β Arietis	1 47 1·31	+0·01	Castor	7 25 47·42	+0·01
α Arietis	1 59 24·01	+0·02	Procyon	7 32 4·63	+0·10
67 Ceti	2 10 6·07	+0·04	Pollux	7 36 52·05	+0·04
ξ² Ceti	2 20 49·49	0·00	ξ Navis	7 43 29·39	....
δ Ceti	2 32 24·73	....	6 Cancri	7 55 2·25	−0·09
γ Ceti	2 36 9·15	+0·05	15 Argûs	8 1 40·05	+0·01
ε Arietis	2 43 52·66	....	β Cancri	8 9 1·77	....
α Ceti	2 55 4·08	+0·06	φ² Cancri	8 15 27·50	....
δ Arietis	3 3 44·57	+0·01	η Cancri	8 24 43·44	+0·03
τ¹ Arietis	3 13 15·89	....	γ Cancri	8 35 17·72	....
ο Tauri	3 17 23·41	....	ι Hydræ	8 39 27·94	−0·02
f Tauri	3 23 15·50	....	α Cancri	8 50 56·20	....
ε Eridani	3 26 25·81	....	κ Cancri	9 0 16·20	....
11 Tauri	3 32 32·10	....	83 Cancri	9 11 16·48	+0·09
δ Eridani	3 36 38·34	....	α Hydræ	9 20 48·34	+0·04
θ Tauri	3 39 17·19	+0·06	ξ Leonis	9 24 30·23	....
γ Eridani	3 51 35·49	+0·05	ο Leonis	9 33 46·95	....
π¹ Tauri	4 1 7·83	....	ν Leonis	9 38 0·76	+0·04
ν¹ Eridani	4 5 7·82	−0·01	μ Leonis	9 44 54·56	....
γ Tauri	4 11 56·60	....	π Leonis	9 52 55·10	0·00
ε Tauri	4 20 33·69	0·00	Regulus	10 1 1·19	+0·03
Aldebaran	4 28 0·30	0·00	γ¹ Leonis	10 12 21·59	0·00
μ Eridani	4 38 36·24	....	μ Hydræ	10 19 26·08	....
ι Aurigæ	4 48 0·66	0·00	ρ Leonis	10 25 32·55	−0·01
ε Leporis	4 59 37·17	+0·04	34 Sextantis	10 35 29·83	....
Rigel	5 7 54·39	+0·02	l Leonis	10 42 0·06	+0·03
β Tauri	5 17 34·24	+0·05	d Leonis	10 53 25·95	....
δ Orionis	5 24 57·43	−0·03	χ Leonis	10 57 53·60	−0·01
α Leporis	5 26 38·69	0·00	δ Leonis	11 6 45·91	+0·02
ι Orionis	5 29 12·68	−0·01	δ Crateris	11 12 26·60	+0·05
α Columbæ	5 34 39·15	−0·15	τ Leonis	11 20 50·37	....
κ Orionis	5 41 12·71	....	υ Leonis	11 29 52·98	−0·03
α Orionis	5 47 42·08	+0·02	β Leonis	11 42 1·11	+0·05
1 Geminorum	5 55 43·95	....	π Virginis	11 53 48·04	....
ν Orionis	5 59 41·56	−0·02	ε Corvi	12 3 1·93	+0·03

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Star's Name.	Assumed Mean Right Ascension, January 1, 1862.	Correction to Nautical Almanac.	Star's Name.	Assumed Mean Right Ascension, January 1, 1862.	Correction to Nautical Almanac.
	h. m. s.	s.		h. m. s.	s.
η Virginis	12 12 50·77	+0·04	α Lyræ	18 32 15·98	+0·07
δ Corvi	12 22 43·71	....	2 Aquilæ	18 34 42·96	....
β Corvi	12 27 6·60	+0·14	β Lyræ	18 44 59·13	+0·11
35 Virginis	12 40 49·84	....	ε Aquilæ	18 53 21·55	....
δ Virginis	12 48 39·20	....	ζ Aquilæ	18 59 4·02	+0·13
ε Virginis	12 55 18·42	....	ψ Sagittarii	19 7 4·54	....
θ Virginis	13 2 48·43	+0·03	ω Aquilæ	19 11 20·32	+0·04
Spica	13 17 55·57	+0·03	δ Aquilæ	19 18 32·36	+0·03
ζ Virginis	13 27 39·80	−0·02	α Vulpeculæ	19 22 57·62	....
m Virginis	13 34 22·32	....	μ Aquilæ	19 27 20·85	....
τ Bootis	13 40 42·26	....	h² Sagittarii	19 28 18·32	+0·10
η Bootis	13 48 6·85	+0·04	γ Aquilæ	19 39 41·92	+0·07
τ Virginis	13 54 37·51	+0·01	α Aquilæ	19 44 2·97	+0·04
κ Virginis	14 5 32·29	....	β Aquilæ	19 48 32·03	+0·05
Arcturus	14 9 22·09	+0·06	e Sagittarii	19 54 10·04	....
f Bootis	14 20 2·25	....	λ Ursæ Minoris	20 2 1·17	−0·37
ρ Bootis	14 25 52·95	0·00	θ Aquilæ	20 4 10·98	....
ε Bootis	14 38 57·63	+0·08	α² Capricorni	20 10 23·70	+0·07
α Libræ	14 43 14·92	+0·03	β Capricorni	20 13 15·27	....
ξ² Libræ	14 49 17·05	....	ρ Capricorni	20 20 59·11	+0·14
ψ Bootis	14 58 31·09	−0·02	ε Delphini	20 26 37·16	....
β Libræ	15 9 35·06	+0·05	α Delphini	20 33 13·70	....
ι² Libræ	15 15 20·21	....	ε Aquarii	20 40 12·14	....
ζ Libræ	15 20 28·72	....	32 Vulpeculæ	20 48 40·77	+0·05
α Coronæ	15 28 30·77	+0·08	θ Capricorni	20 58 11·10	....
α Serpentis	15 37 28·34	+0·07	ζ Cygni	21 7 3·85	+0·08
ε Serpentis	15 43 56·32	....	α Equulei	21 8 55·43	....
γ Serpentis	15 50 4·85	....	ι Capricorni	21 14 33·48	....
β¹ Scorpi	15 57 25·03	+0·04	β Aquarii	21 24 17·48	+0·04
δ Ophiuchi	16 7 6·95	+0·05	ξ Aquarii	21 30 21·15	....
γ Herculis	16 15 49·93	....	ε Pegasi	21 37 24·50	+0·04
Antares	16 20 57·03	+0·02	δ Capricorni	21 39 25·17	....
λ Ophiuchi	16 23 57·34	....	16 Pegasi	21 46 47·08	+0·02
ζ Ophiuchi	16 29 33·73	....	α Aquarii	21 58 11·67	+0·05
ζ Herculis	16 36 5·08	+0·02	ι Pegasi	22 0 35·28	....
κ Ophiuchi	16 51 8·23	−0·04	θ Aquarii	22 9 32·93	−0·01
ε Herculis	16 55 0·65	....	γ Aquarii	22 14 31·64	....
η Ophiuchi	17 2 27·94	....	π Aquarii	22 23 20·48	....
α Herculis	17 8 21·36	+0·10	η Aquarii	22 28 15·81	0·00
θ Ophiuchi	17 13 32·21	+0·06	ζ Pegasi	22 34 34·78	+0·08
σ Ophiuchi	17 19 40·09	....	μ Pegasi	22 43 20·71	....
α Ophiuchi	17 28 31·78	+0·08	λ Aquarii	22 45 24·74	....
β Ophiuchi	17 36 39·34	....	Fomalhaut	22 50 1·04	+0·03
μ Herculis	17 41 3·54	+0·06	α Pegasi	22 57 53·30	+0·03
89 Herculis	17 49 51·21	....	γ Piscium	23 10 0·68	0·00
72 Ophiuchi	18 0 48·43	....	κ Piscium	23 19 51·46	−0·03
μ Sagittarii	18 5 30·61	+0·06	ι Piscium	23 32 51·16	−0·03
η Serpentis	18 14 10·16	....	δ Sculptoris	23 41 43·89	−0·06
δ Ursæ Minoris	18 16 51·52	−0·19	ω Piscium	23 52 13·54	−0·04
λ Sagittarii	18 19 27·25	....	2 Ceti	23 56 40·04	....

The Mean Right Ascensions are converted into Apparent for any day of observation, by the application of the reductions of mean to apparent places taken from the Nautical Almanac. The Correction of the Clock is determined

from the observed transits of the stars in the foregoing Table (excepting the close Polar stars), the corrections of the instrument being previously applied, compared with the Apparent Right Ascensions computed.

The Corrections of the Clock thus determined are contained in the column entitled "Correction of Clock observed."

The sign + prefixed to the Correction of the Clock denotes that the clock is slow; the sign − that it is fast.

On account partly of the variability at times of the Clock-rate, and still more frequently of swerving in the azimuthal position of the Transit Instrument as produced by changes of temperature acting on its supporting stone piers during the observations, the "Adopted Clock Corrections" have been generally obtained by graphical projection, and the stars of each night have been used much more by themselves than with reference to those of preceding and following nights.

At the same time, to afford a tabular view, in the usual manner, of the march of the Clock, its daily errors at 0^h Sidereal Time, as given more or less approximately by the curves, are contained in the following Table.

TABLE III.

CORRECTION FOR TRANSIT CLOCK AT 0^h SIDEREAL TIME.

Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.
1862.	s.	1862.	s.	1862.	s.	1862.	s.	1862.	s.
Jan. 2	+18·80	Mar. 11	+13·90	June 14	+21·61	Sept. 9	+44·09	Nov. 5	+41·48
3	+18·71	20	+14·66	17	+21·76	10	+44·11	6	+41·34
5	+18·48			26	+22·50	15	+44·51	11	+36·10
6	+18·60	April 1	+10·22			17	+44·86	12	+36·96
8	+18·52	6	+11·17	July 1	+23·15	18	+44·92	14	+34·55
9	+18·50	11	+13·00	4	+23·19	19	+45·30	15	+33·80
18	+17·80	12	+12·86	9	+23·32	22	+47·00	17	+32·24
23	+16·17	16	+12·29	14	+24·40	23	+47·20	18	+31·55
24	+14·73	17	+12·35	16	+25·07	25	+47·20		
25	+14·50	19	+12·68	21	+26·78	30	+47·86	Dec. 4	+17·91
28	+14·20	22	+13·71	22	+26·93			5	+17·72
29	+14·22	28	+15·62	23	+26·92	Oct. 6	+49·77	6	+17·39
		29	+16·10	24	+26·98	7	+49·74	10	+16·40
Feb. 6	+15·74	30	+16·68	25	+27·31	8	+49·70	11	+16·12
9	+15·91			26	+27·47	9	+49·84	17	+13·30
11	+15·35	May 2	+17·53	27	+27·73	18	+48·17	19	+12·65
18	+15·36	13	+20·10	28	+27·96	20	+46·92	20	+12·00
20	+15·35	14	+20·28	29	+28·26	23	+45·65	22	+10·53
		20	+22·34			26	+44·15	23	+10·01
March 3	+16·02			Aug. 27	+39·52	28	+43·42	24	+ 9·63
4	+15·69	June 3	+23·20			29	+43·01	26	+ 9·01
9	+13·68	4	+23·10	Sept. 6	+43·29			29	+ 7·80
10	+13·75	6	+22·65	7	+43·68	Nov. 4	+41·45	30	+ 7·38

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OBSERVATIONS

MADE WITH

THE MURAL CIRCLE,

AND

CALCULATION

OF

APPARENT NORTH POLAR DISTANCES.

1862.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1862.
1862.				h m s	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
Jan. 2	......	Nadir	......	6 55 0	54 0	2 51·4	54·9	0·500	29·95	40·3	39·0	5, N.W.	1	......	......	......
	......	Nadir	......	....	54 0	2 60·6	64·7	0·500	......	......	......	......	......	......	......	......
	2410	δ Geminorum	......	7 11 35	267 40	5 35·3	45·6	0·717	29·95	......	38·9	......	......	7	+33 42 50·7	− 4·4
	2488	......	......	7 26 12	243 30	1 18·8	31·3	0·697	29·95	......	38·9	......	......	9	+ 9 28 32·8	− 6·2
	2586	......	......	7 41 5	261 25	2 24·0	33·4	0·491	29·95	......	38·5	......	......	8	+27 24 32·0	− 6·7
	2663	......	......	7 56 28	270 45	0 47·2	57·2	0·786	29·95	......	38·3	......	......	7	+36 43 3·9	− 7·0
	2761	......	......	8 6 22	276 30	1 34·6	44·3	0·779	29·95	......	38·0	......	......	6	+42 28 51·2	− 6·9
	......	Nadir	......	8 10 0	54 0	2 51·6	54·4	0·500	29·93	38·4	38·0	......	......	......	......	......
	......	Nadir	......	....	54 0	2 62·0	66·0	0·500	......	......	......	......	......	......	......	......
Jan. 3	......	Nadir	......	5 8 0	54 0	2 50·4	53·8	0·500	29·61	40·7	43·0	8, W.	4	......		
	......	Nadir	......	....	54 0	2 60·4	63·9	0·500	......	......	......	......	......	......	......	......
	1703	......	......	5 19 54	273 40	0 2·0	14·0	0·661	29·61	......	42·9	......	......	6	+39 37 16·5	+ 1·9
	1766	......	......	5 28 59	280 45	1 28·4	40·0	0·382	29·61	......	42·0	......	......	6	+46 43 35·3	+ 0·5
	1826	......	......	5 39 0	250 30	1 11·9	22·8	0·293	29·61	......	42·7	......	......	5	+46 28 16·1	0·0
	1883	α Orionis	1·0	5 47 25	282 35	1 26·1	38·1	0·500	29·61	......	42·4	......	......	6	+48 33 36·7	− 0·7
	1930	......	8·0	5 54 36	272 15	4 51·0	63·1	0·147	29·61	......	42·3	......	......	7	+38 16 51·9	+ 0·1
	1962	......	10·0	6 0 15	265 40	2 41·1	51·4	0·500	29·61	......	42·3	......	......	5	+31 29 50·2	− 0·2
	2022	......	......	6 9 12	279 55	4 50·6	60·8	0·549	29·61	......	42·7	......	......	7	+45 57 2·0	− 1·3
	2046	......	7·0	6 14 29	233 35	3 60·8	70·9	0·611	29·61	......	42·6	......	......	6	− 0 23 48·9	+ 1·4
	2101	......	......	6 21 43	267 20	1 38·7	49·7	0·488	29·61	......	42·5	......	......	7	+33 18 47·8	− 1·2
	2184	......	......	6 33 6	273 25	3 9·7	21·0	0·349	29·61	......	42·4	......	......	8	+39 25 15·6	− 2·2
	2379	......	......	7 7 41	210 15	2 46·4	57·6	0·700	29·61	......	41·0	......	......	7	+ 6 14 59·9	− 4·3
	2463	......	......	7 19 49	262 5	5 1·7	13·3	0·631	29·61	......	40·9	......	......	6	+28 7 14·6	− 5·2
	2488	......	......	7 26 12	243 30	1 18·5	30·4	0·654	29·61	......	41·2	......	......	7	+ 9 28 31·1	− 6·0
	2586	......	......	7 41 6	261 25	2 18·9	29·3	0·682	29·61	......	41·0	......	......	6	+27 24 32·8	− 6·7
	2688	......	......	7 56 52	262 0	4 39·2	49·2	0·718	29·61	......	41·0	......	......	7	+28 1 54·4	− 7·7
	2748	......	......	8 4 21	275 30	4 37·7	47·3	0·639	29·61	......	40·1	......	......	8	+41 31 51·2	− 7·0
	......	Nadir	......	8 25 0	54 0	2 51·3	55·2	0·500	29·61	40·6	40·1	......	......	......	......	......
	......	Nadir	......	....	54 0	2 60·9	64·5	0·500	......	......	......	......	......	......	......	......
Jan. 6	......	Nadir	......	5 31 0	54 0	2 50·3	54·1	0·500	29·70	39·8	39·8	8, W.	6	......		
	......	Nadir	......	....	54 0	2 61·6	65·4	0·500	......	......	......	......	......	......	......	......
	1907	......	......	5 50 49	277 10	1 41·6	52·2	0·870	29·70	......	39·9	......	......	6	+43 9 1·7	− 0·4
	......	Nadir	......	8 2 0	54 0	2 50·7	53·6	0·500	29·70	40·1	40·4	......	......	......	......	......
	......	Nadir	......	....	54 0	2 61·4	64·4	0·500	......	......	......	......	......	......	......	......
Jan. 8	......	Nadir	......	7 18 0	54 0	2 50·8	53·6	0·500	29·15	42·2	42·5	20, W.	4	......	......	......
	......	Nadir	......	....	54 0	2 61·3	64·3	0·500	......	......	......	......	......	......	......	......
	3522	α Canis Minoris	......	7 31 46	284 20	4 30·0	40·8	0·758	29·15	......	42·4	......	......	6	+50 21 48·1	− 5·6
	2586	......	......	7 41 7	261 25	2 25·7	35·6	0·419	29·15	......	42·3	......	......	6	+27 21 32·5	− 6·6
	2683	......	......	7 56 29	270 45	0 43·5	55·0	0·873	29·15	......	42·7	......	......	7	+36 43 3·9	− 7·3
	2748	......	9·0	8 4 21	275 30	4 38·1	46·7	0·761	29·15	......	42·7	......	......	6	+41 31 56·0	− 7·4
	2867	......	......	8 24 52	279 25	2 32·9	43·0	0·442	29·15	......	42·7	......	......	7	+45 24 41·5	− 8·0
	......	Nadir	......	8 37 0	54 0	2 50·0	53·3	0·500	29·15	42·3	42·3	......	......	......	......	......
	......	Nadir	......	....	54 0	2 60·2	64·2	0·500	......	......	......	......	......	......	......	......
Jan. 9	......	(a) Nadir	......	5 50 0	54 0	2 51·7	54·9	0·500	28·92	42·7	45·4	15, W.	......	......	......	......
	......	Nadir	......	....	54 0	2 60·6	64·1	0·500	......	......	......	......	......	......	......	......
	2379	......	......	7 7 44	240 15	2 46·0	56·0	0·758	28·95	......	43·8	20	......	7	+ 6 15 0·1	− 3·4

(a) Showery.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed	Clock Sidereal Time of Observation	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer. Fahr.	Exterior Thermometer. Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1862.
1862.				h m s	° '	' "	"	revols.	inches.	°	°				° ' "	"
Jan. 9	2463	....	......	7 19 48	262 5	5 2·1	14·0	0·629	28·95	......	43·8	30, W.	......	5	+28 7 15·1	− 5·1
	2488	(a)	......	7 26 13	243 30	1 19·0	31·2	0·620	28·95	......	43·8	40	......	6	+ 9 28 31·0	− 5·3
	2522	α Canis Minoris......	......	7 31 47	284 20	4 35·8	46·7	0·550	28·95	......	43·7	....	......	7	+50 21 45·0	− 5·7
	2586	....	7·0	7 41 6	261 25	2 19·0	31·5	0·610	28·95	......	43·5	....	......	8	+27 24 32·6	− 6·6
	......	(b) Nadir ‖|	......	8 41 0	54 0	2 51·1	53·9	0·500	28·95	43·8	43·4	....	......	......	....	......
	......	Nadir |‖	......	....	54 0	2 61·1	64·1	0·500	......	......	......	....	......	......	....	......
Jan. 10	......	Nadir ‖|	......	5 35 0	54 0	2 51·8	56·0	0·500	29·24	42·2	42·0	20, W.	0	......	....	......
	......	Nadir |‖	......	....	54 0	2 61·3	64·7	0·500	......	......	......	....	......	......	....	......
	2022	(c)	......	6 9 13	279 55	5 2·4	13·2	0·200	29·24	......	41·7	....	......	6	+45 57 3·5	− 1·8
Jan. 17	......	Nadir ‖|	......	7 20 0	54 0	2 51·2	54·0	0·500	29·65	39·2	33·9	....	......	......	....	......
	......	Nadir |‖	......	....	54 0	2 61·7	64·0	0·500	......	......	......	....	......	......	....	......
Jan. 24	......	Nadir ‖|	......	7 10 0	54 0	2 51·2	54·1	0·500	28·80	39·7	40·0	12, S.	0	......	....	......
	......	Nadir |‖	......	....	54 0	2 61·5	65·3	0·500	......	......	......	....	......	......	....	......
	2463	....	6·0	7 19 52	262 5	5 5·9	16·8	0·500	28·80	......	40·0	....	......	6	+28 7 14·8	− 4·7
	2488	....	......	7 26 17	243 25	6 12·6	27·1	0·760	28·80	......	39·9	....	......	7	+ 9 28 29·3	− 3·3
	2522	α Canis Minoris......	......	7 31 51	284 20	4 30·4	50·0	0·500	28·80	......	39·8	....	......	8	+50 21 49·9	− 7·4
	2683	....	......	7 56 32	270 40	5 50·6	62·6	0·553	28·83	......	39·8	....	......	7	+36 43 2·1	− 7·9
	2737	....	......	8 3 0	274 55	2 22·9	35·2	0·627	28·85	......	39·8	....	......	5	+40 54 36·9	− 8·4
	2867	....	......	8 24 55	279 25	2 38·2	47·7	0·253	28·85	......	39·8	20, S.	......	7	+45 21 40·7	− 9·6
	2971	ι Hydræ..............	......	8 39 14	283 0	3 52·7	64·4	0·529	28·88	......	38·8	....	......	7	+49 1 4·4	−10·1
	3013	....	......	8 44 53	284 5	2 52·0	63·4	0·408	28·88	......	38·8	....	......	6	+50 5 0·0	−10·4
	3053	....	......	8 50 2	280 0	4 22·3	33·5	0·530	28·88	......	38·8	....	......	8	+46 1 33·6	−10·8
	3083	....	......	8 55 22	238 35	3 2·5	12·6	0·700	28·90	......	38·8	....	......	6	+ 4 35 15·4	−11·6
	3133	....	......	9 4 46	285 30	3 22·9	33·1	0·428	28·90	......	38·8	....	......	7	+51 30 31·1	−11·0
	......	Nadir ‖|	......	9 40 0	54 0	2 51·1	54·6	0·500	28·93	40·2	40·0	....	......	......	....	......
	......	Nadir |‖	......	....	54 0	2 60·9	64·5	0·500	......	......	......	....	......	......	....	......
Jan. 28	......	Nadir ‖|	......	7 24 0	54 0	2 51·4	55·2	0·500	29·13	43·3	46·4	10, S.W.	1	......	....	......
	......	Nadir |‖	......	....	54 0	2 61·2	65·1	0·500	......	......	......	....	......	......	....	......
	2586	....	7·0	7 41 11	261 25	2 18·6	29·0	0·600	29·13	......	46·3	....	......	8	+27 24 33·3	− 6·1
	2737	....	......	8 3 1	274 55	2 24·4	36·8	0·500	29·13	......	46·2	....	......	6	+40 54 35·5	− 8·6
	2971	ι Hydræ..............	......	8 39 15	283 0	4 0·0	11·4	0·313	29·13	......	46·3	35, S.W.	......	5	+49 1 6·0	−10·6
	3013	....	......	8 44 53	284 5	2 49·6	62·4	0·500	29·13	......	46·3	....	......	7	+50 5 1·4	−10·8
	3336	....	......	9 36 40	282 35	3 45·4	58·8	0·340	29·13	......	46·3	....	......	6	+48 35 53·2	−12·9
	3375	....	......	9 45 10	254 20	2 9·5	21·3	0·633	29·13	......	46·3	....	......	6	+20 19 22·8	−15·2
	3427	....	......	9 55 43	256 35	6 20·4	30·8	0·552	29·12	......	46·3	....	......	4	+22 38 30·7	−15·8
	......	Nadir ‖|	......	10 0 0	54 0	2 48·0	53·0	0·500	29·10	45·8	46·2	....	......	......	....	......
	......	Nadir |‖	......	....	54 0	2 59·8	63·8	0·500	......	......	......	....	......	......	....	......
Jan. 29	......	Nadir ‖|	......	6 50 0	54 0	2 50·4	54·1	0·500	29·05	43·4	43·0	3, W.	0	......	....	......
	......	Nadir |‖	......	....	54 0	2 60·9	65·7	0·500	......	......	......	....	......	......	....	......
	2334	....	......	7 1 10	239 55	4 28·4	39·2	0·500	29·05	......	43·0	....	......	5	+ 5 56 36·9	+ 0·5
	2410	δ Geminorum..........	......	7 11 40	267 45	0 41·4	51·6	0·500	29·05	......	43·0	....	......	6	+33 42 50·7	− 4·7
	2463	....	......	7 19 53	262 5	5 5·6	16·8	0·500	29·05	......	43·0	....	......	......	+28 7 15·1	− 4·5
	2488	....	......	7 26 17	243 30	1 11·8	24·2	0·761	29·05	......	43·0	....	......	8	+ 9 28 28·2	− 2·5
	2522	α Canis Minoris......	......	7 31 52	284 20	4 36·9	47·9	0·621	29·05	......	43·0	....	......	7	+50 21 51·4	− 7·9
	2586	....	......	7 41 12	261 25	2 22·2	32·6	0·500	29·05	......	43·0	....	......	6	+27 24 31·6	− 6·0

(a) Wind increasing to a tempest. (b) Frequent flashes of lightning and one peal of thunder. (c) Large halo round the Moon.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1862.
1862.				h m s	° ′	r ″	″	revs.	inches	°	°				° ′ ″	″
Jan. 29	......	Nadir	......	9 48 0	54 0	2 49·4	52·2	0·500	29·05	43·7	43·9	....	......	......	....	......
	......	Nadir	......	....	54 0	2 60·6	64·2	0·500	......	......	......	....	......	......	....	......
Feb. 6	......	Nadir	......	8 10 0	54 0	2 50·0	53·8	0·500	29·91	43·0	33·0	6, E.	5	......	....	......
	......	Nadir	......	....	54 0	2 60·3	64·9	0·500	......	......	......	....	......	......	....	......
	2971	(a) ε Hydræ	......	8 39 13	283 0	3 51·7	62·3	0·500	29·91	......	33·0	....	......	4	+49 1 2·5	−11·4
	3013	....	......	8 44 52	284 5	2 51·6	61·6	0·263	29·91	......	33·0	....	......	4	+50 4 55·5	−11·7
	3053	....	......	8 50 0	280 0	4 18·7	28·1	0·590	29·91	......	33·0	....	......	4	+46 1 31·3	−11·8
	3103	(b)	......	8 58 15	272 15	4 48·1	59·1	0·498	29·91	......	33·0	....	......	3	+38 16 58·7	−11·9
	3133	....	......	9 4 45	285 30	3 14·0	24·2	0·662	29·91	......	33·0	....	......	5	+51 30 29·1	−8·1
	3331	ε Leonis	......	9 37 46	265 35	0 17·0	26·7	0·690	29·91	......	32·1	....	......	6	+31 32 32·6	−14·0
	3380	....	......	9 46 13	283 20	2 49·1	61·0	0·600	29·91	......	32·0	....	......	6	+49 20 3·4	−14·0
	3438	(c)	9·0	9 57 20	284 15	3 52·7	64·9	0·578	29·91	......	32·0	....	......	3	+50 16 6·4	−14·3
	3529	....	......	10 13 3	282 50	1 52·8	65·8	0·518	29·91	......	32·0	....	......	4	+48 49 5·0	−14·9
	3592	....	......	10 22 23	287 45	2 0·0	11·7	0·500	29·91	......	32·0	....	......	4	+53 44 11·2	−14·7
	......	Nadir	......	10 41 0	54 0	2 49·7	52·4	0·500	29·91	40·0	32·0	....	......	......	....	......
	......	Nadir	......	....	54 0	2 60·9	65·3	0·500	......	......	......	....	......	......	....	......
Feb. 11	......	Nadir	......	9 40 0	54 0	2 50·9	54·7	0·500	29·87	42·0	42·1	3, W.	6	......	....	......
	......	Nadir	......	....	54 0	2 60·9	64·7	0·500	......	......	......	....	......	......	....	......
	3420	....	......	9 53 50	257 45	3 22·0	31·6	0·425	29·87	......	42·2	....	......	6	+23 45 29·0	−11·8
	3484	....	8·0	10 6 1	257 50	3 33·9	42·0	0·571	29·87	......	42·2	....	......	6	+23 50 43·8	−15·7
	3592	....	......	10 22 23	287 45	2 1·5	11·4	0·700	29·87	......	42·2	....	......	7	+53 44 17·0	−15·3
	3662	....	......	10 34 11	278 30	1 56·3	66·3	0·600	29·87	......	42·2	....	......	5	+44 29 8·8	−16·3
	3726	....	......	10 44 54	288 10	3 44·3	53·4	0·432	29·87	......	42·2	....	......	6	+54 10 52·3	−15·7
	......	Nadir	......	10 55 0	54 0	2 50·8	54·0	0·500	29·87	42·0	42·1	....	......	......	....	......
	......	Nadir	......	....	54 0	2 61·4	64·6	0·500	......	......	......	....	......	......	....	......
Feb. 18	......	Nadir	......	9 20 0	54 0	2 51·1	55·1	0·500	28·97	41·8	45·6	10, S E.	5	......	....	......
	......	Nadir	......	....	54 0	2 60·8	66·2	0·500	......	......	......	....	......	......	....	......
	3375	....	......	9 44 8	254 20	2 17·3	28·7	0·350	28·97	......	46·0	....	......	6	+20 19 22·0	−13·4
	3439	....	......	9 57 27	254 15	4 47·8	57·2	0·500	28·97	......	46·0	....	......	5	+20 16 56·1	−14·3
	......	Nadir	......	11 0 0	54 0	2 51·2	54·1	0·500	28·99	42·9	46·0	....	......	......	....	......
	......	Nadir	......	....	54 0	2 61·3	64·9	0·500	......	......	......	....	......	......	....	......
Feb. 20	......	Nadir	......	8 4 0	54 0	2 51·0	54·1	0·500	29·28	45·6	46·0	....	......	......	....	......
	......	Nadir	......	....	54 0	2 60·9	61·9	0·500	......	......	......	....	......	......	....	......
	2882	....	7·0	8 27 40	229 30	5 18·0	28·7	0·550	29·36	......	46·0	....	......	6	− 4 27 32·3	−2·5
	3004	....	8·5	8 44 35	223 55	2 35·7	44·0	0·639	29·36	......	46·0	2, S.W.	0	5	−10 5 14·1	−3·3
	3053	....	......	8 50 1	280 0	4 24·5	33·9	0·500	29·36	......	46·0	....	......	7	+46 1 31·4	−12·4
	3083	....	......	8 55 20	238 35	2 57·7	69·2	0·637	29·36	......	46·0	....	......	6	+ 4 36 9·8	−6·8
	3157	....	......	9 9 40	229 35	3 50·8	59·9	0·546	29·36	......	45·8	....	......	6	− 4 24 0·6	−6·9
	3242	θ Ursæ Majoris	......	9 23 22	237 40	2 1·5	13·5	0·658	29·36	......	45·8	....	......	7	+ 3 39 14·2	−9·6
	3326	....	......	9 36 46	226 5	2 14·7	24·1	0·700	29·36	......	45·5	....	......	8	− 7 55 30·3	−9·2
	3375	....	......	9 45 7	254 20	2 9·3	21·0	0·600	29·36	......	45·3	....	......	8	+20 19 21·5	−13·1
	3418	....	......	9 53 32	280 20	2 36·4	47·2	0·500	29·39	......	45·2	....	......	5	+46 19 46·7	−15·3
	3484	....	7·5	10 6 0	257 50	3 34·3	44·1	0·500	29·40	......	45·1	....	......	5	+23 50 43·2	−14·9
	3529	....	......	10 13 7	282 50	1 51·2	63·4	0·741	29·40	......	45·0	....	......	4	+48 49 9·0	−16·0
	3592	....	......	10 22 22	287 45	2 5·3	16·1	0·594	29·40	......	45·0	....	......	6	+53 44 18·6	−16·2
	3662	....	......	10 34 10	278 30	1 58·7	68·5	0·538	29·40	......	45·0	....	......	5	+44 29 9·4	−15·8

(a) Bad definition. (b) Very faint. (c) Faint.

Date.	Star or other Object Observed. No. in British Assoc. Catalogue.	Name or Description.	Magnitude observed	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Internal Thermometer, Fahr.	External Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1. 1862.
1862.				h. m. s.	° ′	′ ″	″	revols.	inches	°	°				° ′ ″	″
Feb. 20	3726	......	......	10 44 55	288 10	3 45·4	55·1	0·500	29·40	......	45·0	......	......	8	+54 10 55·7	−16·7
	3780	......	......	10 56 15	281 35	4 48·8	60·6	0·700	29·40	......	45·0	......	......	7	+47 37 5·6	−17·3
	3869	......	......	11 15 0	271 45	3 11·7	22·9	0·333	29·40	......	44·9	......	......	6	+37 45 17·3	−18·5
	......	Nadir ‖ |	......	11 26 0	54 0	2 51·6	54·9	0·500	29·40	44·9	44·9	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 60·3	64·3	0·500	......	......	......	......	......	......	......	......
Feb. 28	......	Nadir ‖ |	......	8 28 0	54 0	2 50·8	54·8	0·500	29·96	41·9	39·0	6, N.E.	1	......	......	......
	......	Nadir | ‖	......	......	54 0	2 60·6	64·0	0·500	......	......	......	......	......	......	......	......
Mar. 3	......	Nadir ‖ |	......	9 0 0	54 0	2 51·8	53·8	0·500	29·19	36·4	28·0	2, N.	0	......	......	......
	......	Nadir | ‖	......	......	54 0	2 59·6	61·8	0·500	......	......	......	......	......	......	......	......
	3331	ε Leonis	......	9 37 45	265 30	5 22·7	33·1	0·500	29·19	......	28·0	......	......	7	+31 32 32·0	−12·9
	3380	......	......	9 46 13	283 20	2 59·3	60·1	0·390	29·19	......	28·0	......	......	6	+49 20 6·8	−15·6
	3418	......	9·0	9 53 26	280 20	2 37·6	47·8	0·500	29·19	......	28·0	......	......	4	+46 19 47·8	−15·6
	3438	......	7·0	9 57 21	284 15	3 57·7	68·4	0·500	29·19	......	28·0	......	......	6	+50 16 9·0	−16·1
	3592	......	......	10 22 22	287 45	2 5·4	15·1	0·500	29·19	......	27·1	......	......	6	+53 44 15·9	−17·0
	3662	......	9·0	10 33 50	278 30	1 58·4	68·0	0·500	29·19	......	26·4	......	......	4	+44 29 8·5	−17·0
	3726	......	7·0	10 44 52	288 10	3 46·3	55·7	0·388	29·19	......	26·4	......	......	5	+54 10 54·1	−17·6
	3834	δ Leonis	......	11 6 31	268 40	2 59·8	69·4	0·694	29·19	......	26·3	......	......	7	+34 40 15·1	−18·2
	3869	......	......	11 15 1	271 45	3 8·8	18·6	0·417	29·19	......	26·3	......	......	6	+37 45 17·5	−18·3
	......	Nadir ‖ |	......	12 7 0	54 0	2 49·9	52·7	0·500	29·19	30·7	26·2	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 61·0	64·1	0·500	......	......	......	......	......	......	......	......
Mar. 4	......	Nadir ‖ |	......	10 55 0	54 0	2 49·7	52·3	0·500	29·37	37·1	34·1	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 62·0	64·0	0·500	......	......	......	......	......	......	......	......
	4231	......	......	12 26 25	264 45	2 22·9	31·9	0·410	29·37	......	26·5	......	......	6	+30 44 29·6	−20·9
	......	Nadir ‖ |	......	12 40 0	54 0	2 49·4	52·0	0·500	29·37	26·2	26·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 62·2	66·1	0·500	......	......	......	......	......	......	......	......
Mar. 10	......	Nadir ‖ |	......	9 41 0	54 0	2 52·4	54·1	0·500	29·62	45·1	42·0	0	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 60·6	63·8	0·500	......	......	......	......	......	......	......	......
	3592	......	......	10 22 23	287 45	2 8·8	19·4	0·500	29·62	......	42·0	......	......	6	+53 44 19·3	−17·4
	4005	......	......	......	276 54	1 51·8	62·2	0·500	29·62	......	41·7	......	......	4	+42 53 1·6	−19·0
Mar. 11	......	Nadir ‖ |	......	9 45 0	54 0	2 51·3	54·7	0·500	29·25	45·0	48·1	3, W	5	......	......	......
	......	Nadir | ‖	......	......	54 0	2 60·4	63·8	0·500	......	......	......	......	......	......	......	......
	3662	......	......	10 34 11	278 30	1 55·9	67·5	0·672	29·25	......	47·5	......	......	6	+44 29 11·3	−17·0
	3726	......	......	10 44 55	288 10	3 44·8	55·4	0·634	29·25	......	47·4	......	......	5	+54 10 59·5	−18·0
	......	Nadir ‖ |	......	12 0 0	54 0	2 51·5	57·1	0·500	29·24	46·5	47·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 60·1	63·6	0·500	......	......	......	......	......	......	......	......
Mar. 19	......	(a) Nadir ‖ |	......	12 0 0	54 0	2 50·0	53·0	0·500	29·50	40·0	34·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 60·7	64·9	0·500	......	......	......	......	......	......	......	......
Mar. 20	......	Nadir ‖ |	......	9 24 0	54 0	2 50·8	54·4	0·500	29·46	39·0	34·0	5, N	0	......	......	......
	......	Nadir | ‖	......	......	54 0	2 59·8	63·7	0·500	......	......	......	......	......	......	......	......
	3331	ε Leonis	......	9 37 48	265 30	5 18·5	30·0	0·640	29·46	......	34·0	......	......	7	+31 32 32·0	−11·7
	3418	......	......	9 53 29	280 20	2 40·1	50·2	0·438	29·46	......	34·0	......	......	6	+46 19 48·8	−15·6

(a) Sky getting cloudy.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist. Jan. 1, 1862.
1862.				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
Mar. 20	......	Nadir	......	11 19 0	54 0	2 50·9	54·6	0·500	......	......	......	......	......	......	......	......
	......	Nadir	......	....	54 0	2 59·7	64·0	0·500	......	......	......	......	......	......	......	......
Mar. 31	......	(a) Nadir	......	11 50 0	54 0	2 51·3	54·9	0·500	29·34	40·6	40·0	2, N.E.	9	......	......	......
	......	Nadir	......	....	54 0	2 59·8	63·1	0·500	......	......	......	......	......	......	......	......
April 1	......	Nadir	......	12 34 0	54 0	2 50·4	53·1	0·500	29·05	43·7	50·3	20, S.W.	5	......	......	......
	......	Nadir	......	....	54 0	2 60·3	61·1	0·500	......	......	......	......	......	......	......	......
	4364	......	......	12 54 41	267 55	3 54·4	65·8	0·871	29·06	......	50·2	......	......	5	+33 56 15·8	−18·9
	4421	β Comae	......	13 5 17	261 20	5 16·6	28·1	0·667	29·05	......	50·1	......	......	4	+27 22 31·6	−18·8
	......	Nadir	......	14 0 0	54 0	2 49·8	52·6	0·500	29·03	46·0	50·4	......	......	......	......	......
	......	Nadir	......	....	54 0	2 60·4	63·0	0·500	......	......	......	......	......	......	......	......
April 4	......	Nadir	......	11 0 0	54 0	2 49·1	53·8	0·500	29·75	45·2	41·0	......	......	......	......	......
	......	Nadir	......	....	54 0	2 60·3	66·1	0·500	......	......	......	......	......	......	......	......
	4678	......	......	13 56 17	257 35	5 29·3	39·3	0·680	29·72	......	40·3	......	......	5	+23 37 43·0	−19·4
	4729	α Bootis	......	14 9 12	270 0	5 48·4	57·6	0·294	29·72	......	40·2	......	......	6	+36 2 51·8	−19·8
	4797	......	......	14 22 23	253 10	1 11·9	21·7	0·724	29·72	......	40·2	......	......	7	+19 8 26·5	−19·9
	......	Nadir	......	14 30 0	54 0	2 50·9	54·1	0·500	29·72	43·4	40·0	......	......	......	......	......
	......	Nadir	......	....	54 0	2 60·0	63·7	0·500	......	......	......	......	......	......	......	......
April 11	......	Nadir	......	11 50 0	54 0	2 50·7	54·3	0·500	30·11	41·5	31·4	......	......	......	......	......
	......	Nadir	......	....	54 0	2 60·9	65·7	0·500	......	......	......	......	......	......	......	......
	4199	......	......	12 20 32	263 15	4 13·7	24·7	0·755	30·09	......	31·1	......	......	6	+29 16 30·4	−16·1
	4231	......	......	12 26 28	264 45	2 20·4	30·2	0·333	30·09	......	31·1	......	......	7	+30 44 24·5	−16·5
	4364	......	......	12 54 39	267 55	4 0·8	11·6	0·473	30·09	......	31·0	......	......	7	+33 56 9·8	−17·6
	4421	β Comae	......	13 5 14	261 20	5 13·4	25·6	0·668	30·09	......	30·6	......	......	8	+27 22 28·0	−17·2
	4457	......	......	13 12 32	254 5	3 51·1	62·2	0·669	30·09	......	30·4	......	......	7	+20 6 5·3	−16·6
	4503	......	......	13 22 4	285 20	4 9·9	22·7	0·158	30·09	......	30·3	......	......	5	+31 21 12·0	−18·9
	4550	(b)	......	13 30 56	236 30	6 48·7	60·3	0·587	30·09	......	30·1	......	......	6	+ 2 33 58·9	−15·5
	4575	......	......	13 37 3	266 30	6 2·1	14·7	0·500	30·09	......	30·0	......	......	7	+32 33 12·1	−18·2
	4610	......	......	13 42 14	258 5	2 25·1	36·3	0·500	30·09	......	30·0	7, N.	0	6	+24 4 34·2	−17·8
	4652	......	......	13 49 52	257 15	2 35·9	46·4	0·655	30·09	......	30·0	......	......	7	+23 14 48·9	−17·9
	4678	......	......	13 56 14	257 40	0 30·1	40·9	0·500	30·09	......	30·0	......	......	6	+23 37 38·7	−18·1
	4694	......	......	14 0 7	258 25	4 23·6	35·0	0·500	30·09	......	30·0	......	......	7	+24 26 33·2	−18·1
	4723	(c)	......	14 7 36	260 10	4 50·8	63·0	0·582	30·09	......	30·0	......	......	8	+26 12 3·4	−18·3
	4797	......	......	14 22 22	253 10	1 11·7	22·5	0·644	30·09	......	30·0	15, N.	......	6	+19 8 23·9	−18·4
	4820	......	......	14 26 7	256 50	1 35·2	46·6	0·592	30·09	......	30·0	......	......	5	+22 48 46·7	−18·6
	4863	......	......	14 36 [illegible]	252 35	4 26·1	39·0	0·488	30·09	......	30·0	......	......	6	+18 36 35·9	−18·7
	......	Nadir	......	14 45 0	54 [illegible]	2 52·4	54·8	0·500	30·09	35·0	30·0	......	......	......	......	......
	......	Nadir	......	....	54 0	2 63·6	65·3	0·500	......	......	......	......	......	......	......	......
April 16	......	Nadir	......	12 3 0	54 0	2 50·4	54·0	0·500	29·31	43·8	41·0	6, N.W.	0	......	......	......
	......	Nadir	......	....	54 0	2 60·8	65·4	0·500	......	......	......	......	......	......	......	......
	4199	......	......	12 20 33	263 15	1 23·9	34·0	0·410	29·31	......	41·0	......	......	6	+29 16 30·6	−15·3
	4231	......	......	12 26 29	261 45	2 14·8	25·0	0·647	29·31	......	41·0	......	......	6	+30 44 27·8	−15·7
	4364	......	......	12 54 39	267 55	4 1·7	11·5	0·573	29·31	......	40·4	......	......	5	+33 56 12·9	−16·9
	4421	β Comae	......	13 5 15	261 20	5 19·2	29·0	0·580	29·31	......	40·0	......	......	7	+27 22 29·6	−16·2
	4457	......	......	13 12 32	254 5	3 50·7	61·1	0·694	29·31	......	40·0	......	......	8	+20 6 4·5	−15·4
	4526	......	......	13 26 4	264 50	6 3·4	13·7	0·564	29·31	......	40·0	......	......	6	+30 53 14·0	−17·1
	4550	......	......	13 30 57	236 35	1 51·1	62·0	0·500	29·31	......	40·0	......	......	7	+ 2 33 58·6	−14·1

(a) Clouds increasing.

(b) $\left\{ a_a{}^{a}b \right\}$ b observed.

(c) Wind increasing.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1862.
1862.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
April 16	4575	....	......	13 37 3	266 35	1 2·6	14·0	0·500	29·31	......	40·0	....	......	5	+32 33 12·8	−17·4
	4606	....	7·0	13 41 55	257 50	4 39·8	50·4	0·560	29·31	......	40·0	....	......	6	+23 51 50·8	−16·8
	4652	....	......	13 49 53	257 15	2 30·9	40·3	0·890	29·31	......	40·0	....	......	5	+23 14 49·8	−16·9
	4934	....	......	14 50 36	248 15	3 40·8	50·4	0·439	29·31	......	40·0	....	......	......	+14 15 46·9	−17·6
	4965	....	......	14 58 3	244 45	4 13·0	22·0	0·621	29·31	......	40·0	15, W.	......	5	+10 46 23·8	−17·7
	......	Nadir ‖ |	......	15 4 0	54 0	2 51·5	55·1	0·500	29·31	41·0	40·0	....	......	......	....	......
	......	Nadir | ‖	......	....	54 0	2 61·9	64·4	0·500	......	......	......	....	......	......	....	......
April 17	......	Nadir ‖ |	......	11 48 0	54 0	2 51·2	54·9	0·500	29·29	43·9	42·7	10, W.	0	......	....	......
	......	Nadir | ‖	......	....	54 0	2 60·2	65·0	0·500	......	......	......	....	......	......	....	......
	4552	(a)	......	13 31 9	252 55	5 10·7	21·7	0·804	29·29	......	42·0	....	......	6	+18 57 27·4	−15·8
	4575	....	......	13 37 2	266 35	1 0·7	12·2	0·604	29·29	......	42·0	....	......	7	+32 33 13·1	−17·2
	4627	(b)	......	13 44 48	254 30	2 40·0	50·4	0·650	29·29	......	42·0	....	......	7	+20 29 52·7	−16·3
	4676	....	......	13 55 4	257 40	6 6·0	17·1	0·500	29·29	......	42·0	....	......	8	+23 43 14·9	−15·8
	4694	....	......	14 0 8	258 25	4 21·0	30·8	0·580	29·29	......	42·0	....	......	7	+21 26 32·3	−16·9
	4729	α Bootis	......	14 9 11	270 5	0 41·5	50·7	0·500	29·29	......	42·0	....	......	6	+36 2 50·1	−18·1
	......	Nadir ‖ |	......	15 0 0	54 0	2 51·0	55·0	0·500	29·29	42·5	42·0	....	......	......	....	......
	......	Nadir | ‖	......	....	54 0	2 60·5	65·1	0·500	......	......	......	....	......	......	....	......
April 22	......	Nadir ‖ |	......	13 0 0	54 0	2 51·6	54·0	0·500	28·97	49·0	47·4	7, W.	5	......	....	......
	......	Nadir | ‖	......	....	54 0	2 61·3	64·8	0·500	......	......	......	....	......	......	....	......
	4678	....	......	13 56 14	257 35	5 24·3	34·0	0·740	28·96	......	47·6	....	......	6	+23 37 39·2	−15·8
	4723	....	......	14 7 33	260 10	4 54·7	65·0	0·471	28·96	......	47·4	....	......	5	+26 12 3·3	−16·1
	4876	(c) ε Bootis	......	14 38 44	262 15	5 28·4	39·4	0·633	28·96	......	47·2	....	......	4	+28 17 41·1	−16·5
	4934	....	......	14 50 34	248 15	3 34·1	44·5	0·710	28·96	......	47·0	....	......	6	+14 15 48·3	−16·1
	4965	....	......	14 58 2	244 45	4 13·0	24·8	0·470	28·96	......	47·0	....	......	5	+10 46 21·2	−16·1
	5000	....	......	15 4 51	256 20	3 54·8	65·1	0·560	28·96	......	47·0	....	......	6	+22 21 5·4	−16·5
	5071	....	6·0	15 15 47	237 30	3 0·6	11·4	0·595	28·96	......	47·0	....	......	6	+ 3 30 11·0	−16·2
	......	Nadir ‖ |	......	15 39 0	54 0	2 51·4	54·3	0·500	28·96	47·2	47·0	....	......	......	....	......
	......	Nadir | ‖	......	....	54 0	2 60·9	65·3	0·500	......	......	......	....	......	......	....	......
April 23	......	Nadir ‖ |	......	12 26 0	54 0	2 50·1	54·9	0·500	29·37	50·0	47·8	....	......	......	....	......
	......	Nadir | ‖	......	....	54 0	2 60·5	65·3	0·500	......	......	......	....	......	......	....	......
April 28	......	Nadir ‖ |	......	12 27 0	54 0	2 50·8	56·1	0·500	29·94	50·3	49·3	2, W.	0	......	....	......
	......	Nadir | ‖	......	....	54 0	2 59·3	63·3	0·500	......	......	......	....	......	......	....	......
	4364	....	7·0	12 54 36	267 55	3 54·8	65·2	0·701	29·94	......	49·2	....	......	6	+33 56 10·2	−15·1
	4421	β Comæ	......	13 5 12	261 25	0 16·4	28·8	0·484	29·94	......	49·2	....	......	7	+27 22 25·8	−14·1
	4457	....	......	13 12 30	254 5	3 50·3	61·1	0·563	29·94	......	49·1	....	......	8	+20 6 1·3	−13·0
	4503	....	......	13 22 1	285 20	4 3·5	16·3	0·500	29·94	......	50·0	....	......	7	+51 21 15·5	−17·8
	4575	....	......	13 37 0	266 35	0 56·0	69·7	0·639	29·94	......	50·0	....	......	6	+32 33 10·8	−15·3
	4627	....	......	13 44 44	254 30	2 35·2	46·0	0·680	29·94	......	50·0	....	......	6	+20 29 49·3	−13·8
	4738	....	......	14 10 31	249 35	1 55·0	68·6	0·780	29·94	......	50·0	....	......	5	+15 34 12·7	−13·8
	4797	....	......	14 22 19	253 10	1 8·5	20·9	0·604	29·94	......	50·0	....	......	7	+19 8 20·8	−14·4
	4820	....	......	14 28 6	256 50	1 37·4	49·8	0·460	29·94	......	49·0	....	......	6	+22 48 46·2	−14·8
	4863	....	......	14 36 49	252 35	4 17·1	29·2	0·674	29·94	......	49·0	....	......	5	+18 36 31·8	−14·6
	4934	....	......	14 50 34	248 15	3 35·3	47·8	0·500	29·95	......	48·6	....	......	6	+14 15 45·0	−14·5
	4965	....	......	14 58 0	244 45	4 7·6	19·2	0·594	29·95	......	48·5	....	......	7	+10 46 19·4	−14·5
	4992	....	......	15 2 6	234 55	0 9·7	22·5	0·500	29·95	......	48·5	....	......	9	+ 0 52 18·1	−13·9
	5071	....	......	15 15 46	237 30	2 51·7	63·7	0·785	29·95	......	48·2	....	......	8	+ 3 30 8·2	−14·4

(a) Occasional showers. (b) $\left\{ {}^{*a}_{*b} \right\}$ b observed. (c) Not well defined.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1862.
1862.				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
April 28	5284	γ Serpentis	......	15 49 50	273 50	2 44.0	56.2	0.621	29.95	......	47.9	......	......	8	+39 49 56.2	−14.5
	......	Nadir	......	15 55 0	54 0	2 50.5	54.1	0.500	29.95	49.9	47.9	......	......	......	......	......
	......	Nadir	......	....	54 0	2 60.7	64.4	0.500	......	......	......	......	......	......	......	......
April 29	......	Nadir	......	12 38 0	54 0	2 49.0	55.0	0.500	29.93	53.0	54.0	5. S.	4	......	......	......
	......	Nadir	......	....	54 0	2 59.8	65.8	0.500	......	......	......	......	......	......	......	......
	4550	......	......	13 30 52	236 35	1 43.2	53.4	0.669	29.93	......	55.0	......	......	7	+ 2 33 55.6	−10.5
	4575	......	......	13 37 0	266 35	0 59.0	70.0	0.590	29.93	......	55.0	......	......	8	+32 33 11.0	−15.2
	4610	......	......	13 42 11	258 5	2 20.8	30.3	0.650	29.93	......	55.0	......	......	7	+24 4 33.8	−14.0
	4652	......	......	13 49 48	257 15	2 40.2	48.3	0.414	29.93	......	55.0	......	......	6	+23 14 45.8	−14.1
	4736	......	......	14 10 33	249 35	1 58.8	70.1	0.630	29.93	......	54.3	......	......	6	+15 34 11.4	−13.6
	4820	......	......	14 28 5	256 50	1 35.3	46.0	0.500	29.93	......	54.4	......	......	7	+22 48 44.5	−14.6
	4942	......	......	14 53 54	249 45	3 28.1	40.3	0.610	29.92	......	53.0	......	......	6	+15 45 40.9	−14.4
	4992	......	......	15 2 4	234 55	0 7.3	18.0	0.573	29.92	......	53.0	......	......	7	+ 0 52 16.8	−13.6
	5071	......	......	15 15 45	237 30	2 55.0	67.1	0.700	29.92	......	53.0	......	......	9	+ 3 30 9.3	−14.1
	......	Nadir	......	15 55 0	54 0	2 49.6	55.1	0.500	29.92	53.5	53.0	......	......	......	......	......
	......	Nadir	......	....	54 0	2 60.7	64.3	0.500	......	......	......	......	......	......	......	......
April 30	......	Nadir	......	12 24 0	54 0	2 48.7	53.7	0.500	29.75	56.3	55.0	......	1	......	......	......
	......	Nadir	......	....	54 0	2 59.7	64.9	0.500	......	......	......	......	......	......	......	......
	4364	......	......	12 54 34	267 55	3 57.3	68.3	0.525	29.75	......	51.5	......	......	5	+33 56 8.7	−14.7
	4457	......	......	13 12 28	254 5	3 49.9	61.8	0.552	29.75	......	51.5	......	......	6	+20 6 1.6	−12.3
	4552	......	......	13 31 4	252 55	5 10.0	24.0	0.608	29.75	......	51.0	......	......	7	+18 57 23.6	−12.8
	4575	......	......	13 36 59	266 35	1 0.9	14.1	0.121	29.75	......	51.0	......	......	6	+32 33 9.9	−15.0
	4652	......	......	13 49 47	257 15	2 34.6	44.9	0.568	29.75	......	51.0	......	......	5	+23 14 46.0	−13.8
	4678	(a)	......	13 56 10	257 35	5 27.4	39.7	0.500	29.75	......	51.0	......	......	3	+23 37 37.6	−14.0
	4756	......	......	14 13 25	237 15	5 6.7	20.1	0.636	29.73	......	51.0	......	......	5	+ 3 17 19.8	−11.9
	4820	......	......	14 28 4	256 50	1 34.9	47.1	0.500	29.75	......	51.0	......	......	7	+22 48 45.2	−14.4
	4934	......	......	14 50 32	248 15	3 35.0	46.9	0.500	29.75	......	53.0	......	......	6	+14 15 44.9	−14.0
	4992	......	......	15 2 4	234 55	0 2.3	17.0	0.690	29.75	......	53.0	......	......	6	+ 0 52 17.4	−13.3
	5071	......	......	15 15 45	237 30	2 56.5	68.6	0.636	29.75	......	53.0	......	......	7	+ 3 30 9.5	−13.8
	5284	γ Serpentis	......	15 49 50	273 50	2 44.3	58.0	0.600	29.75	......	53.0	......	......	8	+39 49 59.4	−14.2
	......	Nadir	......	15 58 0	54 0	2 50.3	53.9	0.500	29.75	55.0	53.0	......	......	......	......	......
	......	Nadir	......	....	54 0	2 59.7	63.5	0.500	......	......	......	......	......	......	......	......
May 2	......	Nadir	......	13 28 0	54 0	2 49.9	54.9	0.500	30.00	53.1	47.0	6, W.	0	......	......	......
	......	Nadir	......	....	54 0	2 59.0	64.0	0.600	......	......	......	......	......	......	......	......
	4628	(b)	6.0	13 44 42	254 35	2 37.8	46.0	0.631	30.00	......	46.4	......	......	......	+20 34 49.7	−12.9
	4676	......	7.0	13 54 59	257 45	1 0.7	9.9	0.576	30.00	......	46.2	......	......	6	+23 43 11.5	−13.6
	4694	......	......	14 0 3	258 25	4 15.2	25.1	0.657	30.00	......	46.2	......	......	7	+24 26 29.0	−13.7
	4723	......	......	14 7 31	260 10	4 51.0	60.5	0.510	30.00	......	46.2	......	......	......	+26 12 0.9	−14.0
	4756	......	......	14 13 24	237 15	5 8.4	18.4	0.633	30.00	......	46.1	......	......	8	+ 3 17 19.7	−11.4
	4820	......	......	14 29 3	256 50	1 31.7	40.9	0.641	30.00	......	46.0	......	......	7	+22 48 44.3	−13.9
	4863	......	......	14 36 48	252 35	4 23.3	32.3	0.500	30.00	......	46.0	......	......	6	+18 36 32.0	−13.6
	4992	......	......	15 2 3	234 50	5 1.7	11.3	0.760	30.00	......	46.0	......	......	7	+ 0 52 16.2	−12.7
	5071	......	......	15 15 45	237 30	2 57.0	69.0	0.585	30.00	......	45.4	......	......	6	+ 3 30 5.3	−13.2
	5284	γ Serpentis	......	15 49 49	273 50	2 45.5	57.2	0.500	30.00	......	45.0	......	......	8	+39 49 56.6	−13.6
	5415	......	6.0	16 6 1	231 40	2 36.2	47.0	0.580	30.00	......	45.0	......	......	6	− 2 20 13.3	−14.0
	......	Nadir	......	16 12 0	54 0	2 49.6	52.8	0.500	30.00	48.4	44.9	......	......	......	......	......
	......	Nadir	......	....	54 0	2 61.4	64.2	0.500	......	......	......	......	......	......	......	......

(a) Very faint.

(b) $\left\{ *_a \quad *^b \right\}$ b observed.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour) and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1862.
1862.				h. m. s.	° ′	′ ″	″	revols.	inches	°	°				° ′ ″	″
May 8	......	Nadir ‖ |	......	13 51 0	54 0	2 50·7	55·5	0·500	29·38	52·2	50·4	8, W.	0	......	......	......
	......	Nadir | ‖	......	......	54 0	2 59·8	63·6	0·500	......	......	......	......	......	......	......	......
	4729	α Bootis	......	14 9 5	270 5	0 39·0	49·0	0·500	29·38	......	50·1	......	......	7	+36 2 48·8	−14·6
	4797	......	5·5	14 22 16	253 10	0 59·3	70·3	0·872	29·38	......	50·0	......	......	6	+19 8 18·8	−12·0
	4876	ι Bootis	......	14 38 40	262 20	0 29·4	41·0	0·500	29·38	......	50·0	......	......	8	+28 17 39·6	−13·1
	4934	......	......	14 50 31	218 15	3 33·6	43·8	0·537	29·38	......	50·0	......	......	7	+14 15 43·4	−11·9
	5000	......	7·5	15 4 46	256 20	3 47·7	57·7	0·641	29·38	......	50·0	......	......	6	+22 21 0·9	−12·7
	5071	......	......	15 15 44	237 30	2 56·2	67·4	0·500	29·38	......	50·0	......	......	5	+ 3 30 4·8	−11·4
	5284	γ Serpentis	......	15 49 48	273 50	2 46·6	57·9	0·500	29·38	......	50·0	......	......	7	+39 49 57·5	−12·8
	5415	......	6·0	16 6 2	231 40	2 34·3	44·9	0·565	29·38	......	49·4	......	......	6	− 2 20 15·7	−12·1
	......	Nadir ‖ |	......	16 15 0	54 0	2 50·0	54·2	0·500	29·38	51·3	49·4	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 60·4	63·7	0·500	......	......	......	......	......	......	......	......
May 13	......	Nadir ‖ |	......	13 32 0	54 0	2 50·0	53·9	0·500	29·72	50·2	42·2	5, S.	1	......	......	......
	......	Nadir | ‖	......	......	54 0	2 60·3	64·3	0·500	......	......	......	......	......	......	......	......
	4627	......	......	13 44 40	251 30	2 35·3	45·6	0·500	29·72	......	42·2	......	......	6	+20 29 44·5	−10·5
	4676	(a)	......	13 54 56	257 45	0 57·3	68·7	0·562	29·72	......	42·2	......	......	5	+23 43 8·8	−11·2
	4694	......	......	14 0 0	258 25	4 11·0	22·2	0·670	29·72	......	42·2	......	......	5	+24 26 25·8	−11·4
	4723	......	......	14 7 29	260 10	4 41·7	53·3	0·730	29·72	......	42·6	......	......	5	+26 12 0·3	−11·7
	4736	......	......	14 13 22	237 15	4 59·8	69·9	0·757	29·72	......	42·6	......	......	4	+ 3 17 15·1	− 8·2
	4797	......	......	14 22 16	253 10	1 8·7	19·0	0·470	29·72	......	42·6	......	......	6	+19 8 16·8	−10·7
	......	Nadir ‖ |	......	15 50 0	54 0	2 50·5	54·4	0·500	29·72	47·1	43·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 59·7	63·7	0·500	......	......	......	......	......	......	......	......
May 14	......	Nadir ‖ |	......	13 40 0	54 0	2 49·8	55·4	0·500	29·84	51·7	46·3	1, S.E.	0	......	......	......
	......	Nadir | ‖	......	......	54 0	2 59·2	65·4	0·500	......	......	......	......	......	......	......	......
	4694	......	......	14 0 1	258 25	4 16·7	26·9	0·522	29·84	......	46·2	......	......	6	+24 26 26·9	−11·1
	4797	......	......	14 22 14	253 10	1 4·4	14·6	0·650	29·84	......	46·2	......	......	6	+19 8 17·4	−10·5
	4863	......	......	14 36 45	252 35	4 15·8	27·6	0·608	29·84	......	46·0	......	......	5	+18 36 28·7	−10·6
	4934	......	......	14 50 29	248 15	3 28·7	39·7	0·671	29·84	......	46·0	......	......	6	+14 15 42·7	−10·2
	4965	......	......	14 57 55	244 45	4 3·4	14·9	0·500	29·84	......	46·0	......	......	7	+10 46 12·9	− 9·9
	5000	......	......	15 4 44	256 20	3 44·8	55·0	0·670	29·84	......	46·0	......	......	6	+22 20 58·8	−11·2
	5071	......	......	15 15 42	237 30	2 52·8	63·8	0·673	29·84	......	45·8	......	......	5	+ 3 30 6·1	− 9·5
	5284	γ Serpentis	......	15 49 46	273 50	2 40·4	52·4	0·658	29·84	......	45·8	......	......	8	+39 49 56·0	−11·7
	5415	......	......	16 6 1	231 40	2 33·4	45·4	0·500	29·84	......	45·8	......	......	5	− 2 20 17·7	−10·2
	5452	......	......	16 13 47	268 30	1 40·1	52·4	0·391	29·84	......	45·8	......	......	6	+34 28 47·3	−11·0
	5504	......	......	16 21 29	274 15	4 55·4	68·0	0·500	29·84	......	45·8	......	......	6	+40 17 7·2	−10·7
	5597	......	......	16 34 59	264 50	2 7·4	19·9	0·500	29·84	......	45·8	......	......	5	+30 49 18·3	−10·6
	5647	......	......	16 42 54	276 25	4 6·2	17·6	0·740	29·84	......	45·8	......	......	7	+42 26 24·0	− 9·9
	5716	......	......	16 52 4	274 15	4 43·8	55·1	0·627	29·84	......	47·8	......	......	......	+40 16 58·4	− 9·7
	......	Nadir ‖ |	......	17 0 0	54 0	2 50·8	54·0	0·500	29·84	46·0	47·8	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 59·9	63·4	0·500	......	......	......	......	......	......	......	......
May 20	......	Nadir ‖ |	......	13 30 0	54 0	2 49·4	54·2	0·500	29·21	53·8	50·0	3, S.	1	......	......	......
	......	Nadir | ‖	......	......	54 0	2 60·3	65·4	0·500	......	......	......	......	......	......	......	......
	4678	......	......	13 56 5	257 35	5 21·9	30·9	0·613	29·20	......	49·9	......	......	7	+23 37 33·4	− 9·7
	4694	......	7·5	13 59 57	258 25	4 12·7	23·8	0·595	29·20	......	49·8	......	......	6	+24 26 25·2	− 9·9
	4729	(b) α Bootis	......	14 9 1	270 5	0 34·2	43·8	0·600	29·20	......	49·8	......	......	5	+36 2 46·4	−12·8
	4797	......	......	......	253 10	1 8·7	18·7	0·500	29·20	......	49·8	......	......	5	+19 8 17·3	− 9·1
	4863	(c)	......	14 36 44	252 35	4 13·5	23·9	0·690	29·20	......	49·3	......	......	6	+18 36 27·9	− 9·1

(a) Bad definition. (b) Rather faint. (c) Sky getting cloudy.

Date.	Star or other Object Observed. No. in British Assn. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds.	Est. Value of Obs.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1862.
				h. m. s.	° ′	′ ″	″	revs.	inches	°	°		Max. = 10.	Max. = 10.	° ′ ″	″
1862. May 20	5071	......	......	15 15 40	237 30	2 49·9	60·7	0·641	29·20	......	48·9	......	......	7	+ 3 30 2·0	− 7·7
	5284	γ Serpentis	......	15 49 45	273 50	2 43·0	54·6	0·537	29·20	......	48·3	......	......	8	+39 49 54·8	−10·5
	5452	......	......	16 13 45	268 30	1 36·0	48·0	0·621	29·20	......	47·4	......	......	7	+34 28 49·9	− 9·7
	5527	......	......	16 24 14	269 10	2 40·2	51·0	0·550	29·15	......	47·2	......	......	6	+35 0 51·7	− 9·5
	5597	......	......	16 34 57	264 50	2 7·2	18·6	0·594	29·15	......	47·1	......	......	7	+30 49 20·0	− 9·2
	......	Nadir	......	17 0 0	54 0	2 49·9	54·3	0·500	29·15	51·0	47·1	......	......	......	......	......
	......	Nadir	......	....	54 0	2 60·1	64·1	0·500	......	......	......	......	......	......	......	......
May 21	......	Nadir	......	14 37 0	54 0	2 49·1	55·1	0·500	29·18	52·7	47·0	......	......	......	......	......
	......	Nadir	......	....	54 0	2 59·4	65·2	0·500	......	......	......	......	......	......	......	......
May 26	......	Nadir	......	14 42 0	54 0	2 50·6	55·0	0·500	29·55	52·7	49·4	9, W.	0	......	......	......
	......	Nadir	......	....	54 0	2 60·7	64·1	0·500	......	......	......	......	......	......	......	......
	5284	γ Serpentis	......	15 49 41	273 50	2 35·6	50·3	0·683	29·55	......	49·5	......	......	6	+39 49 54·3	− 3·4
	5415	......	......	16 5 56	231 40	2 28·3	39·0	0·581	29·55	......	49·0	......	......	7	− 2 20 21·6	− 6·3
	5452	......	......	16 13 42	268 30	1 36·8	47·7	0·572	29·55	......	49·0	......	......	6	+34 28 48·6	− 8·4
	5597	......	......	16 34 54	264 50	2 6·0	16·9	0·571	29·55	......	49·0	......	......	7	+30 49 17·6	− 7·8
	5716	......	......	16 52 0	274 15	4 44·5	56·3	0·614	29·55	......	48·3	......	......	5	+40 16 56·6	− 7·2
	......	Nadir	......	17 0 0	54 0	2 48·8	53·2	0·500	29·55	50·6	48·2	......	......	......	......	......
	......	Nadir	......	....	54 0	2 60·9	64·8	0·500	......	......	......	......	......	......	......	......
May 27	......	Nadir	......	16 57 0	54 0	2 50·0	55·0	0·500	29·51	51·8	45·4	8, W.	0	......	......	......
	......	Nadir	......	....	54 0	2 59·9	64·9	0·500	......	......	......	......	......	......	......	......
	5821	α Herculis	2·0	17 7 59	275 25	1 27·3	37·6	0·557	29·51	......	45·3	......	......	6	+41 23 38·6	− 6·3
	5863	ω Herculis	......	17 15 6	257 20	1 2·6	11·6	0·639	29·51	......	45·0	......	......	7	+23 18 14·7	− 6·7
	6035	......	......	17 43 15	280 5	0 35·4	45·0	0·748	29·51	......	45·0	......	......	6	+48 2 51·9	− 4·3
	......	Nadir	......	18 0 0	54 0	2 52·2	55·1	0·500	29·51	46·0	45·0	......	......	......	......	......
	......	Nadir	......	....	54 0	2 61·3	64·5	0·500	......	......	......	......	......	......	......	......
June 3	......	Nadir	......	15 25 0	54 0	2 51·3	53·7	0·500	29·63	55·0	50·0	......	......	......	......	......
	......	Nadir	......	....	54 0	2 61·0	63·8	0·500	......	......	......	......	......	......	......	......
	5284	γ Serpentis	......	15 49 42	273 50	2 43·3	53·6	0·500	29·63	......	50·0	......	......	7	+30 49 53·1	− 7·9
	5452	(a)	......	....	268 30	1 37·5	46·9	0·500	29·63	......	49·0	......	......	4	+34 28 46·4	− 6·6
	5647	......	......	16 42 50	276 25	4 3·8	13·2	0·751	29·63	......	48·5	......	......	6	+42 26 20·3	− 6·0
	5716	......	6·0	....	274 15	4 45·3	56·1	0·500	29·63	......	48·4	......	......	7	+40 16 55·7	− 5·6
	5776	......	......	17 0 48	241 0	0 22·9	34·3	0·749	29·63	......	48·3	......	......	7	+ 6 57 37·8	− 4·6
	5821	α Herculis	2·0	17 8 1	275 25	1 28·7	39·1	0·500	29·65	......	48·2	8, W.	0	7	+41 23 38·4	− 4·0
	5863	ω Herculis	5·5	17 15 9	257 20	1 8·3	16·9	0·421	29·65	......	48·1	......	......	7	+23 18 13·9	− 4·8
	5917	......	......	17 23 31	229 50	0 29·4	38·8	0·621	29·65	......	48·0	......	......	8	− 4 12 20·3	− 4·5
	6035	......	......	17 43 16	280 5	0 38·8	49·0	0·564	29·65	......	48·0	......	......	6	+16 2 50·3	− 3·1
	6123	......	......	17 58 8	287 25	1 55·4	66·4	0·340	29·65	......	48·0	......	......	5	+53 24 1·7	− 1·7
	6213	......	......	18 12 7	282 45	1 43·4	54·4	0·579	29·65	......	48·0	......	......	6	+48 43 55·9	− 1·4
	......	Nadir	......	18 20 0	54 0	2 51·0	54·4	0·500	29·65	49·0	48·0	......	......	......	......	......
	......	Nadir	......	....	54 0	2 61·8	66·2	0·500	......	......	......	......	......			
June 4	......	Nadir	......	15 27 0	54 0	2 50·2	55·1	0·500	29·50	53·0	49·0	16, W.	4	......	......	......
	......	Nadir	......	....	54 0	2 60·0	64·8	0·500	......	......	......	......	......	......	......	......
	5284	γ Serpentis	......	15 49 43	273 50	2 42·9	54·7	0·460	29·50	......	49·0	......	......	......	+39 49 52·4	− 7·7
	5415	......	......	16 5 57	231 40	2 25·4	35·3	0·601	29·50	......	48·9	......	......	6	− 2 20 24·5	− 3·4
	5537	......	6·0	16 26 41	279 15	4 35·2	46·8	0·500	29·50	......	48·8	......	......	5	+45 16 46·2	− 6·7
	5597	......	......	16 34 56	264 50	2 2·5	14·4	0·660	29·50	......	48·8	......	......	7	+30 49 16·9	− 5·6

(a) Rather late at Instrument

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Date.	Star or other Object Observed. No. in British Assoc. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1862.
1862.				h m s	° ′	′ ″	″	revols.	inches	°	°				° ′ ″	″
June 4	5617	......	......	16 42 51	276 25	1 6·9	16·4	0·600	29·50	......	48·8	......	......	5	+42 26 19·3	− 5·8
	5732	......	......	16 54 55	274 50	0 16·0	28·3	0·483	29·50	......	48·8	......	......	6	+40 47 26·1	− 5·3
	5821	α Herculis......	3·0	17 8 0	275 25	1 23·8	35·8	0·630	29·50	......	48·4	......	......	7	+41 23 37·9	− 4·7
	5917	......	......	17 23 30	229 50	0 29·7	40·1	0·581	29·50	......	48·2	......	......	6	− 4 12 20·6	− 4·2
	6035	......	......	17 43 16	280 5	0 37·8	49·1	0·624	29·50	......	48·2	......	......		+46 2 51·4	− 2·9
	6123	(a) 70 Ophiuchi......	......	17 58 7	287 25	1 50·4	62·0	0·550	29·50	......	48·2	......	......	7	+53 21 2·8	− 1·6
	6213	......	......	18 12 9	282 45	1 41·6	57·1	0·520	29·50	......	48·0	......	......	6	+48 43 56·3	− 1·2
	......	Nadir ||	......	18 25 0	54 0	2 52·4	56·1	0·500	29·50	49·1	48·0	......	......	......	......	......
	......	Nadir ||	......	......	54 0	2 60·4	65·0	0·500	......	......	......	......	......	......	......	......
July 9	......	Nadir ||	......	17 32 0	54 0	2 50·6	53·0	0·500	29·40	56·0	54·3	......	5	......	......	......
	......	Nadir ||	......	......	54 0	2 59·0	62·8	0·500	......	......	......	......	......	......	......	......
	6123	(a) 70 Ophiuchi......	......	17 58 8	287 25	1 45·1	56·3	0·500	29·39	......	53·6	......	......	6	+53 23 56·2	+ 3·8
July 14	......	Nadir ||	......	18 42 0	54 0	2 50·2	53·8	0·500	29·28	57·5	55·6	12, S.	5	......	......	......
	......	Nadir ||	......	......	54 0	2 60·8	64·3	0·500	......	......	......	......	......	......	......	......
	6528	ζ Aquilæ......	......	18 58 42	276 15	4 33·7	44·3	0·500	29·28	......	55·6	......	......	5	+42 16 41·2	+ 9·2
	6772	γ Aquilæ......	......	19 39 20	279 40	2 12·1	24·9	0·672	29·28	......	55·2	......	......	7	+45 39 28·3	+11·1
	6941	......	......	20 4 37	269 15	0 47·4	58·5	0·500	29·28	......	55·0	......	......	6	+35 12 57·3	+12·0
	7086	......	......	20 25 36	234 20	3 37·9	49·2	0·717	29·28	......	55·0	......	......	7	+ 0 20 52·2	+ 8·9
	7161	......	......	20 34 21	244 45	4 2·0	14·0	0·597	29·28	......	55·0	......	......	6	+10 46 14·1	+ 9·9
	7285	......	......	20 52 55	283 0	0 2·0	16·0	0·500	29·28	......	55·0	......	......	7	+48 57 13·9	+13·3
	......	Nadir ||	......	21 0 0	54 0	2 51·7	55·2	0·500	29·28	56·1	55·0	......	......	......	......	......
	......	Nadir ||	......	......	54 0	2 59·9	63·7	0·500	......	......	......	......	......	......	......	......
July 16	......	Nadir ||	......	18 39 0	54 0	2 49·8	54·6	0·500	29·44	56·2	52·0	10, W.	4	......	......	......
	......	Nadir ||	......	......	54 0	2 60·6	65·8	0·500	......	......	......	......	......	......	......	......
	6480	......	......	18 51 28	257 15	1 5·8	16·5	0·500	29·44	......	52·0	......	......	5	+23 13 14·7	+ 9·9
	6528	ζ Aquilæ......	......	18 58 41	276 15	4 33·8	42·7	0·549	29·44	......	52·0	......	......	7	+42 16 44·4	+ 9·6
	6966	......	5·0	......	264 45	4 6·1	16·9	0·500	29·44	......	50·6	......	......	6	+30 46 15·9	+12·3
	7150	......	......	......	279 10	3 20·7	32·1	0·500	29·44	......	50·4	......	......	5	+45 10 31·3	+14·4
	......	Nadir ||	......	21 6 0	54 0	2 51·0	54·8	0·500	29·44	51·0	50·1	......	......	......	......	......
	......	Nadir ||	......	......	54 0	2 61·7	65·3	0·500	......	......	......	......	......	......	......	......
July 21	......	Nadir ||	......	19 32 0	54 0	2 50·0	55·2	0·500	29·91	55·0	49·0	7, W.	5	......	......	......
	......	Nadir ||	......	......	54 0	2 60·4	65·4	0·500	......	......	......	......	......	......	......	......
	6791	......	......	19 41 58	278 35	3 26·0	35·0	0·622	29·91	......	49·0	......	......	6	+44 35 38·8	+13·0
	6852	......	6·0	19 50 40	230 35	4 25·6	35·5	0·588	29·91	......	48·9	......	......	5	− 3 23 24·5	+11·4
	6966	......	......	20 9 0	264 45	4 6·0	15·6	0·434	29·91	......	48·9	......	......	7	+30 46 13·3	+13·6
	7006	......	7·0	20 14 13	253 15	2 39·4	49·0	0·689	29·91	......	48·8	......	......	7	+19 14 52·8	+13·0
	7086	......	......	20 25 33	234 20	3 40·4	49·8	0·644	29·90	......	48·8	......	......	6	+ 0 20 51·4	+11·4
	7150	......	......	20 32 51	279 10	3 15·4	24·6	0·730	29·90	......	48·8	......	......	8	+45 10 31·3	+15·5
	7268	......	6·0	20 50 44	243 5	1 27·8	41·3	0·554	29·90	......	48·6	......	......	7	+ 9 3 38·6	+12·1
	7336	61 Cygni......	......	21 0 18	251 55	0 17·7	29·4	0·633	29·90	......	48·2	......	......	8	+17 52 30·2	+14·8
	7368	ζ Cygni......	......	21 6 39	260 15	4 43·1	53·1	0·629	29·90	......	48·2	......	......	8	+26 16 55·8	+14·3
	7450	......	......	21 19 37	271 10	2 28·5	38·9	0·500	29·90	......	48·1	......	......	7	+37 9 38·0	+16·1
	......	Nadir ||	......	21 30 0	54 0	2 52·3	55·0	0·500	......	48·7	......	......	......	......	......	......
	......	Nadir ||	......	......	54 0	2 61·7	64·1	0·500	......	......	......	......	......	......	......	......
July 22	......	Nadir ||	......	17 53 0	54 0	2 50·5	53·8	0·500	29·78	55·1	51·0	......	......	......	......	......
	......	Nadir ||	......	......	54 0	2 60·0	64·6	0·500	......	......	......	......	......	......	......	......

(a) Double star.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. (Max. = 10.)	Est. Value of Obs. (Max. = 10.)	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1862.
1862.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
July 22	6213	......	......	18 12 5	282 45	1 32·5	44·4	0·667	29·78	......	51·0	......	......	6	+48 43 48·1	+ 7·3
	6245	......	6·0	18 16 18	272 10	3 34·7	52·3	0·741	29·78	......	50·6	......	......	5	+38 10 57·1	+ 8·9
	6602	......	......	19 11 28	267 10	2 35·6	46·0	0·598	29·78	......	49·7	2, N.W.	0	6	+33 9 48·0	+11·9
	6644	b Aquilæ	......	19 17 59	278 15	4 52·8	63·0	0·738	29·78	......	49·6	......	......	7	+14 17 9·8	+11·9
	6729	......	......	19 31 58	284 50	3 34·1	45·1	0·697	29·78	......	49·1	......	......	8	+50 50 50·6	+12·5
	6772	γ Aquilæ	......	19 39 17	279 40	2 12·6	24·4	0·530	29·78	......	49·0	......	......	6	+45 39 25·0	+13·1
	6855	......	7·5	19 51 33	273 50	1 43·3	54·0	0·572	29·78	......	49·0	......	......	8	+39 48 55·3	+13·6
	7086	......	......	......	234 20	3 42·0	52·0	0·500	29·78	......	48·4	......	......	6	+ 0 20 49·6	+11·8
	7268	......	6·0	20 50 42	243 5	1 25·4	38·8	0·635	29·78	......	48·3	......	......	6	+ 9 3 36·7	+12·1
	7336	61 Cygni	......	21 0 17	251 55	0 20·3	33·4	0·424	29·76	......	47·6	......	......	7	+17 52 27·9	+15·2
	7368	ζ Cygni	......	21 6 38	260 15	4 40·9	51·5	0·700	29·76	......	47·5	......	......	8	+26 16 56·2	+14·6
	7410	......	......	21 14 24	266 40	2 40·6	52·8	0·760	29·76	......	47·4	......	......	6	+32 39 58·4	+15·6
	7450	......	......	21 19 37	271 10	2 25·3	36·7	0·600	29·76	......	47·4	......	......	6	+37 9 36·4	+16·3
	......	Nadir ‖¦	......	21 26 0	54 0	2 49·2	52·4	0·500	......	49·1	......	......	......	......	......	......
	......	Nadir ¦‖	......	......	54 0	2 60·6	64·9	0·500	......	......	......	......	......	......	......	......
July 23	......	Nadir ‖¦	......	19 37 [illegible]	54 0	2 50·3	54·9	0·500	29·68	54·5	51·0	3, N.W.	2	......	......	......
	......	Nadir ¦‖	......	......	54 0	2 60·1	64·8	0·500	......	......	......	......	......	......	......	......
	6852	......	......	19 50 40	230 35	4 26·8	36·4	[illegible]·500	29·68	......	50·6	......	......	6	− 3 23 25·7	+12·1
	6966	......	......	20 9 0	264 45	3 57·3	66·9	0·762	29·68	......	50·0	......	......	7	+30 46 13·9	+14·2
	7086	......	......	20 25 34	234 20	3 38·8	50·0	0·644	29·67	......	50·0	......	......	7	+ 0 20 50·9	+12·1
	7150	......	......	20 32 51	279 10	3 17·8	29·6	0·602	29·67	......	50·0	......	......	8	+45 10 31·6	+15·9
	7268	......	6·0	20 50 44	243 5	1 26·1	38·7	0·591	29·67	......	50·0	......	......	7	+ 9 3 37·6	+12·5
	7354	(a)	7·5	21 3 54	268 5	0 38·7	49·3	0·592	29·67	......	50·0	......	......	8	+34 2 50·6	+15·8
	7417	......	6·0	21 16 0	231 55	2 40·7	51·1	0·500	29·66	......	50·0	......	......	6	− 2 5 11·6	+11·1
	7450	......	......	21 19 38	271 10	2 26·2	36·8	0·568	29·66	......	50·0	......	......	8	+37 9 37·9	+16·6
	7497	......	9·0	21 27 16	288 45	0 28·8	40·8	0·507	29·66	......	50·0	......	......	5	+54 42 40·2	+19·3
	......	Nadir ‖¦	......	21 37 0	54 [illegible]	2 51·6	54·8	0·500	29·66	51·8	50·0	......	......	......	......	......
	......	Nadir ¦‖	......	......	54 [illegible]	2 60·9	64·9	0·500	......	......	......	......	......	......	......	......
July 25	......	Nadir ‖¦	......	19 7 0	54 0	2 51·0	54·4	0·500	29·73	56·7	54·0	10, N.W.	......	......	......	......
	......	Nadir ¦‖	......	......	54 0	2 60·8	64·8	0·500	......	......	......	......	......	......	......	......
	6791	......	7·0	19 41 58	278 35	3 24·0	35·4	0·627	29·80	......	51·2	......	7	7	+44 35 38·3	+13·8
	6855	......	......	19 51 32	273 50	1 11·8	52·4	0·670	29·80	......	51·0	......	3	6	+39 48 56·4	+14·3
	7006	......	......	20 14 13	253 15	2 41·8	52·8	0·500	29·80	......	51·0	......	0	7	+19 14 50·6	+14·2
	7150	......	......	20 32 50	279 10	3 18·0	28·9	[illegible]·562	29·80	......	50·8	......	......	8	+45 10 30·2	+16·3
	7290	......	6·0	20 52 57	246 [illegible]	3 41·8	51·1	0·500	29·80	......	50·8	......	......	7	+12 [illegible] 49·6	+13·8
	7336	61 Cygni	......	21 0 18	251 55	0 19·8	31·0	0·450	29·80	......	50·8	......	......	6	+17 52 27·1	+16·2
	7450	......	......	21 19 37	271 10	2 26·5	37·1	0·613	29·80	......	50·6	......	......	6	+37 9 38·9	+17·1
	7497	......	......	21 27 17	288 45	0 29·7	41·4	0·500	29·80	......	50·6	......	......	7	+54 42 40·8	+19·6
	......	Nadir ‖¦	......	21 35 [illegible]	54 0	2 49·7	53·1	0·500	29·80	51·4	50·4	......	......	......	......	......
	......	Nadir ¦‖	......	......	54 0	2 61·4	64·9	0·500	......	......	......	......	......	......	......	......
July 26	......	Nadir ‖¦	......	18 20 0	54 0	2 50·0	54·9	0·500	29·79	55·0	52·0	4, W.	3	......	......	......
	......	Nadir ¦‖	......	......	54 0	2 60·4	65·2	0·500	......	......	......	......	......	......	......	......
	6528	ζ Aquilæ	......	18 56 39	276 15	4 19·7	29·7	0·550	29·78	......	51·3	......	......	6	+42 16 39·3	+11·9
	6602	......	......	19 11 28	267 10	2 38·7	45·3	0·500	29·78	......	51·2	......	......	5	+33 9 47·6	+13·3
	6729	......	......	19 31 58	284 50	3 39·7	50·1	0·500	29·78	......	50·8	......	......	6	+50 50 50·2	+13·5
	6855	......	......	19 51 32	273 50	1 43·8	56·1	0·500	29·78	......	50·3	......	......	7	+39 48 54·5	+14·9
	6966	......	......	20 8 59	264 45	4 3·7	13·5	0·50[illegible]	29·78	......	50·[illegible]	......	......	6	+50 46 13·0	+15·5
	7161	......	......	20 34 17	244 45	4 0·0	10·8	0·5[illegible]0	29·78	......	50·0	......	......	7	+10 46 8·6	+14·7

(a) { : } Larger observed.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1862.
1862.				h m s	° '	' "	"	revols.	inches.	°	°				° ' "	"
July 28	7268	......	5·5	20 50 44	243 5	1 16·4	29·8	0·678	29·78	......	50·0	......	......	5	+ 9 3 36·2	+ 14·5
	7528	......	......	21 32 9	270 20	0 30·3	40·1	0·702	29·78	......	50·0	......	5	8	+ 36 17 45·0	+ 18·0
	7590	......	......	21 40 5	273 25	0 39·3	50·9	0·556	29·77	......	50·0	......	......	6	+ 39 22 50·9	+ 18·5
	......	Nadir ‖	......	21 50 0	54 0	2 50·5	54·3	0·500	29·77	52·1	50·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 61·4	64·4	0·500	......	......	......	......	......	......	......	......
July 29	......	Nadir ‖	......	18 28 0	54 0	2 49·0	53·4	0·500	29·84	56·0	51·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 60·6	65·8	0·500	......	......	......	......	......	......	......	......
	6429	β Lyræ	3·0	18 44 33	256 45	2 18·8	28·0	0·665	29·84	......	51·0	......	......	7	+ 22 41 31·3	+ 13·0
	6528	ζ Aquilæ	......	18 58 39	276 15	4 29·6	38·1	0·500	29·84	......	50·0	......	......	8	+ 42 16 38·5	+ 12·1
	6602	......	......	19 11 28	267 10	2 39·4	50·7	0·487	29·84	......	50·0	......	......	7	+ 33 9 48·8	+ 13·6
	6652	......	......	19 18 56	269 55	4 10·5	21·4	0·516	29·84	......	50·0	......	......	6	− 35 56 20·9	+ 13·7
	6729	......	......	19 31 58	284 50	3 40·0	50·7	0·460	29·82	......	49·5	......	......	7	+ 50 50 49·4	+ 13·6
	6772	γ Aquilæ	......	19 39 16	279 40	2 14·5	25·0	0·500	29·82	......	49·4	......	......	8	+ 45 39 24·4	+ 14·3
	6852 (a)	......	......	19 50 39	230 35	4 23·0	33·9	0·618	29·82	......	49·2	4, W.	0	8	− 3 23 25·9	+ 14·2
	6941	......	......	20 4 33	269 15	0 45·4	55·2	0·500	29·82	......	49·0	......	......	6	+ 35 12 54·2	+ 15·7
	7006	......	......	......	253 15	2 43·7	52·7	0·500	29·82	......	49·0	......	......	5	+ 19 14 51·4	+ 15·4
	7086	......	......	20 25 32	234 20	3 39·9	49·8	0·500	29·82	......	48·9	......	......	6	+ 0 20 47·0	+ 11·3
	7161	......	......	20 31 17	244 45	3 59·4	70·8	0·561	29·82	......	48·8	......	......	8	+ 10 46 9·8	+ 15·0
	7290	......	5·5	20 52 56	246 0	3 36·9	48·4	0·678	29·82	......	48·8	......	......	6	+ 12 0 50·4	+ 15·1
	7450	......	......	21 19 35	271 10	2 23·8	34·4	0·626	29·82	......	48·2	......	......	7	+ 37 9 36·8	+ 18·1
	7528	......	......	21 32 9	270 20	0 31·3	42·1	0·677	29·82	......	48·1	9, N.W.	0	6	+ 36 17 45·6	+ 18·2
	......	Nadir ‖	......	21 51 0	54 0	2 52·4	56·0	0·500	29·82	48·9	48·2	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 62·5	65·3	0·500	......	......	......	......	......	......	......	......
Aug. 27	......	Nadir ‖	......	21 45 0	54 0	2 51·0	55·1	0·500	29·82	59·5	58·5	1, W.	1	......	......	......
	......	Nadir ‖	......	......	54 0	2 61·8	65·8	0·500	......	......	......	......	......	......	......	......
	7688	α Aquarii	......	21 58 4	290 55	2 40·5	52·5	0·473	29·82	......	58·5	......	......	7	+ 56 54 51·1	+ 25·3
	7759	......	......	22 6 48	229 55	0 18·0	30·0	0·558	29·82	......	58·5	......	......	8	− 4 7 32·4	+ 22·2
	7908	ζ Pegasi	......	22 33 58	279 50	2 4·8	16·5	0·539	29·82	......	58·5	......	......	6	+ 45 49 16·4	+ 20·2
	8083	Cassiopeiæ	6·0	23 6 1	233 35	0 28·2	39·4	0·640	29·83	......	56·0	......	......	7	− 0 27 20·5	+ 20·2
	8338	......	......	23 53 5	228 35	0 28·8	40·0	0·598	29·83	......	57·8	......	......	7	− 5 27 21·0	+ 16·6
	......	Nadir ‖	......	0 0 0	54 0	2 49·6	53·3	0·500	29·83	56·0	57·7	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 60·8	65·0	0·500	......	......	......	......	......	......	......	......
Sept. 9	......	Nadir ‖	......	20 12 0	54 0	2 50·8	55·7	0·500	29·70	55·4	50·0	10, W.	0	......	......	......
	......	Nadir ‖	......	......	54 0	2 60·4	64·8	0·500	......	......	......	......	......	......	......	......
	7157	......	8·0	20 33 27	274 45	4 37·4	47·6	0·792	29·70	......	49·7	......	......	6	+ 40 46 55·4	+ 24·3
	7268	......	6·5	20 50 27	243 5	1 10·8	24·1	0·611	29·70	......	49·5	......	......	7	+ 9 3 22·7	+ 27·8
	7354	......	8·0	21 3 37	268 5	0 26·1	36·1	0·632	29·70	......	49·2	......	......	7	+ 34 2 38·4	+ 26·4
	7410	......	......	21 14 8	266 40	2 33·8	44·4	0·575	29·70	......	49·0	......	......	8	+ 32 39 45·1	+ 27·0
	7450	......	......	21 19 20	271 10	2 15·7	26·3	0·527	29·70	......	49·0	......	......	6	+ 37 9 25·8	+ 26·7
	7497	......	......	21 27 0	288 45	0 24·5	35·9	0·500	29·70	......	49·0	......	......	6	+ 54 42 34·9	+ 23·1
	7561	ι Pegasi	......	21 36 44	280 40	4 6·4	18·8	0·515	29·70	......	49·0	......	......	7	+ 46 41 17·9	+ 26·4
	7688	α Aquarii	......	21 58 0	290 55	2 37·7	48·3	0·500	29·70	......	49·0	......	......	8	+ 56 54 49·1	+ 26·3
	7908	ζ Pegasi	......	22 33 53	279 50	2 1·4	11·8	0·660	29·69	......	49·0	......	......	7	+ 45 49 15·5	+ 27·9
	8024	......	......	22 54 58	233 35	2 57·6	67·6	0·620	29·69	......	49·0	......	......	8	− 0 24 51·8	+ 25·3
	......	Nadir ‖	......	23 7 0	54 0	2 50·4	55·0	0·500	29·69	49·9	49·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 62·3	67·0	0·500	......	......	......	......	......	......	......	......

(a) Stars very well defined.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1862.
1862.				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
Sept. 10	......	Nadir	......	20 20 0	54 0	2 49·1	52·6	0·500	29·72	49·1	47·1	6, N.W.	0	......	......	......
	......	Nadir	......	......	54 0	2 61·7	64·8	0·500	......	......	......	......	......	......	......	......
	7220	κ Cephei	......	20 41 44	228 40	1 39·3	47·2	0·621	29·71	......	47·1	......	......	6	− 5 21 11·6	+27·9
	7410	......	......	21 14 9	266 40	2 35·4	44·8	0·497	29·72	......	46·0	......	......	8	+32 39 44·0	+27·1
	7497	......	......	21 27 0	288 45	0 23·6	32·8	0·500	29·72	......	46·0	......	......	7	+54 42 32·9	+25·1
	7644	......	......	21 49 32	218 5	4 45·7	54·1	0·614	29·72	......	45·8	......	......	5	−15 53 4·7	+26·6
	7708	......	......	22 0 10	228 20	3 21·4	30·4	0·594	29·71	......	45·8	......	......	8	− 5 39 29·4	+27·2
	......	Nadir	......	22 30 0	54 0	2 51·1	54·3	0·500	29·71	46·5	45·5	......	......	......	......	......
	......	Nadir	......	......	54 0	2 62·9	65·9	0·500	......	......	......	......	......	......	......	......
Sept. 12	......	Nadir	......	21 31 0	54 0	2 50·0	55·3	0·500	29·50	56·7	61·1	30, W.	5	......	......	......
	......	Nadir	......	......	54 0	2 61·2	66·2	0·500	......	......	......	......	......	......	......	......
	7644	......	......	21 49 32	218 5	4 50·0	59·1	0·300	29·50	......	61·0	......	......	7	−15 53 8·8	+27·3
Sept. 15	......	Nadir	......	21 42 0	54 0	2 51·4	54·0	0·500	29·98	54·4	50·4	4, W.	0	......	......	......
	......	Nadir	......	......	54 0	2 62·2	64·5	0·500	......	......	......	......	......	......	......	......
	7708	......	......	22 0 10	228 20	3 19·3	29·7	0·500	29·98	......	50·0	......	......	6	− 5 39 33·6	+28·8
	7759	......	6·0	22 6 45	229 55	0 8·0	17·8	0·760	29·98	......	50·0	......	......	7	− 4 7 36·4	+28·5
	7908	ζ Pegasi	......	22 33 53	279 50	2 3·9	14·0	0·500	29·98	......	50·0	......	......	6	+45 49 13·3	+28·6
	7996	......	......	22 49 49	286 50	4 9·0	20·0	0·500	29·98	......	50·0	......	......	6	+52 51 19·6	+28·6
	8034	α Pegasi	......	22 57 11	275 30	1 1·9	12·9	0·695	29·98	......	49·8	......	......	7	+41 28 16·7	+29·0
	8083	Cassiopeæ	......	23 5 56	233 35	0 21·8	33·4	0·631	29·98	......	49·8	......	......	6	− 0 27 27·3	+26·8
Sept. 17	......	Nadir	......	21 42 0	54 0	2 51·3	54·2	0·500	30·20	55·0	53·3	0	0	......	......	......
	......	Nadir	......	......	54 0	2 61·7	64·3	0·500	......	......	......	......	......	......	......	......
	7708	......	......	22 0 9	228 20	3 20·3	30·9	0·500	30·20	......	53·1	......	......	6	− 5 39 32·7	+29·5
	7779	(a)	9·0	22 9 34	217 20	2 20·5	29·1	0·453	30·20	......	53·0	......	......	6	−16 40 35·1	+28·3
	7977	......	......	22 46 7	288 50	1 45·4	57·2	0·500	30·20	......	53·0	......	......	7	+54 48 55·8	+28·6
	8034	α Pegasi	......	22 57 11	275 30	1 5·6	16·8	0·500	30·20	......	53·0	......	......	7	+41 28 14·9	+29·3
	......	Nadir	......	23 7 0	54 0	2 52·0	55·0	0·500	30·20	53·7	53·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 62·2	65·8	0·500	......	......	......	......	......	......	......	......
Sept. 18	......	Nadir	......	22 36 0	54 0	2 51·2	55·8	0·500	30·20	57·1	58·1	10, W.	0	......	......	......
	......	Nadir	......	......	54 0	2 62·0	67·6	0·500	......	......	......	......	......	......	......	......
	7977	......	......	22 46 7	288 50	1 45·9	56·7	0·551	30·20	......	58·0	......	......	7	+54 48 57·0	+28·6
	8024	......	......	22 54 59	233 35	2 54·8	64·6	0·607	30·20	......	58·0	......	......	7	− 0 24 56·0	+28·3
	8135	......	......	23 13 30	246 35	2 46·8	58·1	0·609	30·20	......	58·0	......	......	6	+12 34 57·5	+28·5
	......	Nadir	......	23 26 0	54 0	2 51·2	55·1	0·500	30·20	57·8	58·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 61·1	65·1	0·500	......	......	......	......	......	......	......	......
Sept. 22	......	Nadir	......	22 0 0	54 0	2 51·4	56·6	0·500	30·03	55·0	49·0	0	0	......	......	......
	......	Nadir	......	......	54 0	2 61·8	66·2	0·500	......	......	......	......	......	......	......	......
	7779	(a)	10·0	22 9 34	217 20	2 23·0	31·2	0·347	30·03	......	49·0	......	......	5	−16 40 36·0	+30·0
	7908	ζ Pegasi	......	22 33 52	279 50	2 0·7	11·9	0·521	30·03	......	47·0	......	......	7	+45 49 10·9	+29·1
	7977	......	......	22 46 6	288 50	1 42·7	54·4	0·628	30·03	......	47·8	......	......	6	+54 48 56·4	+28·8
	8024	......	......	22 54 56	233 35	2 53·3	63·9	0·500	30·03	......	48·0	......	......	6	− 0 25 0·0	+29·6
	8083	......	......	23 6 3	233 35	0 16·8	28·2	0·748	30·03	......	48·0	......	......	5	− 0 27 29·6	+29·1
	8135	......	......	23 13 28	246 35	2 46·8	58·4	0·500	30·03	......	48·0	......	......	6	+12 34 54·7	+29·6
	8204	(b)	......	23 25 52	218 45	0 43·2	53·2	0·513	30·03	......	48·0	......	......	5	−15 17 10·6	+26·4

(a) Smaller star observed. (b) Bad definition.

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Date.	Star or other Object Observed: No. in British Ass. Catalogue.	Star or other Object Observed: Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. (Max. = 10.)	Est. Value of Obs. (Max. = 10.)	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1. 1862.
1862.				h. m. s.	° ′	′ ″	″	revs.	inches	°	°				° ′ ″	″
Sept. 22	......	Nadir ||	......	23 35 0	54 0	2 50·8	55·1	0·500	30·03	51·6	48·0	....	......	......	....	......
	......	Nadir ||	......	....	54 0	2 62·2	65·1	0·500	......	......	......	....	......	......	....	......
Sept. 23	......	Nadir ||	......	22 16 0	54 0	2 50·7	55·7	0·500	29·89	53·0	48·2	1, E.	0	......	....	......
	......	Nadir ||	......	....	54 0	2 62·3	66·3	0·500	......	......	......	....	......	......	....	......
	7908	ζ Pegasi	......	22 33 51	279 50	2 2·1	13·9	0·500	29·89	......	48·0	....	......	7	+45 49 11·9	+29·4
	7977	....	......	22 46 5	288 50	1 15·5	56·1	0·500	29·89	......	48·0	....	......	6	+51 48 55·1	+28·9
	8034	α Pegasi	......	22 57 9	275 30	1 5·0	16·6	0·500	29·90	......	47·9	....	......	8	+41 28 14·3	+30·0
	8091	....	......	23 7 30	262 10	0 0·8	12·4	0·513	29·90	......	47·9	....	......	7	+28 37 9·6	+30·4
	8247	....	......	23 31 48	272 0	4 48·3	59·0	0·619	29·90	......	47·9	....	......	7	+38 2 1·0	+29·6
	......	Nadir ||	......	23 42 0	54 0	2 51·1	55·0	0·500	29·90	51·4	47·9	....	......	......	....	......
	......	Nadir ||	......	....	54 0	2 61·7	65·0	0·500	......	......	......	....	......	......	....	......
Sept. 25	......	Nadir ||	......	23 26 0	54 0	2 50·8	54·4	0·500	29·61	54·0	54·1	....	......	......	....	......
	......	Nadir ||	......	....	54 0	2 62·4	65·9	0·500	......	......	......	....	......	......	....	......
	8350	85 Pegasi	......	23 54 11	263 35	3 7·0	18·2	0·500	29·61	......	53·6	0	3	6	+29 35 16·2	+29·4
Sept. 26	......	Nadir ||	......	22 41 0	54 0	2 51·2	55·4	0·500	29·56	55·0	55·8	....	......	......	....	......
	......	Nadir ||	......	....	54 0	2 62·1	66·6	0·500	......	......	......	....	......	......	....	......
	8024	....	......	22 54 55	233 35	2 52·4	62·8	0·500	29·56	......	55·6	0	1	5	− 0 25 1·0	+30·8
	8063	....	......	23 5 53	233 35	0 20·0	30·4	0·597	29·56	......	55·7	....	......	6	− 0 27 31·1	+30·3
	8135	....	......	....	216 35	2 47·8	59·4	0·500	29·56	......	55·7	2, W.	......	4	+12 34 55·7	+30·6
	8280	....	......	23 41 25	230 45	2 3·6	14·2	0·790	29·56	......	55·7	....	......	7	− 3 15 41·7	+28·1
	......	Nadir ||	......	23 50 0	54 0	2 51·2	56·0	0·500	29·56	56·0	55·7	....	......	......	....	......
	......	Nadir ||	......	....	54 0	2 61·9	65·9	0·500	......	......	......	....	......	......	....	......
Sept. 30	......	Nadir ||	......	22 36 0	54 0	2 50·3	54·9	0·500	29·42	55·8	52·3	....	......	......	....	......
	......	Nadir ||	......	....	54 0	2 62·3	66·9	0·500	......	......	......	....	......	......	....	......
	8034	α Pegasi	......	22 57 9	275 30	1 6·1	17·1	0·500	29·42	......	52·0	6, S.	0	7	+41 28 15·0	+30·8
	......	(a) Nadir ||	......	23 56 0	54 0	2 51·7	55·9	0·500	29·43	55·0	52·2	....	......	......	....	......
	......	Nadir ||	......	....	54 0	2 61·9	65·8	0·500	......	......	......	....	......	......	....	......
Oct. 6	......	Nadir ||	......	22 57 0	54 0	2 51·0	53·8	0·500	29·71	53·7	47·3	8, N.W.	2	......	....	......
	......	Nadir ||	......	....	54 0	2 62·4	65·5	0·500	......	......	......	....	......	......	....	......
	8091	....	......	23 7 25	262 35	4 56·3	67·3	0·581	29·71	......	47·2	....	......	6	+28 37 7·4	+32·6
	8135	....	......	23 13 25	216 35	2 43·1	54·3	0·600	29·71	......	47·1	....	......	7	+12 34 53·5	+33·2
	8252	....	......	23 35 36	237 35	1 28·7	39·3	0·500	29·71	......	47·0	....	......	5	+ 3 33 35·2	+32·0
	8272	....	......	23 40 23	282 25	4 51·7	61·0	0·500	29·71	......	47·0	....	......	6	+48 27 0·8	+30·6
	8315	....	......	23 47 48	282 30	1 20·0	29·4	0·500	29·71	......	47·0	....	......	7	+48 28 28·6	+30·5
	8350	85 Pegasi	......	23 54 11	263 35	3 5·9	15·9	0·500	29·71	......	46·9	....	......	7	+29 35 14·2	+31·3
	8372	....	......	23 58 16	232 15	4 47·0	56·4	0·540	29·71	......	46·8	....	......	6	− 1 43 5·4	+30·3
	83	....	......	0 16 52	237 40	2 49·8	59·8	0·500	29·70	......	46·2	....	......	7	+ 3 39 56·2	+29·3
	......	Nadir ||	......	0 26 0	54 0	2 52·6	56·0	0·500	29·70	47·0	46·0	....	......	......	....	......
	......	Nadir ||	......	....	54 0	2 63·4	66·4	0·500	......	......	......	....	......	......	....	......
Oct. 7	......	Nadir ||	......	22 40 0	54 0	2 51·8	55·4	0·500	30·02	52·5	49·5	5, W.	0	......	....	......
	......	Nadir ||	......	....	54 0	2 61·8	65·2	0·500	......	......	......	....	......	......	....	......
	7996	....	6·0	....	286 50	4 9·2	20·3	0·500	30·02	......	49·8	....	......	5	+52 51 19·4	+29·7
	8034	α Pegasi	......	22 57 7	275 30	1 0·8	12·0	0·620	30·02	......	49·8	....	......	5	+41 28 13·1	+31·5
	8147	....	......	23 15 7	270 10	0 48·2	59·0	0·572	30·02	......	50·0	....	......	6	+36 7 58·8	+32·0
	8247	....	......	23 34 45	272 0	4 47·6	59·2	0·530	30·02	......	50·0	....	......	7	+38 1 58·2	+31·6

(a) Sky getting cloudy.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1862.
1862.				h. m. s.	° '	' "	"	revs.	inches.	°	°				° ' "	"
Oct. 7	8315	....	......	23 47 48	282 30	1 17·7	29·3	0·556	30·02	......	50·0	....	......	6	+48 28 28·9	+30·6
	8350	85 Pegasi........	......	23 54 11	263 35	3 2·8	13·3	0·640	30·02	......	50·0	....	......	7	+29 35 15·2	+31·5
	26	γ Pegasi........	......	0 5 21	275 30	3 55·7	66·8	0·500	30·02	......	50·0	....	......	7	+41 31 5·1	+30·8
	83	....	......	0 16 51	237 40	2 44·8	56·1	0·669	30·02	......	50·0	....	......	6	+ 3 39 56·7	+29·6
	120	....	......	0 23 20	257 10	0 12·0	22·0	0·500	30·02	......	50·0	....	......	6	+23 7 19·2	+30·1
	......	Nadir ‖|	......	0 30 0	54 0	2 50·7	51·0	0·500	30·02	50·2	50·0	....	......	......	....	......
	......	Nadir |‖	......	....	54 0	2 63·0	67·3	0·500	......	......	......	....	......	......	....	......
Oct. 8	......	Nadir ‖|	......	0 6 0	54 0	2 50·9	55·3	0·500	30·13	54·1	50·0	5, W.	0	......	....	......
	......	Nadir |‖	......	....	54 0	2 62·0	66·0	0·500	......	......	......	....	......	......	....	......
	83	....	......	0 16 52	237 40	2 48·1	58·3	0·563	30·13	......	50·0	....	......	6	+ 3 39 56·6	+29·9
	113	....	......	0 22 17	285 50	2 45·0	55·1	0·500	30·13	......	50·0	....	......	7	+51 49 54·5	+29·8
	149	....	......	0 27 59	277 30	1 40·3	50·0	0·457	30·13	......	50·0	....	......	6	+43 28 17·9	+30·0
	177	....	......	0 33 16	281 20	2 37·8	47·4	0·523	30·13	......	50·0	....	......	6	+47 19 47·5	+29·7
	......	Nadir ‖|	......	0 39 0	54 0	2 49·2	52·8	0·500	30·13	51·0	50·0	....	......	......	....	......
	......	Nadir |‖	......	....	54 0	2 61·7	65·3	0·500	......	......	......	....	......	......	....	......
Oct. 9	......	Nadir ‖|	......	23 30 0	54 0	2 51·8	56·0	0·500	30·03	53·0	52·0	0	0	......	....	......
	......	Nadir |‖	......	....	54 0	2 62·9	66·3	0·500	......	......	......	....	......	......	....	......
	18	(a)	......	....	231 5	0 35·0	44·2	0·500	30·03	......	52·0	....	......	4	− 2 57 19·2	+30·8
	42	....	7·0	0 8 5	286 25	4 25·6	36·2	0·500	30·03	......	52·0	....	......	5	+52 26 35·6	+30·0
	83	....	......	0 16 53	237 40	2 47·8	58·9	0·500	30·03	......	52·0	....	......	7	+ 3 39 55·0	+30·2
	113	....	......	0 22 17	285 50	2 44·7	55·4	0·500	30·03	......	51·9	....	......	6	+51 49 54·4	+29·9
	149	....	......	0 27 59	277 30	1 37·9	48·0	0·566	30·03	......	51·9	....	......	6	+43 28 48·6	+30·1
	177	....	......	0 33 17	281 20	2 36·4	46·8	0·606	30·03	......	51·9	....	......	7	+47 19 48·6	+29·6
	......	Nadir ‖|	......	0 50 0	54 0	2 50·8	53·9	0·500	30·03	53·5	51·9	....	......	......	....	......
	......	Nadir |‖	......	....	54 0	2 62·6	66·4	0·500	......	......	......	....	......	......	....	......
Oct. 15	......	Nadir ‖|	......	23 49 0	54 0	2 52·4	55·1	0·500	29·35	51·1	48·3	4, W.	5	......	....	......
	......	Nadir |‖	......	....	54 0	2 61·7	66·2	0·500	......	......	......	....	......	......	....	......
	83	....	......	0 16 54	237 40	2 45·0	56·6	0·551	29·35	......	48·3	....	......	5	+ 3 39 53·7	+31·6
	250	....	......	0 48 21	252 10	4 20·8	33·3	0·702	29·35	......	48·3	....	......	6	+18 11 35·3	+29·9
	......	Nadir ‖|	......	1 0 0	54 0	2 52·2	55·0	0·500	29·35	50·0	48·3	....	......	......	....	......
	......	Nadir |‖	......	....	54 0	2 62·0	66·0	0·500	......	......	......	....	......	......	....	......
Oct. 20	......	Nadir ‖|	......	0 9 0	54 0	2 52·0	55·7	0·500	28·87	44·2	40·6	....	......	......	....	......
	......	Nadir |‖	......	....	54 0	2 62·5	65·9	0·500	......	......	......	....	......	......	....	......
	314	(b) μ Cassiopeæ........	......	0 58 21	235 45	0 16·5	27·0	0·500	28·87	......	40·0	20, W.	2	6	+ 1 42 22·6	+29·6
	459	....	......	1 24 32	278 45	3 31·0	39·8	0·632	28·87	......	41·0	....	......	0	+44 45 43·0	+28·0
Oct. 21	......	Nadir ‖|	......	0 40 0	54 0	2 52·6	53·8	0·500	29·47	44·3	40·0	....	......	......	....	......
	......	Nadir |‖	......	....	54 0	2 62·7	64·3	0·500	......	......	......	....	......	......	....	......
	314	μ Cassiopeæ........	......	0 58 26	235 45	0 17·4	28·4	0·500	29·47	......	40·0	....	......	6	+ 1 42 23·7	+30·7
	357	....	......	1 4 34	258 35	3 46·8	54·4	0·607	29·47	......	40·0	....	......	5	+24 35 56·5	+30·3
	......	Nadir ‖|	......	2 0 0	54 0	2 52·8	55·2	0·500	......	43·0	......	....	......	......	....	......
	......	Nadir |‖	......	....	54 0	2 64·0	65·8	0·500	......	......	......	....	......	......	....	......
Oct. 28	......	Nadir ‖|	......	0 33 0	54 0	2 52·0	54·3	0·500	29·42	44·3	41·1	....	5	......	....	......
	......	Nadir |‖	......	....	54 0	2 63·2	66·0	0·500	......	......	......	....	......	......	....	......
	290	....	......	0 55 29	236 30	1 50·9	59·9	0·500	29·42	......	41·0	0	......	6	+ 2 28 56·5	+32·0
	357	(c)	9·0	1 4 35	258 35	3 47·1	55·5	0·500	29·42	......	41·0	....	......	6	+24 35 54·3	+30·8

(a) Seen rather late, { *a *b } b observed.

(b) Occasional showers of sleet.

(c) Double. Larger observed.

Date.	Star or other Object Observed: No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1862.
1862.				h m s	° ′	′ ″	″	revs.	inches	°	°				° ′ ″	″
Oct. 28	455	(a)	6·0	1 23 57	273 40	1 23·7	33·7	0·587	29·12	......	41·0	......	......	5	+39 41 35·0	+28·7
	......	Nadir ‖	......	1 40 0	54 0	2 51·7	54·1	0·500	......	42·0	......	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 63·1	65·9	0·500	......	......	......	......	......	......	......	......
Oct. 30	......	Nadir ‖	......	2 8 0	54 0	2 52·9	55·4	0·500	29·50	41·0	41·1	......	5	......	......	......
	......	(b) Nadir ‖	......	......	54 0	2 64·6	67·0	0·500	......	......	......	......	......	......	......	......
Nov. 3	......	Nadir ‖	......	1 55 0	54 0	2 51·8	55·1	0·500	29·63	50·0	52·0	3, S.	3	......	......	......
	......	Nadir ‖	......	......	54 0	2 62·3	65·0	0·500	......	......	......	......	......	......	......	......
	718	......	6·5	2 11 35	233 20	3 26·1	35·9	0·500	29·63	......	51·4	......	......	5	− 0 39 27·6	+24·9
	......	(a) Nadir ‖	......	3 30 0	54 0	2 52·0	55·4	0·500	29·63	51·4	51·4	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 62·1	64·9	0·500	......	......	......	......	......	......	......	......
Nov. 4	......	Nadir ‖	......	1 4 0	54 0	2 53·3	55·7	0·500	29·81	48·0	42·9	8, W.	0	......	......	......
	......	Nadir ‖	......	......	54 0	2 63·0	65·0	0·500	......	......	......	......	......	......	......	......
	514	......	......	1 33 15	260 35	3 21·8	30·4	0·673	29·81	......	42·9	......	......	6	+26 35 33·5	+29·3
	562	......	6·5	1 43 25	239 10	2 14·5	23·8	0·577	29·81	......	42·9	......	......	7	+ 5 9 22·2	+26·8
	645	......	7·5	1 58 16	264 45	1 2·1	11·2	0·468	29·81	......	42·9	......	......	6	+30 46 8·9	+25·9
	718	......	6·0	2 11 31	233 20	3 21·7	31·0	0·561	29·81	......	42·8	......	......	7	− 0 39 27·9	+25·2
	764	......	......	2 21 38	281 0	1 57·3	67·3	0·500	29·81	......	42·9	......	......	6	+46 59 5·5	+24·3
	793	......	......	2 27 51	283 45	0 7·8	19·2	0·500	29·81	......	42·9	......	......	6	+49 42 16·4	+23·7
	834	......	......	2 35 14	264 55	1 21·8	31·2	0·500	29·81	......	42·7	......	......	5	+30 53 28·9	+23·2
	891	......	......	2 44 44	284 0	4 18·1	28·8	0·500	29·81	......	42·7	......	......	5	+50 1 27·3	+22·4
	949	α Ceti	......	2 54 27	286 25	0 52·0	62·4	0·500	29·81	......	42·7	......	......	7	+52 23 0·4	+21·4
	980	......	......	3 1 39	263 35	2 26·4	36·4	0·500	29·81	......	42·3	......	......	7	+29 34 34·0	+20·3
	1055	......	......	3 15 55	268 25	1 27·3	37·1	0·357	29·81	......	42·0	......	......	6	+34 23 30·8	+18·9
	1101	......	8·0	3 26 27	258 45	1 33·0	42·9	0·608	29·81	......	41·4	......	......	5	+24 43 43·1	+17·0
	1166	η Tauri	......	3 38 40	266 15	3 51·8	62·1	0·500	29·81	......	40·2	......	......	6	+32 16 0·0	+16·0
	1282	......	......	4 2 53	241 15	0 48·4	59·8	0·717	29·82	......	39·3	......	......	7	+ 7 13 0·7	+ 9·7
	1318	......	6·0	4 10 2	233 45	4 59·7	69·1	0·554	29·82	......	39·1	......	0	8	− 0 12 52·8	+ 7·6
	1361	......	......	4 16 17	271 15	1 2·9	12·2	0·500	29·82	......	38·8	......	......	6	+37 13 10·2	+12·1
	......	Nadir ‖	......	4 21 0	54 0	2 52·6	56·0	0·500	29·82	40·0	38·7	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 64·0	65·8	0·500	......	......	......	......	......	......	......	......
Nov. 5	......	Nadir ‖	......	1 43 0	54 0	2 52·5	54·5	0·500	29·75	46·0	41·0	0	4	......	......	......
	......	Nadir ‖	......	......	54 0	2 63·2	65·4	0·500	......	......	......	......	......	......	......	......
	718	(c)	......	2 11 31	233 20	3 21·4	31·9	0·596	29·75	......	39·4	......	......	5	− 0 39 28·3	+25·4
	793	......	......	......	283 45	0 9·8	20·0	0·500	29·74	......	39·0	......	......	6	+49 42 17·6	+23·7
	891	......	6·0	2 44 42	284 0	4 11·5	21·3	0·680	29·74	......	38·4	......	......	3	+50 1 28·1	+22·3
	962	ι Persei	......	2 58 31	240 50	4 53·0	61·4	0·540	29·74	......	38·0	......	......	6	+ 6 51 59·7	+19·5
	1101	......	......	3 26 27	258 45	1 35·6	45·8	0·500	29·74	......	38·0	......	......	4	+24 43 42·6	+17·0
	1166	η Tauri	......	......	266 15	3 51·0	61·2	0·500	29·74	......	38·0	......	......	4	+32 15 58·9	+16·1
	1282	......	......	4 2 53	241 15	0 52·9	63·9	0·551	29·74	......	37·1	3, N.W.	0	5	+ 7 13 0·2	+ 9·9
	1318	......	......	4 10 2	233 45	5 3·1	11·9	0·463	29·74	......	37·0	......	......	6	− 0 12 53·7	+ 7·8
	1361	......	......	4 16 17	271 15	1 0·2	8·0	0·564	29·74	......	37·0	......	......	5	+37 13 8·2	+12·1
	......	Nadir ‖	......	4 26 0	54 0	2 53·7	55·1	0·500	29·74	37·0	36·8	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 64·9	67·1	0·500	......	......	......	......	......	......	......	......
Nov. 6	......	Nadir ‖	......	1 9 0	54 0	2 53·5	55·5	0·500	29·88	43·7	37·0	0	0	......	......	......
	......	Nadir ‖	......	......	54 0	2 63·6	66·0	0·500	......	......	......	......	......	......	......	......
	455	......	......	1 24 0	273 40	4 26·1	35·1	0·500	29·88	......	37·0	......	......	6	+39 41 34·2	+29·0

(a) Cloudy. (b) Clouds increasing. (c) Bad definition.

Date.	Star or other Object Observed. No. in British Assn.Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1862.
1862.				h. m. s.	° ′	′ ″	″	revs.	inches	°	°				° ′ ″	″
Nov. 6	538	....	......	1 38 29	273 15	0 47·7	54·3	0·500	29·88	......	37·0	....	......	7	+39 12 54·6	+28·1
	586	....	......	1 48 52	226 0	3 9·0	15·4	0·500	29·88	......	37·0	....	......	6	− 7 59 46·9	+28·3
	694	(a)	8·0	2 7 35	226 10	3 1·3	11·0	0·500	29·89	......	36·2	....	......	4	− 7 49 52·9	+25·9
	764	....	......	2 21 36	261 0	1 55·0	61·8	0·553	29·89	......	36·1	....	......	4	+46 59 4·6	+24·2
	822	(b)	......	2 32 44	247 50	3 15·3	25·1	0·500	29·89	......	36·1	....	......	4	+13 50 21·9	+23·4
	891	....	......	2 44 44	281 0	4 17·1	27·3	0·531	29·89	......	36·0	....	......	5	+50 1 27·0	+22·3
	962	ι Persei..................	......	2 58 32	240 50	4 50·0	62·7	0·500	29·89	......	36·0	....	......	7	+ 6 51 58·0	+19·7
	985	....	......	....	215 15	1 56·9	66·0	0·500	29·89	......	36·0	....	......	3	−18 45 58·2	+16·8
	1055	....	......	3 15 56	268 25	1 21·5	31·9	0·563	29·89	......	35·9	....	......	6	+34 23 30·9	+19·0
	1101	....	......	3 26 25	258 45	1 34·9	45·2	0·500	29·89	......	36·3	....	......	5	+24 43 42·1	+17·1
	1166	η Tauri..................	......	3 38 40	266 15	3 53·6	63·8	0·400	29·89	......	36·2	....	......	7	+32 15 58·9	+16·1
	1282	....	......	4 2 54	241 15	0 54·0	65·6	0·469	29·89	......	35·9	....	......	5	+ 7 12 59·5	+10·1
	1318	....	......	4 10 3	233 45	4 56·0	68·6	0·601	29·89	......	35·4	....	......	6	− 0 12 53·8	+ 8·0
	1361	....	......	4 16 18	271 15	0 59·3	68·0	0·635	29·89	......	35·3	....	......	6	+37 13 9·8	+12·2
	......	Nadir ‖	......	4 26 0	54 0	2 52·1	53·2	0·500	29·89	35·2	35·2	....	......	......	....	......
	......	Nadir ‖............	......	....	54 0	2 64·0	65·0	0·500	......	......	......	....	......	......	....	......
Nov. 7	......	Nadir ‖	......	3 30 0	54 0	2 52·2	54·6	0·500	30·00	42·0	39·2	....	......	......	....	......
	......	Nadir ‖............	......	....	54 0	2 64·3	66·0	0·500	......	......	......	....	......	......	....	......
	1282	(c)	......	4 2 53	241 15	0 49·1	57·9	0·733	30·00	......	39·0	6, N.W.	0	6	+ 7 13 0·6	+10·3
	1318	....	......	4 10 4	233 45	4 52·3	62·3	0·733	30·00	......	39·0	....	......	6	− 0 12 54·9	+ 8·2
	1361	....	......	4 16 19	271 15	1 3·8	12·4	0·500	30·00	......	38·7	....	......	7	+37 13 10·7	+12·2
	1431	....	......	4 29 49	277 45	0 18·0	27·6	0·500	30·00	......	38·7	....	......	6	+43 42 25·5	+11·4
	1459	....	......	4 36 14	231 35	4 11·1	20·9	0·500	30·00	......	38·7	....	......	5	+ 0 36 17·1	+ 4·0
	......	Nadir ‖	......	4 41 0	54 0	2 50·6	51·4	0·500	30·00	40·1	38·6	....	......	......	....	......
	......	Nadir ‖............	......	....	54 0	2 66·6	66·6	0·500	......	......	......	....	......	......	....	......
Nov. 10	......	Nadir ‖	......	1 41 0	54 0	2 51·8	54·4	0·500	28·76	40·0	33·8	12, N.W.	5	......	....	......
	......	Nadir ‖............	......	....	54 0	2 64·8	66·0	0·500	......	......	......	....	......	......	....	......
	645	....	......	1 58 19	264 45	4 6·4	14·8	0·367	28·76	......	33·8	....	......	6	+30 46 9·9	+27·1
	920	(d)	......	2 50 24	268 55	0 25·0	33·8	0·600	28·77	......	33·8	....	......	6	+34 52 34·5	+22·0
Nov. 11	......	Nadir ‖	......	1 50 0	54 0	2 52·0	54·5	0·500	29·41	36·0	34·2	15, W.	0	......	....	......
	......	Nadir ‖............	......	....	54 0	2 64·6	65·9	0·500	......	......	......	....	......	......	....	......
	718	....	......	2 11 38	233 20	3 25·0	31·4	0·541	20·41	......	34·2	....	......	5	− 0 39 29·7	+27·0
	764	....	......	2 21 40	281 0	1 59·2	63·3	0·500	29·41	......	34·0	....	......	6	+46 59 5·0	+24·1
	793	....	......	2 27 57	283 45	0 8·0	16·0	0·500	29·41	......	34·0	....	......	5	+19 12 15·3	+23·4
	834	....	......	2 35 17	264 55	1 21·4	28·9	0·500	29·41	......	34·0	....	......	6	+30 53 27·6	+23·5
	891	....	......	2 44 48	281 0	4 19·8	27·8	0·500	29·41	......	34·0	....	......	5	+50 1 27·7	+22·0
	920	....	......	2 50 25	268 55	0 25·6	33·2	0·518	29·41	......	34·0	....	......	7	+34 52 32·2	+22·1
	962	ι Persei	......	2 58 35	240 50	4 50·9	58·8	0·550	29·41	......	34·0	....	......	6	+ 6 51 57·8	+20·7
	1055	....	......	3 16 0	268 25	1 22·7	30·0	0·541	29·41	......	34·0	....	......	5	+34 23 30·0	+19·2
	1101	....	......	3 26 30	258 45	1 34·1	42·1	0·500	29·41	......	34·0	....	......	6	+24 43 40·2	+17·6
	1166	η Tauri..................	......	3 38 44	266 15	3 51·6	60·4	0·500	29·41	......	34·0	....	......	7	+32 15 59·0	+16·4
	1282	....	......	4 2 58	241 15	0 53·0	61·6	0·500	29·41	......	34·0	....	......	6	+ 7 12 57·9	+11·0
	1318	....	......	4 10 8	233 45	4 57·6	66·8	0·500	29·41	......	34·0	....	......	7	− 0 12 56·5	+ 9·1
	1361	....	......	4 16 22	271 15	1 2·6	10·4	0·530	29·41	......	34·0	....	......	5	+37 13 9·9	+12·2
	1434	....	......	4 29 53	277 45	0 16·0	24·4	0·584	29·41	......	34·0	....	......	7	+43 42 25·2	+11·2
	1459	....	......	4 36 17	234 35	4 7·9	14·8	0·612	29·41	......	34·0	....	......		+ 0 36 15·5	+ 4·6
	1491	....	......	4 42 32	281 15	4 25·9	33·0	0·500	29·41	......	34·0	....	......	6	+47 16 33·7	+10·2

(a) Stars blurred.

(b) { •c •d •b •a •e } a observed ;—called a Nebula in B.A.C.

(c) Halo round the Moon.

(d) Sky getting overcast.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1862.
1862				h m s	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Nov. 11	......	Nadir ‖ |	......	4 51 0	54 0	2 52·7	54·3	0·500	29·41	35·0	34·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 64·9	65·1	0·500	......	......	......	......	......	......	......	......
Nov. 12	......	Nadir ‖ |	......	3 0 0	54 0	2 53·2	53·2	0·500	29·84	37·9	31·5	0	0	......	......	......
	......	Nadir | ‖	......	......	54 0	2 66·1	67·0	0·500	......	......	......	......	......	......	......	......
	1055	(a)	......	3 16 2	268 25	1 19·7	27·2	0·568	29·84	......	31·5	......	......	4	+ 34 23 27·6	+ 10·3
	1101	......	......	3 26 31	258 45	1 36·5	44·5	0·410	29·84	......	31·1	......	......	4	+ 24 43 40·8	+ 17·7
	1166	η Tauri	......	3 38 45	266 15	3 51·6	59·9	0·410	29·84	......	31·0	......	......	5	+ 32 15 56·1	+ 16·4
	1318	......	......	4 10 5	233 45	4 53·2	62·3	0·563	29·84	......	31·0	......	......	5	− 0 12 59·3	+ 9·3
	1459	......	......	4 36 18	231 35	4 11·2	19·2	0·397	29·84	......	31·0	......	......	4	+ 0 36 13·3	+ 5·0
	1501	......	......	4 44 57	234 20	4 20·0	28·9	0·673	29·84	......	31·0	......	......	4	+ 0 21 30·2	+ 3·5
	......	Nadir ‖ |	......	4 50 0	54 0	2 53·0	53·4	0·500	29·84	36·0	31·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 61·9	64·0	0·500	......	......	......	......	......	......	......	......
Nov. 14	......	Nadir ‖ |	......	1 41 0	54 0	2 53·8	55·0	0·500	29·80	40·0	38·2	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 63·8	64·2	0·500	......	......	......	......	......	......	......	......
Nov. 17	......	Nadir ‖ |	......	2 15 0	54 0	2 54·0	55·1	0·500	30·11	40·1	39·1	4, W.	0	......	......	......
	......	Nadir | ‖	......	......	54 0	2 63·6	64·5	0·500	......	......	......	......	......	......	......	......
	891	......	......	2 44 54	284 0	4 17·4	26·8	0·500	30·11	......	38·2	......	......	5	+ 50 1 26·0	+ 21·7
	949	α Ceti	......	2 54 36	286 25	0 55·1	63·0	0·433	30·11	......	38·0	......	......	5	+ 52 23 0·3	+ 20·6
	980	......	......	3 1 49	263 35	2 29·2	37·8	0·110	30·11	......	38·0	......	......	6	+ 29 34 34·4	+ 21·3
	1055	......	......	3 16 6	268 25	1 25·2	32·4	0·404	30·11	......	37·4	......	......	7	+ 34 23 28·6	+ 19·5
	1101	......	......	3 26 35	258 45	1 33·3	41·8	0·563	30·11	......	37·4	......	......	6	+ 24 43 41·4	+ 18·2
	1166	η Tauri	......	3 38 49	266 15	3 51·5	59·4	0·500	30·11	......	37·6	......	......	5	+ 32 15 58·4	+ 16·6
	1434	......	......	4 29 59	277 45	0 17·9	25·9	0·500	30·11	......	37·6	......	......	6	+ 43 42 24·6	+ 11·0
	1491	......	......	......	281 15	4 27·0	35·2	0·457	30·11	......	37·5	......	......	7	+ 47 16 33·7	+ 9·8
	1626	(b)	......	5 8 37	249 40	1 14·6	22·6	0·580	30·11	......	37·0	......	......	6	+ 15 38 22·1	+ 2·5
	......	Nadir ‖ |	......	5 15 0	54 0	2 53·6	53·6	0·500	30·11	38·4	37·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 63·6	63·5	0·500	......	......	......	......	......	......	......	......
Nov. 18	......	Nadir ‖ |	......	2 8 0	54 0	2 53·4	53·4	0·500	30·10	40·0	39·0	0	0	......	......	......
	......	Nadir | ‖	......	......	54 0	2 65·8	66·0	0·500	......	......	......	......	......	......	......	......
	764	......	......	2 21 46	281 0	1 57·4	66·7	0·500	30·10	......	38·6	......	......	6	+ 46 59 5·2	+ 23·9
	891	......	8·0	2 44 53	284 0	4 22·2	31·1	0·366	30·10	......	37·8	......	......	5	+ 50 1 26·9	+ 21·7
	949	α Ceti	......	2 54 37	266 25	0 50·8	60·0	0·567	30·10	......	37·8	......	......	7	+ 52 23 0·5	+ 20·5
	980	......	......	3 1 49	263 35	2 23·8	32·7	0·568	30·10	......	37·4	......	......	5	+ 29 34 33·2	+ 21·3
	1055	......	......	3 16 5	268 25	1 21·2	29·2	0·564	30·10	......	37·2	......	......	6	+ 34 23 30·0	+ 19·5
	1101	......	......	3 26 37	258 45	1 33·0	40·9	0·500	30·10	......	37·2	......	......	6	+ 24 43 39·1	+ 18·3
	1166	η Tauri	......	3 38 51	266 15	3 50·2	59·4	0·500	30·10	......	37·2	......	......	5	+ 32 15 57·7	+ 16·6
	1318	......	......	4 10 13	233 45	4 56·2	64·8	0·474	30·10	......	37·2	......	......	6	− 0 12 58·9	+ 10·6
	1361	......	......	4 16 28	271 15	0 58·3	66·0	0·695	30·10	......	37·2	......	......	7	+ 37 13 10·1	+ 12·2
	1491	......	......	4 42 39	281 15	4 26·8	35·0	0·418	30·10	......	37·2	......	......	6	+ 47 16 32·4	+ 9·7
	1626	......	......	5 8 36	249 40	1 13·6	22·1	0·610	30·10	......	37·0	......	......	5	+ 15 38 22·1	+ 2·6
	......	Nadir ‖ |	......	5 16 0	54 0	2 52·1	53·1	0·500	30·10	39·6	37·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 65·0	65·3	0·500	......	......	......	......	......	......	......	......
Nov. 20	......	Nadir ‖	......	2 21 0	54 0	2 52·4	53·0	0·500	30·06	41·0	39·0	2, W.	7	......	......	......
	......	Nadir | ‖	......	......	54 0	2 61·8	65·8	0·500	......	......	......	......	......	......	......	......
	962	ι Persei	......	2 58 43	240 50	4 47·8	56·4	0·608	30·06	......	37·6	......	......	6	+ 6 51 56·9	+ 22·5

(a) Bad definition. (b) Aurora in N.W.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1862.
1862.				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
Nov. 21	......	Nadir ‖|	......	2 9 0	54 0	2 52·7	52·7	0·500	29·87	41·0	38·0	0	0	......	....	......
	......	Nadir |‖	......	....	54 0	2 63·7	64·3	0·500	......	......	......	....	......	......	....	......
Nov. 24	......	Nadir ‖|	......	3 21 0	54 0	2 51·6	53·0	0·500	29·60	37·2	32·0	0	0	......	....	......
	......	Nadir |‖	......	....	54 0	2 63·6	64·8	0·500	......	......	......	....	......	......	....	......
	1282	....	......	4 3 9	241 15	0 46·8	56·0	0·674	29·60	......	32·0	....	......	6	+ 7 12 57·5	+13·4
	1318	....	6·0	4 10 19	233 45	4 52·4	60·6	0·642	29·60	......	32·0	....	......	7	− 0 12 57·5	+11·9
	1491	....	......	4 42 42	281 15	4 26·2	33·3	0·478	29·60	......	32·0	....	......	6	+47 16 33·7	+ 9·2
	1626	....	......	5 8 42	249 40	1 15·6	24·2	0·500	29·60	......	32·0	....	......	7	+15 38 22·0	+ 3·2
	......	Nadir ‖|	......	5 29 0	54 0	2 52·4	53·0	0·500	29·60	33·8	32·0	....	......	......	....	......
	......	Nadir |‖	......	....	54 0	2 64·1	64·6	0·500	......	......	......	....	......	......	....	......
Nov. 26	......	Nadir ‖|	......	3 33 0	54 0	2 52·0	52·5	0·500	29·23	37·1	33·4	5, S.E.	3	......	....	......
	......	Nadir |‖	......	....	54 0	2 61·8	62·0	0·500	......	......	......	....	......	......	....	......
	1361	....	......	....	271 15	1 2·8	11·4	0·500	29·23	......	32·7	....	......	5	+37 13 10·7	+12·1
	1463	....	......	4 37 3	266 35	2 13·0	21·9	0·561	29·23	......	32·6	....	......	7	+32 34 22·9	+ 9·3
	1501	....	......	4 45 9	234 20	4 15·0	23·0	0·641	29·23	......	32·6	....	......	6	+ 0 21 25·0	+ 6·3
	1626	....	......	5 8 43	249 40	1 14·9	23·4	0·500	29·23	......	32·9	....	......	8	+15 38 21·5	+ 3·4
	......	Nadir ‖|	......	6 1 0	54 0	2 52·0	54·4	0·500	29·22	36·0	33·0	....	......	......	....	......
	......	Nadir |‖	......	....	54 0	2 64·1	65·7	0·500	......	......	......	....	......	......	....	......
Nov. 27	......	Nadir ‖|	......	3 17 0	54 0	2 53·7	55·1	0·500	29·20	37·1	36·5	8, W.	1	......	....	......
	......	Nadir |‖	......	....	54 0	2 65·0	66·0	0·500	......	......	......	....	......	......	....	......
	1282	....	......	4 3 12	241 15	0 48·4	57·2	0·642	29·20	......	36·2	....	......	6	+ 7 12 57·3	+13·9
	1361	....	6·0	4 16 36	271 15	1 2·7	11·4	0·560	29·20	......	36·1	....	......	7	+37 13 11·3	+12·1
	1459	....	......	4 36 32	234 35	4 3·3	10·3	0·617	29·20	......	36·1	....	......	6	+ 0 36 11·2	+ 8·0
	1626	....	......	5 8 45	249 40	1 15·9	23·9	0·500	29·20	......	36·6	....	......	5	+15 38 21·2	+ 3·5
	1683	....	......	5 17 23	255 40	3 48·5	57·1	0·639	29·22	......	36·4	....	......	6	+21 40 59·0	+ 2·7
	1769	....	......	5 29 52	236 35	0 4·3	12·9	0·579	29·22	......	36·0	....	......	8	+ 2 32 10·9	− 1·3
	......	Nadir ‖|	......	5 40 0	54 0	2 53·6	54·0	0·500	29·22	38·0	35·1	....	......	......	....	......
	......	Nadir |‖	......	....	54 0	2 64·6	65·4	0·500	......	......	......	....	......	......	....	......
Dec. 4	......	Nadir ‖|	......	4 30 0	54 0	2 51·7	53·9	0·500	29·58	44·4	45·5	2, S.	5	......	....	......
	......	Nadir |‖	......	....	54 0	2 63·7	66·1	0·500	......	......	......	....	......	......	....	......
	1501	....	......	4 45 16	234 20	4 11·4	19·0	0·782	29·58	......	45·5	....	......	6	+ 0 21 24·3	+ 7·9
	1626	....	......	....	249 40	1 4·7	13·4	0·843	29·58	......	45·5	....	......	4	+15 38 20·0	+ 4·2
	1907	....	......	5 50 53	277 10	1 51·2	60·6	0·563	29·58	......	45·5	....	......	6	+43 9 0·9	− 0·2
	2022	....	......	6 9 17	279 55	4 55·8	64·9	0·500	29·58	......	45·9	....	......	7	+45 57 4·5	− 2·2
	......	Nadir ‖|	......	6 14 0	54 0	2 52·6	54·2	0·500	29·58	46·2	46·0	....	......	......	....	......
	......	Nadir |‖	......	....	54 0	2 63·2	65·4	0·500	......	......	......	....	......	......	....	......
Dec. 5	......	Nadir ‖|	......	5 12 0	54 0	2 51·1	53·5	0·500	29·42	46·2	48·9	15, S.	5	......	....	......
	......	Nadir |‖	......	....	54 0	2 63·9	65·9	0·500	......	......	......	....	......	......	....	......
	1826	....	......	5 39 4	280 30	1 9·7	19·3	0·460	29·41	......	48·9	....	......	6	+46 28 16·8	+ 1·4
	1883	α Orionis	2·0	5 47 29	262 35	1 32·4	42·0	0·450	29·41	......	48·9	....	......	7	+48 33 39·4	+ 0·5
	1932	....	......	5 54 56	251 25	0 27·8	39·0	0·638	29·41	......	48·4	....	......	6	+17 22 38·7	− 3·2
	2022	....	......	6 9 17	279 55	4 53·0	62·9	0·573	29·41	......	48·4	....	......	6	+45 57 4·3	− 2·4
	2101	(a)	......	....	267 20	1 44·4	54·0	0·500	29·41	......	48·2	....	......	4	+33 18 52·1	− 5·5
	......	Nadir ‖|	......	6 29 0	54 0	2 52·0	54·2	0·500	29·41	47·9	48·0	....	......	......	....	......
	......	Nadir |‖	......	....	54 0	2 63·9	65·2	0·500	......	......	......	....	......	......	....	......

(a) Sky getting overcast.

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Date.	Star or other Object Observed. No. in British Assn. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1862.
1862.				h m s	° ′	° ′ ″	″	revs	inches	°	°				° ′ ″	″
Dec. 10	......	Nadir ||	......	3 29 0	54 0	2 50·4	52·0	0·500	29·38	43·2	41·0	......	......	......	......	......
	......	Nadir | ||	......	......	54 0	2 63·8	66·2	0·500	......	......	......	......	......	......	......	......
Dec. 11	......	Nadir ||	......	3 40 0	54 0	2 53·4	52·0	0·500	29·51	41·0	36·0	......	......	......	......	......
	......	Nadir | ||	......	......	54 0	2 61·8	66·6	0·500	......	......	......	......	......	......	......	......
	1292	......	......	4 3 20	241 15	0 44·2	55·2	0·618	29·51	......	36·0	......	......	6	+ 7 12 53·3	+16·3
	1434	......	4·0	4 30 15	277 45	0 22·2	30·8	0·462	29·51	......	35·7	15, W.	0	7	+43 42 27·8	+ 9·7
	1463	......	7·6	4 37 11	266 35	2 13·4	23·4	0·582	29·51	......	35·6	......	......	7	+32 34 23·1	+ 5·2
	1501	......	......	4 45 19	234 20	4 15·0	23·0	0·600	29·51	......	35·5	......	......	8	+ 0 21 22·6	+ 9·3
	1626	......	......	5 8 51	219 40	1 17·7	26·7	0·336	29·51	......	35·5	......	......	8	+15 38 18·7	+ 5·0
	1696	......	......	5 19 7	287 10	0 11·4	20·4	0·500	29·51	......	35·5	......	......	5	+53 7 18·7	+ 3·4
	1769	......	......	5 30 0	236 35	0 0·2	9·8	0·646	29·51	......	35·5	......	......	7	+ 2 32 8·8	+ 1·1
	1826	......	......	5 39 5	280 30	1 8·4	16·3	0·500	29·51	......	35·5	......	......	6	+46 28 15·1	+ 0·9
	2022	......	......	6 9 19	279 55	5 3·4	12·2	0·342	29·51	......	35·5	20, W.	0	7	+45 57 5·8	− 3·0
	2046	......	......	6 14 37	233 35	4 16·1	24·0	0·500	29·51	......	35·5	......	......	6	− 0 23 39·2	− 7·2
	2101	......	......	6 21 51	267 20	1 42·6	50·0	0·670	29·51	......	35·5	......	......		+33 18 53·2	− 5·7
	2184	......	......	6 33 12	273 25	3 16·5	24·1	0·430	29·51	......	35·5	......	......	6	+39 25 21·1	− 6·7
	2238	......	......	6 43 27	266 10	4 5·0	13·9	0·640	29·51	......	35·5	......	......	7	+32 11 16·0	− 8·9
	......	Nadir ||	......	6 51 0	54 0	2 53·8	55·7	0·500	29·51	37·0	35·5	......	......	......	......	......
	......	Nadir | ||	......	......	54 0	2 65·0	66·4	0·500	......	......	......	......	......	......	......	......
Dec. 15	......	Nadir ||	......	3 56 0	54 0	2 52·6	54·0	0·500	29·62	44·1	47·2	......	......	......	......	......
	......	Nadir | ||	......	......	54 0	2 63·8	66·0	0·500	......	......	......	......	......	......	......	......
	1347	(a)	......	4 15 0	265 50	4 41·2	49·6	0·500	29·62	......	47·0	35, W.	2	4	+31 51 48·6	+12·7
	1434	......	......	4 30 17	277 45	0 22·0	32·2	0·406	29·62	......	46·9	......	......	4	+43 42 27·3	+ 9·5
Dec. 17	......	Nadir ||	......	4 0 0	54 0	2 51·7	52·9	0·500	29·87	42·9	41·1	......	......	......	......	......
	......	Nadir | ||	......	......	54 0	2 64·4	65·8	0·500	......	......	......	......	......	......	......	......
	1491	......	......	4 42 57	281 15	4 27·0	35·4	0·500	29·88	......	41·0	10, W.	0	6	+47 16 35·2	+ 7·4
	1626	......	......	5 8 55	219 40	1 12·9	21·7	0·500	29·88	......	41·0	......	......	7	+15 38 18·8	+ 5·7
	1683	......	......	5 17 12	255 40	3 51·8	60·2	0·503	29·88	......	41·0	......	......	8	+21 40 58·6	+ 4·0
	1730	δ Orionis	......	5 24 48	290 20	3 0·2	9·0	0·500	29·88	......	41·0	......	......	6	+56 20 8·7	+ 1·8
	1772	......	......	5 30 21	260 50	1 52·7	59·9	0·500	29·88	......	41·0	......	......	8	+26 48 58·8	+ 1·8
	......	Nadir ||	......	6 0 0	54 0	2 51·3	53·1	0·500	29·86	42·0	41·0	......	......	......	......	......
	......	Nadir | ||	......	......	54 0	2 65·0	65·3	0·500	......	......	......	......	......	......	......	......
Dec. 22	......	Nadir ||	......	4 20 0	54 0	2 51·9	51·9	0·500	29·66	42·0	46·2	......	......	......	......	......
	......	Nadir | ||	......	......	54 0	2 63·7	64·1	0·500	......	......	......	......	......	......	......	......
	1459	......	......	4 36 45	234 35	3 58·8	67·7	0·618	29·66	......	46·1	0, W.	0	7	+ 0 36 8·3	+13·0
	1491	......	......	4 43 0	281 15	4 29·8	38·0	0·500	29·66	......	46·1	......	......	7	+47 16 38·4	+ 7·0
	1656	......	......	5 14 7	281 40	1 49·4	59·2	0·500	29·66	......	46·0	......	......	6	+47 38 56·2	+ 3·0
	1703	(b)	......	5 20 6	273 40	0 6·8	16·6	0·500	29·66	......	46·0	......	......	8	+39 37 14·9	+ 2·8
	1766	......	......	5 29 13	280 45	1 29·6	40·0	0·431	29·66	......	46·0	......	......	8	+46 43 36·7	+ 1·1
	1826	......	......	5 39 12	280 30	1 8·3	19·1	0·500	29·66	......	46·0	......	......	7	+46 28 17·4	− 0·1
	1893	......	......	5 48 47	280 30	0 8·7	18·9	0·500	29·66	......	46·0	15, W.	0	7	+45 27 17·2	− 1·4
	2101	......	......	6 21 56	267 20	1 44·8	52·2	0·500	29·67	......	46·0	......	......	6	+33 18 51·7	− 6·0
	2184	......	......	6 33 17	273 25	3 15·6	24·4	0·430	29·67	......	46·0	......	......	8	+39 25 22·0	− 7·4
	2238	......	6·0	6 43 31	266 10	4 6·0	15·6	0·577	29·67	......	46·0	......	......	5	+32 11 16·6	− 9·2
	2292	......	8·0	6 53 15	279 10	0 31·0	39·4	0·500	29·67	......	46·0	......	......	4	+45 7 38·8	− 9·7
	2334	......	......	7 1 10	239 55	4 43·5	53·3	0·568	29·67	......	46·0	......	......	5	+ 5 56 52·6	−13·5
	2379	......	5·0	7 7 57	240 15	2 57·0	67·4	0·750	29·67	......	46·0	......	......	6	+ 8 15 10·9	−14·6

(a) Bad definition. (b) Good definition.

Date.	Star or other Object Observed. No. in British Assoc. Catalogue	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer. Fahr.	Exterior Thermometer. Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1862.
				h m s	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
1862. Dec. 22	2463	......	......	7 19 59	262 5	5 17·0	28·4	0·500	29·67	......	46·0	......	......	5	+28 7 25·4	−14·8
	......	Nadir	......	7 30 0	54 0	2 52·4	54·0	0·500	29·67	44·2	45·8	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·0	65·0	0·500	......	......	......	......	......	......	......	......
Dec. 23	......	Nadir	......	5 0 0	54 0	2 51·7	53·4	0·500	29·84	44·1	46·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·1	64·7	0·500	......	......	......	......	......	......	......	......
	1656	......	......	5 14 7	281 40	1 48·9	58·4	0·500	29·84	......	45·9	6, S.W.	0	7	+47 38 57·5	+ 2·9
	1730	δ Orionis	......	5 24 51	290 20	3 1·5	10·6	0·500	29·84	......	45·9	......	......	6	+56 20 10·7	+ 0·9
	1772	......	......	5 30 27	260 50	1 47·7	56·8	0·678	29·84	......	45·9	......	......	7	+26 49 0·0	+ 2·0
	1826	......	......	5 39 12	280 30	1 9·0	18·9	0·500	29·82	......	45·6	......	......	6	+46 28 17·7	− 0·2
	1907	......	......	5 51 1	277 10	1 55·1	64·7	0·464	29·82	......	45·6	......	......	8	+43 9 2·7	− 1·7
	2046	......	......	6 14 44	233 35	4 7·9	15·0	0·659	29·82	......	45·5	......	......	6	− 0 23 42·4	− 5·0
	2101	(a)	......	6 21 56	267 20	1 46·2	54·0	0·500	29·82	......	45·5	......	......	7	+33 18 53·3	− 6·0
	......	Nadir	......	7 16 0	54 0	2 50·8	52·2	0·500	29·81	45·0	46·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·0	66·2	0·500	......	......	......	......	......	......	......	......
Dec. 24	......	Nadir	......	6 36 0	54 0	2 51·4	54·0	0·500	29·60	45·2	45·9	......	......	......	......	......
	......	Nadir	......	......	54 0	2 62·8	65·8	0·500	......	......	......	......	......	......	......	......
	2238	(b)	......	6 43 33	266 10	4 7·0	15·8	0·500	29·60	......	44·2	20, W.	5	6	+32 11 15·1	− 9·2
	2306	......	......	6 55 53	278 45	5 24·6	35·2	0·586	29·60	......	44·0	......	......	7	+44 47 35·8	−10·2
	2363	......	7·5	7 5 56	265 0	3 15·8	25·2	0·500	29·60	......	44·0	......	......	6	+31 0 24·0	−12·6
	2410	(c) δ Geminorum	......	7 11 47	267 45	0 49·1	58·0	0·637	29·60	......	44·0	......	......	5	+33 43 0·4	−13·2
	2463	......	......	7 20 0	262 5	5 16·0	25·7	0·632	29·60	......	44·0	......	......	6	+28 7 27·2	−14·8
	2488	......	......	7 26 25	243 30	1 36·6	46·8	0·500	29·60	......	44·0	......	......	7	+ 9 28 43·5	−17·3
	......	Nadir	......	7 31 0	54 0	2 52·0	54·2	0·500	29·60	44·0	44·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·7	64·7	0·500	......	......	......	......	......	......	......	......
Dec. 26	......	Nadir	......	4 21 0	54 0	2 53·7	55·9	0·500	29·94	41·1	37·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·0	64·8	0·500	......	......	......	......	......	......	......	......
	1459	......	......	4 36 46	234 35	3 55·0	62·8	0·750	29·94	......	37·0	7, W.	0	6	+ 0 36 6·9	+13·8
	1501	......	6·0	4 45 25	234 20	4 16·4	23·8	0·463	29·94	......	36·8	......	......	6	+ 0 21 20·1	+12·2
	1765	ι Orionis	2·0	5 29 8	291 15	1 20·3	28·9	0·408	29·94	......	36·8	......	......	7	+57 13 25·5	− 0·0
	1826	......	......	5 39 13	280 30	1 3·9	12·1	0·738	29·94	......	36·8	......	......	6	+46 28 17·6	− 0·5
	2046	......	......	6 14 44	233 35	4 12·0	19·0	0·500	29·94	......	36·8	......	......	7	− 0 23 43·4	− 4·5
	2101	......	......	6 21 57	267 20	1 37·0	46·2	0·840	29·94	......	36·8	......	......	6	+33 18 53·5	− 6·1
	2184	......	......	6 33 20	273 25	3 15·5	23·3	0·428	29·94	......	36·9	......	......	7	+39 25 20·6	− 7·6
	2238	......	......	6 43 33	266 10	4 3·3	12·7	0·612	29·94	......	36·9	......	......	6	+32 11 14·1	− 9·3
	2306	......	......	6 55 55	278 50	0 30·4	39·9	0·340	29·94	......	36·9	......	......	8	+44 47 33·7	−10·4
	2334	......	......	7 1 21	239 55	4 44·9	54·3	0·500	29·94	......	36·9	......	......	6	+ 5 56 51·2	−13·0
	2410	δ Geminorum	......	7 11 49	267 45	0 53·3	61·9	0·464	29·94	......	36·9	......	......	6	+33 42 58·9	−13·3
	2488	......	......	7 26 27	243 30	1 31·8	41·8	0·680	29·96	......	36·9	......	......	7	+ 9 28 42·9	−17·1
	2586	......	......	7 41 19	261 25	2 37·8	46·6	0·467	29·96	......	37·0	......	......	6	+27 24 43·7	−17·9
	......	Nadir	......	7 49 0	54 0	2 52·5	53·5	0·500	29·96	37·0	37·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 64·4	66·6	0·500	......	......	......	......	......	......	......	......
Dec. 29	......	Nadir	......	4 33 0	54 0	2 52·3	54·6	0·500	28·86	43·7	41·9	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·7	66·6	0·500	......	......	......	......	......	......	......	......
	1501	......	......	4 45 27	234 20	4 14·6	21·9	0·500	28·87	......	41·9	......	......	6	+ 0 21 19·3	+12·8
	1883	α Orionis	2·0	5 47 39	282 35	1 28·8	36·0	0·620	28·87	......	41·3	10, W.	0	6	+48 33 40·0	− 2·1
	1932	......	......	5 55 6	251 25	0 30·3	41·3	0·500	28·87	......	41·3	......	......	7	+17 22 36·0	− 1·1

(a) Sky getting overcast. (b) Aurora in W. (c) Wind boisterous.

Date.	Star or other Object Observed. No. in British Assoc. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1862.
1862.				h m s	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Dec. 30	......	Nadir ‖	......	4 47 0	54 0	2 51·8	54·4	0·500	29·49	42·2	38·6	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 62·0	63·4	0·500	......	......	......	....	......	......	....	......
	1626	....	......	5 9 1	249 40	1 9·3	17·7	0·590	29·49	......	38·5	....	......	6	+15 38 18·3	+ 7·0
	1703	....	......	5 20 9	273 40	0 7·4	16·6	0·500	29·49	......	38·5	....	......	7	+39 37 15·5	+ 2·5
	1769	....	6·0	5 30 7	236 30	4 56·4	64·8	0·700	29·49	......	38·5	....	......	6	+ 2 32 8·5	+ 4·5
	1883	α Orionis	......	5 47 40	282 35	1 27·9	36·9	0·540	29·44	......	38·1	6, W.	......	7	+48 33 37·8	− 2·2
	2154	....	......	6 33 22	273 25	3 11·3	23·5	0·500	29·44	......	38·0	....	......	6	+39 25 23·1	− 7·9
	2202	....	......	6 53 18	279 10	0 32·6	41·4	0·500	29·44	......	38·0	....	......	7	+45 7 40·9	−10·5
	2329	....	8·0	7 0 4	274 10	4 45·2	55·2	0·500	29·44	......	38·0	....	......	6	+40 11 54·9	−11·5
	2468	....	......	7 26 28	243 30	1 29·6	39·2	0·780	29·44	......	38·0	....	......	6	+ 9 28 44·1	−16·7
	......	Nadir ‖	......	8 0 0	54 0	2 52·0	51·2	0·500	29·44	40·0	38·0	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 62·2	63·2	0·500	......	......	......	....	......	......	....	......

ROYAL OBSERVATORY, EDINBURGH.

Individual Observations of Mean North Polar Distances of the Stars observed at the Royal Observatory, Edinburgh, in the Year 1862, reduced to January 1, 1862.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
B.A.C. 18.				
Oct. 9	0·77	(7·0)	h. m. 0 3	° ′ ″ 31 5 45·4
B.A.C. 26, γ Pegasi.				
Oct. 7	0·76	(2·0)	0 6	75 35 4·1
B.A.C. 42.				
Oct. 9	0·77	7·0	0 9	86 30 57·9
B.A.C. 83.				
Oct. 6	0·76	(6·0)	0 18	37 43 6·0
7	0·76			6·7
8	0·77			7·1
9	0·77			5·7
15	0·79			6·0
B.A.C. 113.				
Oct. 8	0·77	(7·0)	0 23	85 54 15·4
9	0·77			14·9
B.A.C. 120.				
Oct. 7	0·76	(6·0)	0 24	57 10 51·0
B.A.C. 149.				
Oct. 8	0·77	(6·0)	0 29	77 32 50·2
9	0·77			50·6
B.A.C. 177.				
Oct. 8	0·77	(7·0)	0 34	81 23 57·4
9	0·77			58·2
B.A.C. 259, μ Andromedæ.				
Oct. 15	0·79	(4·0)	h. m. 0 49	° ′ ″ 52 15 0·8
B.A.C. 290.				
Oct. 28	0·82	(7·0)	0 56	36 32 7·8
B.A.C. 314, μ Cassiopeæ.				
Oct. 20	0·80	(5·5)	0 59	35 45 30·7
21	0·81			32·9
B.A.C. 357.				
Oct. 24	0·81	(9·0)	1 5	58 39 30·4
28	0·82			28·6
B.A.C. 455.				
Oct. 28	0·82	(6·0)	1 24	73 45 28·8
Nov. 6	0·85			29·5
B.A.C. 459.				
Oct. 20	0·80	(7·0)	1 25	78 49 44·4
B.A.C. 514.				
Nov. 4	0·84	(6·5)	1 34	60 39 9·0
B.A.C. 538.				
Nov. 6	0·85	(6·5)	1 39	73 16 48·1
B.A.C. 562.				
Nov. 4	0·84	(6·5)	1 44	39 12 33·1
B.A.C. 588.				
Nov. 6	0·85	(6·5)	h. m. 1 50	° ′ ″ 26 3 9·8
B.A.C. 645.				
Nov. 4	0·84	7·5	1 59	64 49 47·6
10	0·86			48·5
B.A.C. 694.				
Nov. 6	0·85	8·0	2 8	26 13 1·6
B.A.C. 718.				
Nov. 3	0·84	6·5	2 12	33 23 33·5
4	0·84	6·0		33·4
5	0·84			33·2
11	0·86			33·4
B.A.C. 764.				
Nov. 4	0·84	(7·0)	2 22	81 3 9·5
6	0·85			9·6
11	0·86			9·1
18	0·88			10·0
B.A.C. 793.				
Nov. 4	0·84	(6·5)	2 29	83 46 26·1
5	0·84			27·7
11	0·86			25·1
B.A.C. 822.				
Nov. 6	0·85	(Neb.?)	2 34	47 53 36·8
B.A.C. 834.				
Nov. 4	0·84	(6·5)	2 36	64 57 4·1
11	0·86			3·5

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B.A.C. 891.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
Nov. 4	0·84	(6·0)	h m 2 45	° ′ ″ 84 5 36·7
5	0·84			37·9
6	0·85			37·2
11	0·86			36·9
17	0·88			35·9
18	0·88			36·8

B.A.C. 920.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
Nov. 10	0·86	(7·0)	2 51	68 56 13·6
11	0·86			12·3

B.A.C. 949, α Ceti.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
Nov. 4	0·84	(2·5)	2 55	86 27 14·8
17	0·88			15·4
18	0·88			15·5

B.A.C. 962, ι Persei.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
Nov. 5	0·84	(4·0)	2 59	40 55 3·1
6	0·85			1·7
11	0·86			2·4
20	0·88			3·4

B.A.C. 980.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
Nov. 4	0·84	(6·5)	3 2	63 38 4·5
17	0·88			6·5
18	0·88			5·4

B.A.C. 985.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
Nov. 6	0·85	8·0	3 3	15 16 35·1

B.A.C. 1055.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
Nov. 4	0·84	(7·5)	3 17	68 27 6·8
6	0·85			7·6
11	0·86			6·4
12	08·6			4·9
17	0·88			6·0
18	0·88			7·4

B.A.C. 1101.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
Nov. 4	0·84	6·0	h m 3 27	° ′ ″ 58 47 4·1
5	0·84			3·7
6	0·85			3·5
11	0·86			1·8
12	0·86			3·1
17	0·88			4·1
18	0·88			1·9

B.A.C. 1166, η Tauri.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
Nov. 4	0·84	(3·0)	3 39	66 19 30·1
5	0·84			29·2
6	0·85			29·5
11	0·86			29·5
12	0·86			27·4
17	0·88			29·7
18	0·88			29·0

B.A.C. 1282.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
Nov. 4	0·84	(6·0)	4 4	41 15 54·7
5	0·84			54·4
6	0·85			54·0
7	0·85			55·3
11	0·86			53·2
24	0·90			55·3
27	0·90			55·4
Dec. 11	0·94			53·9

B.A.C. 1318.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
Nov. 4	0·84	6·0	4 11	33 49 51·4
5	0·84			50·7
6	0·85			50·8
7	0·85			49·9
11	0·86			49·2
12	0·86			46·6
18	0·88			48·3
24	0·90			51·0

B.A.C. 1347.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
Dec. 15	0·95	(8·0)	4 15	65 55 14·1

B.A.C. 1361.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
Nov. 4	0·84	(6·0)	h m 4 17	° ′ ″ 71 16 44·1
5	0·84			42·1
6	0·85			44·2
7	0·85			45·0
11	0·86			43·7
18	0·88			44·7
26	0·90			44·3
27	0·90			44·5

B.A.C. 1434.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
Nov. 7	0·85	(5·0)	4 31	77 46 10·7
11	0·86			9·6
17	0·88			9·7
Dec. 11	0·94			10·7
15	0·95			8·9

B.A.C. 1459.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
Nov. 7	0·85	(6·5)	4 37	34 38 58·5
11	0·86			57·7
12	0·86			55·7
27	0·90			56·6
Dec. 22	0·97			59·7
26	0·98			58·1

B.A.C. 1463.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
Nov. 26	0·90		4 37	66 37 46·6
Dec. 11	0·94	7·5		42·8

B.A.C. 1491, π² Orionis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
Nov. 11	0·86	(5·0)	4 43	81 20 24·2
17	0·88			25·2
18	0·88			23·9
24	0·90			24·3
Dec. 17	0·96			23·4
22	0·97			25·0

B.A.C. 1501.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
Nov. 12	0·86		4 46	34 24 10·9
26	0·90			8·5
Dec. 4	0·92			9·4
11	0·94			9·1
26	0·98	6·0		9·5
29	0·99			9·2

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
B.A.C. 1626.				
Nov. 17	0·88	(7·5)	h. m. 5 9	° ′ ″ 49 41 18·2
18	0·88			18·3
24	0·90			18·7
26	0·90			18·2
27	0·90			17·8
Dec. 4	0·92			17·2
11	0·94			17·0
17	0·96			17·9
30	0·99			18·5
B.A.C. 1656.				
Dec. 22	0·97	(6·0)	5 14	81 42 41·7
23	0·97			41·3
B.A.C. 1683.				
Nov. 27	0·90	(6·0)	5 18	55 44 1·7
Dec. 17	0·96			2·9
B.A.C. 1696.				
Dec. 11	0·94	(7·5)	5 19	87 11 17·5
B.A.C. 1703.				
Jan. 3	0·01	(7·0)	5 20	73 40 43·5
Dec. 22	0·97			42·6
30	0·99			43·4
B.A.C. 1730, δ Orionis.				
Dec. 17	0·96	(2·0)	5 25	90 24 15·9
23	0·97			16·0
B.A.C. 1765, ε Orionis.				
Dec. 26	0·98	2·0	5 29	91 17 34·9
B.A.C. 1766.				
Jan. 3	0·01	(4·5)	5 29	80 47 14·7
Dec. 22	0·97			16·3
B.A.C. 1769.				
Nov. 27	0·90	(6·0)	h. m. 5 30	° ′ ″ 36 34 49·0
Dec. 11	0·94			49·3
30	0·99			52·4
B.A.C. 1772.				
Dec. 17	0·96	(6·0)	5 31	60 52 7·3
23	0·97			8·4
B.A.C. 1826.				
Jan. 3	0·01	(6·0)	5 40	80 31 54·3
Dec. 5	0·93			55·2
11	0·94			54·9
22	0·97			55·2
23	0·97			55·8
26	0·98			56·7
B.A.C. 1883, α Orionis.				
Jan. 3	0·01	(1·0)	5 48	82 37 18·9
Dec. 5	0·93			21·5
29	0·99			19·3
30	0·99			18·7
B.A.C. 1893.				
Dec. 22	0·97	(7·0)	5 49	80 30 53·6
B.A.C. 1907.				
Jan. 6	0·01	(6·0)	5 52	77 12 33·3
Dec. 4	0·92			31·9
23	0·97			32·6
B.A.C. 1930.				
Jan. 3	0·01	(6·5)	5 55	72 20 14·9
B.A.C. 1932.				
Dec. 5	0·93	(7·5)	5 56	51 25 30·3
29	0·99			29·6
B.A.C. 1962.				
Jan. 3	0·01	(Neb.)	6 1	65 43 2·8
B.A.C. 2022.				
Jan. 3	0·01	(6·0)	h. m. 6 10	° ′ ″ 80 0 37·8
10	0·02			38·2
Dec. 4	0·92			38·9
5	0·92			37·9
11	0·94			40·6
B.A.C. 2046.				
Jan. 3	0·01	(7·0)	6 15	33 38 48·9
Dec. 11	0·94			50·7
23	0·97			49·0
26	0·98			48·5
B.A.C. 2101.				
Jan. 3	0·01	(7·5)	6 23	67 22 1·8
Dec. 5	0·92			1·1
11	0·94			3·8
22	0·97			0·7
23	0·97			2·5
26	0·98			3·5
B.A.C. 2184.				
Jan. 3	0·01	(7·0)	6 34	73 28 38·2
Dec. 11	0·94			40·7
22	0·97			39·1
26	0·98			38·9
30	0·99			40·2
B.A.C. 2238.				
Dec. 11	0·94	(6·0)	6 44	66 14 21·8
22	0·97			20·8
24	0·98			19·3
26	0·98			19·2
B.A.C. 2292.				
Dec. 22	0·97	(6·0)	6 54	79 11 4·2
30	0·99			6·1
B.A.C. 2306.				
Dec. 24	0·98	(6·0)	6 56	78 50 60·2
25	0·98			59·4

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
B.A.C. 2329.				
			h. m.	° ′ ″
Dec. 30	0·99	(7·0)	7 0	74 15 9·7
B.A.C. 2334.				
Jan. 29	0·08	(6·0)	7 1	39 59 20·2
Dec. 22	0·97			22·0
26	0·98			21·2
B.A.C. 2363.				
Dec. 24	0·98	(7·5)	7 6	65 3 23·2
B.A.C. 2379.				
Jan. 3	0·01	(5·0)	7 8	40 17 39·7
9	0·02			39·5
Dec. 22	0·97			38·8
B.A.C. 2410. δ Geminorum.				
Jan. 2	0·00	(3·0)	7 12	67 46 2·8
29	0·08			1·0
Dec. 24	0·98			2·9
26	0·98			2·4
B.A.C. 2463.				
Jan. 3	0·01	(7·0)	7 20	62 10 17·5
9	0·02			17·2
24	0·06			17·4
29	0·08			18·0
Dec. 22	0·97			18·5
24	0·98			20·3
B.A.C. 2488.				
Jan. 2	0·00	(6·0)	7 27	43 31 13·3
3	0·01			10·8
9	0·02			12·0
24	0·06			12·3
29	0·08			12·1
Dec. 24	0·98			12·7
26	0·98			12·6
30	0·99			14·0
B.A.C. 2522, α Canis Minoris.				
			h. m.	° ′ ″
Jan. 8	0·02	(1·0)	7 32	84 25 28·6
9	0·02			27·8
24	0·06			28·2
29	0·08			29·3
B.A.C. 2586.				
Jan. 2	0·00	(7·0)	7 42	61 27 33·0
3	0·01			33·3
8	0·02			32·5
9	0·02			32·4
28	0·07			33·6
29	0·08			32·1
Dec. 26	0·98			33·6
B.A.C. 2633.				
Jan. 2	0·00	(6·0)	7 57	70 46 18·1
8	0·02			16·3
24	0·06			13·7
B.A.C. 2688.				
Jan. 3	0·01	(7·0)	7 58	62 4 54·7
B.A.C. 2737.				
Jan. 24	0·06	(7·0)	8 3	74 57 54·9
28	0·07			53·1
B.A.C. 2748.				
Jan. 3	0·01	(7·0)	8 5	75 35 12·9
8	0·02			16·3
B.A.C. 2761.				
Jan. 2	0·00	(7·0)	8 7	76 32 15·7
B.A.C. 2867.				
Jan. 8	0·02	(6·5)	8 26	79 28 8·6
24	0·06			5·9
B.A.C. 2882.				
Feb. 20	0·14	(7·0)	8 28	29 34 57·4
B.A.C. 2971, ι Hydræ.				
			h. m.	° ′ ″
Jan. 24	0·06	(4·0)	8 40	83 4 37·1
28	0·07			37·8
Feb. 6	0·10			37·1
B.A.C. 3004.				
Feb. 20	0·14	(7·0)	8 45	23 57 9·2
B.A.C. 3013.				
Jan. 24	0·06	(6·0)	8 45	84 8 34·9
28	0·07			35·5
Feb. 6	0·10			32·5
B.A.C. 3053.				
Jan. 24	0·06	(6·0)	8 50	60 4 59·1
Feb. 6	0·10			56·8
20	0·14			58·4
B.A.C. 3083.				
Jan. 24	0·06	(6·5)	8 56	38 37 45·2
Feb. 20	0·14			44·4
B.A.C. 3103.				
Feb. 6	0·10	(7·5)	8 59	72 20 11·1
B.A.C. 3133.				
Jan. 24	0·06	(6·0)	9 5	85 34 9·1
Feb. 6	0·10			13·4
B.A.C. 3157.				
Feb. 20	0·14	(7·0)	9 10	29 38 24·9
B.A.C. 3242, θ Ursæ Majoris.				
Feb. 20	0·14	(3·0)	9 24	37 41 45·1
B.A.C. 3325.				
Feb. 20	0·14	(6·0)	9 37	26 6 49·3

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension. h. m.	Mean North Polar Distance, January 1, 1862. ° ′ ″
B.A.C. 3331, ι Leonis.				
Feb. 6	0·10	(3·0)	9 38	65 35 32·4
Mar. 3	0·17			32·4
20	0·21			33·4
B.A.C. 3336.				
Jan. 28	0·07	(5·5)	9 39	82 39 21·8
B.A.C. 3375.				
Jan. 28	0·07	(6·5)	9 45	54 22 5·5
Feb. 18	0·13			6·3
20	0·14			6·5
B.A.C. 3380.				
Feb. 6	0·10	(6·0)	9 47	83 23 36·3
Mar. 3	0·17			37·0
B.A.C. 3418.				
Feb. 20	0·14	(8·0)	9 54	80 23 8·6
Mar. 3	0·17			11·2
20	0·21			11·9
B.A.C. 3420.				
Feb. 11	0·11	(7·0)	9 54	57 48 17·0
B.A.C. 3427.				
Jan. 28	0·07	(7·0)	9 56	56 41 15·5
B.A.C. 3438.				
Feb. 6	0·10	9·0	9 58	84 19 41·4
Mar. 3	0·17			41·0
B.A.C. 3439.				
Feb. 18	0·13	(7·0)	9 58	64 19 39·6
B.A.C. 3484.				
Feb. 11	0·11	(caret)	10 6	57 53 31·0
20	0·14			30·6
B.A.C. 3529.				
Feb. 6	0·10	(6·0)	10 13	82 52 35·8
20	0·14			35·7
B.A.C. 3592.				
Feb. 6	0·10	(6·0)	10 23	87 47 55·4
11	0·11			58·7
20	0·14			57·7
Mar. 3	0·17			56·6
10	0·19			58·3
B.A.C. 3662.				
Feb. 11	0·11	(7·5)	10 34	78 32 27·2
20	0·14			26·0
Mar. 3	0·17			26·8
11	0·19			27·2
B.A.C. 3726.				
Feb. 11	0·11	(6·0)	10 45	88 14 35·0
20	0·14			35·6
Mar. 3	0·17			35·7
11	0·19			37·3
B.A.C. 3780.				
Feb. 20	0·14	(7·5)	10 57	81 40 28·3
B.A.C. 3834, δ Leonis.				
Mar. 3	0·17	(2·5)	11 7	68 43 14·9
B.A.C. 3869.				
Feb. 20	0·14	(6·0)	11 15	71 48 20·3
Mar. 3	0·17			22·1
B.A.C. 4005.				
Mar. 10	0·19	(6·0)	11 44	76 56 13·7
B.A.C. 4199.				
April 11	0·27	(7·0)	12 21	63 19 25·2
16	0·29			24·6
B.A.C. 4231.				
Mar. 4	0·17	(7·0)	12 27	64 47 21·0
April 11	0·27			20·9
16	0·29			23·4
B.A.C. 4364.				
April 1	0·25	(6·0)	12 55	67 59 11·6
11	0·27			9·9
16	0·29			11·9
28	0·32			11·1
30	0·33			9·6
B.A.C. 4421, β Comæ.				
April 1	0·25	(4·5)	13 5	61 25 18·8
11	0·27			19·1
16	0·29			20·3
28	0·32			18·7
B.A.C. 4457.				
April 11	0·27	(6·5)	13 13	54 8 47·8
16	0·29			47·3
28	0·32			46·4
30	0·33			47·0
B.A.C. 4503.				
April 11	0·27	(7·0)	13 22	85 21 45·9
28	0·32			47·1
B.A.C. 4526.				
April 16	0·29	(6·5)	13 26	64 56 8·5
B.A.C. 4550.				
April 11	0·27	(7·5)	13 31	36 36 22·9
16	0·29			23·9
29	0·32			24·4
B.A.C. 4552.				
April 17	0·29	(5·0)	13 32	53 0 8·3
30	0·33			8·8

B.A.C. 4575.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
			h. m.	° ′ ″
April 11	0·27	(6·0)	13 37	66 36 9·6
16	0·29			8·5
17	0·29			9·6
28	0·32			9·4
29	0·32			9·3
30	0·33			8·5

B.A.C. 4606.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
April 16	0·29	7·0	13 42	57 54 36·5

B.A.C. 4610.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
April 11	0·27	(6·0)	13 43	58 7 20·4
29	0·32			22·3

B.A.C. 4627.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
April 17	0·29	(7·0)	13 45	54 32 34·8
28	0·32			34·1
May 13	0·36			32·7

B.A.C. 4628.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
May 2	0·33	(6·0)	13 45	54 37 35·6

B.A.C. 4652.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
April 11	0·27	(7·0)	13 50	57 17 34·0
16	0·29			34·7
29	0·32			33·2
30	0·33			33·8

B.A.C. 4676.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
April 17	0·29	(7·0)	13 55	57 46 0·3
May 2	0·33			0·5
13	0·36			0·2

B.A.C. 4678.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
April 4	0·25	(7·0)	13 57	57 40 26·2
11	0·27			24·1
22	0·30			25·0
30	0·33			25·6
May 20	0·38			25·3

B.A.C. 4694.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
			h. m.	° ′ ″
April 11	0·27	(7·0)	14 0	58 29 19·6
17	0·29			18·5
May 2	0·33			18·8
13	0·36			17·9
14	0·36			19·2
20	0·38			17·9

B.A.C. 4723.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
April 11	0·27	(7·0)	14 8	60 14 51·9
22	0·30			51·8
May 2	0·33			52·6
13	0·36			54·2

B.A.C. 4729, α Bootis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
April 4	0·25	(1·0)	14 9	70 5 51·7
17	0·29			50·9
May 8	0·35			52·3
20	0·38			51·7

B.A.C. 4738.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
April 28	0·32	(7·0)	14 11	49 36 51·9
29	0·32			50·7

B.A.C. 4756.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
April 30	0·33	(6·0)	14 14	37 19 48·0
May 2	0·33			48·5
13	0·36			47·1

B.A.C. 4797.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
April 4	0·25	(6·0)	14 23	53 11 3·9
11	0·27			3·4
28	0·32			3·4
May 9	0·35			3·4
13	0·36			3·2
14	0·36			4·0
20	0·38			4·7

B.A.C. 4820.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
April 11	0·27	(6·0)	14 28	56 51 30·5
28	0·32			32·7
29	0·32			30·9
30	0·33			31·9
May 2	0·33			31·9

B.A.C. 4863.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
			h. m.	° ′ ″
April 11	0·27	(6·0)	14 37	52 39 14·5
28	0·32			13·6
May 2	0·33			15·0
14	0·36			14·6
20	0·38			14·7

B.A.C. 4876, ε Bootis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
April 22	0·30	(3·0)	14 39	62 20 31·0
May 8	0·35			34·0

B.A.C. 4934.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
April 16	0·29	(6·5)	14 51	48 18 20·9
22	0·30			23·4
28	0·32			22·1
30	0·33			22·3
May 8	0·35			22·9
14	0·36			24·2

B.A.C. 4942.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
April 29	0·32	(6·0)	14 54	19 48 19·6

B.A.C. 4965.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
April 16	0·29	(5·5)	14 58	44 48 54·0
22	0·30			52·7
28	0·32			52·8
May 14	0·36			50·9

B.A.C. 4492.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
April 28	0·32	(5·5)	15 3	34 54 41·9
29	0·32			40·9
30	0·33			41·8
May 2	0·33			41·2

B.A.C. 5000.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
April 22	0·30	(6·5)	15 5	56 23 49·0
May 8	0·35			48·5
14	0·36			48·4

B.A.C. 5071.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
April 22	0·30	(6·0)	15 16	37 32 35·1
28	0·32			34·2
29	0·32			35·5

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension	Mean North Polar Distance, January 1, 1862
B.A.C. 5071.				
April 30	0·33	(6·0)	h. m. 15 16	° ′ ″ 37 32 36·0
May 2	0·33			35·5
8	0·35			33·7
14	0·36			37·1
20	0·38			34·6
B.A.C. 5281, γ Serpentis.				
April 28	0·32	(3·0)	15 50	73 53 9·2
30	0·33			9·9
May 2	0·33			8·7
8	0·35			9·1
14	0·36			9·9
20	0·38			8·5
26	0·40			9·6
June 3	0·42			10·0
4	0·42			9·4
B.A.C. 5415.				
May 2	0·33	(6·0)	16 7	31 42 7·1
8	0·35			6·7
14	0·36			6·5
26	0·40			6·6
June 4	0·42			6·6
B.A.C. 5452.				
May 14	0·36	(6·0)	16 14	68 31 53·9
20	0·38			56·1
26	0·40			56·5
June 3	0·42			56·2
B.A.C. 5504.				
May 14	0·36	(7·0)	16 22	74 20 22·9
B.A.C. 5527.				
May 20	0·38	(5·5)	16 25	69 12 59·1
B.A.C. 5537.				
June 4	0·42	6·0	16 27	79 20 14·3
B.A.C. 5597.				
May 14	0·36	(6·0)	16 35	64 52 19·4
20	0·38			21·6
26	0·40			20·9
June 4	0·42			22·4
B.A.C. 5647.				
May 14	0·36	(6·0)	16 43	76 29 44·5
June 3	0·42			43·9
4	0·42			42·8
B.A.C. 5716.				
May 14	0·36	(6·5)	16 52	74 20 15·0
26	0·40			16·9
June 3	0·42			15·8
B.A.C. 5732.				
June 4	0·42	(6·0)	16 55	74 50 47·1
B.A.C. 5776.				
June 3	0·42	(6·0)	17 1	41 0 17·1
B.A.C. 5821, α Herculis.				
May 27	0·40	(3·5)	17 8	75 27 0·1
June 3	0·42			1·2
4	0·42			0·6
B.A.C. 5863, π Herculis.				
May 27	0·40	(6·0)	17 16	57 21 9·8
June 3	0·42			10·8
B.A.C. 5917.				
June 3	0·42	(6·0)	17 24	29 50 7·8
4	0·42			7·8
B.A.C. 6035.				
May 27	0·40	(6·5)	17 44	80 6 24·2
June 3	0·42			24·0
4	0·42			24·9
B.A.C. 6123.				
June 3	0·42	(4·5)	17 59	67 27 54·5
4	0·42			55·3
July 9	0·52			53·0
B.A.C. 6213.				
June 3	0·42	(6·0)	h. m. 18 12	° ′ ″ 82 47 37·1
4	0·42			37·4
July 22	0·55			37·9
B.A.C. 6245.				
July 22	0·55	(6·0)	18 17	72 14 28·2
B.A.C. 6429, β Lyræ.				
July 29	0·57	(3·0)	18 45	56 47 45·4
B.A.C. 6480.				
July 16	0·54	(5·5)	18 52	57 16 25·8
B.A.C. 6528, ζ Aquilæ.				
July 14	0·53	(3·0)	18 59	76 20 21·3
16	0·54			22·6
28	0·57			20·4
29	0·57			20·1
B.A.C. 6602.				
July 22	0·55	(5·5)	19 12	67 13 14·5
28	0·57			15·6
29	0·57			17·1
B.A.C. 6644.				
July 22	0·55	(5·0)	19 18	78 20 54·9
B.A.C. 6652.				
July 29	0·57	(7·0)	19 19	69 59 53·1
B.A.C. 6729.				
July 22	0·55	(5·0)	19 32	84 54 51·0
28	0·57			50·5
29	0·57			50·9
B.A.C. 6772, γ Aquilæ.				
July 14	0·53	(3·0)	19 40	79 43 14·0
22	0·55			14·2
29	0·57			14·8

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension. (h m)	Mean North Polar Distance, January 1, 1862. (° ′ ″)
B.A.C. 6791.				
July 21	0·55	(7·5)	19 42	78 39 26·0
25	0·56			25·8
B.A.C. 6852.				
July 21	0·55	(5·5)	19 52	30 39 20·3
23	0·56			19·8
29	0·57			21·7
B.A.C. 6855.				
July 22	0·55	(7·5)	19 52	73 52 34·0
25	0·56			35·7
28	0·57			34·4
B.A.C. 6941.				
July 14	0·53	(7·0)	20 5	69 16 25·8
29	0·57			27·7
B.A.C. 6966.				
July 16	0·54	(5·0)	20 9	64 49 39·0
21	0·55			38·4
23	0·56			39·2
28	0·57			39·7
B.A.C. 7006.				
July 21	0·55	(7·0)	20 15	53 18 2·9
25	0·56			2·0
29	0·57			3·9
B.A.C. 7086.				
July 14	0·53	(6·0)	20 26	34 23 38·2
21	0·55			40·0
22	0·55			38·6
23	0·56			40·1
29	0·57			38·5
B.A.C. 7150.				
July 16	0·54	(7·0)	20 33	79 14 20·0
21	0·55			22·2
23	0·56			22·3
25	0·56			21·5
B.A.C. 7157.				
Sept. 9	0·69	(8·0)	20 34	74 50 46·3
B.A.C. 7161.				
July 14	0·53	(7·0)	20 35	41 49 11·5
28	0·57			11·1
29	0·57			12·6
B.A.C. 7220, η Cephei.				
Sept. 10	0·69	(3·5)	20 43	28 41 47·7
B.A.C. 7268.				
July 21	0·55	(6·5)	20 50	43 6 36·8
22	0·55			37·1
23	0·56			36·4
28	0·57			36·7
Sept. 9	0·69			36·5
B.A.C. 7285.				
July 14	0·53	(7·0)	20 53	63 1 8·6
B.A.C. 7290.				
July 25	0·56	(caret)	20 53	46 3 52·5
29	0·57			54·7
B.A.C. 7336, 61[1] Cygni.				
July 21	0·55	(5·5)	21 0	51 55 40·6
22	0·55			38·6
25	0·56			38·7
B.A.C. 7354.				
July 23	0·56	(8·0)	21 4	68 6 22·2
Sept. 9	0·69			20·6
B.A.C. 7368, ζ Cygni.				
July 21	0·55	(3·0)	21 7	60 20 15·7
22	0·55			16·3
B.A.C. 7410.				
July 22	0·55	(5·5)	21 15	66 43 28·1
Sept. 9	0·69			26·0
10	0·69			25·2
B.A.C. 7417.				
July 23	0·56	(6·0)	21 15	31 57 34·2
B.A.C. 7450.				
July 21	0·55	(7·0)	21 20	71 13 16·1
22	0·55			15·5
23	0·56			15·0
25	0·56			16·6
29	0·57			15·8
Sept. 9	0·69			13·1
B.A.C. 7497.				
July 23	0·56	(7·5)	21 28	88 46 57·5
25	0·56			58·8
Sept. 9	0·69			58·3
10	0·69			56·9
B.A.C. 7528.				
July 28	0·57	(5·5)	21 33	70 21 22·3
29	0·57			23·3
B.A.C. 7561, ι Pegasi.				
Sept. 9	0·69	(2·5)	21 37	80 45 22·4
B.A.C. 7590.				
July 28	0·57	(7·5)	21 40	73 26 33·6
B.A.C. 7644.				
Sept. 10	0·69	(7·0)	21 50	18 9 41·3
12	0·70			39·3
B.A.C. 7688, α Aquarii.				
Aug. 27	0·65	(3·0)	21 58	90 59 20·4
Sept. 9	0·69			19·7
B.A.C. 7708.				
Sept. 10	0·69	(5·5)	22 1	28 23 28·8
15	0·70			26·2
17	0·71			27·8

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1862.
B.A.C. 7759.				
Aug. 27	0·65	(6·0)	22h 7m	29° 55′ 22″·5
Sept. 15	0·70			23·0
B.A.C. 7779.				
Sept. 17	0·71	(7·5)	22 10	17 22 12·5
22	0·72			13·3
B.A.C. 7908, ζ Pegasi.				
Aug. 27	0·65	(3·0)	22 34	79 53 17·9
Sept. 9	0·69			19·6
15	0·70			18·6
22	0·72			17·4
23	0·73			18·2
B.A.C. 7977.				
Sept. 17	0·71	(7·5)	22 47	88 53 23·7
18	0·71			24·1
22	0·72			24·9
23	0·73			23·3
B.A.C. 7996.				
Sept. 15	0·70	(6·0)	22 50	86 55 41·7
Oct. 7	0·76			42·8
B.A.C. 8024.				
Sept. 9	0·69	(6·5)	22 56	33 38 9·9
18	0·71			8·7
22	0·72			6·0
26	0·73			6·2
B.A.C. 8034, α Pegasi.				
Sept. 15	0·70	(2·0)	22h 58m	75° 32′ 13″·7
17	0·71			12·5
23	0·73			12·6
30	0·74			12·6
Oct. 7	0·76			12·9
B.A.C. 8083.				
Aug. 27	0·65	(6·0)	23 7	33 35 36·1
Sept. 15	0·70			35·9
22	0·72			35·8
26	0·73			36·6
B.A.C. 8091.				
Sept. 23	0·73	(7·0)	23 8	62 40 48·6
Oct. 6	0·76			46·5
B.A.C. 8135.				
Sept. 18	0·71	(6·0)	23 14	46 38 15·7
22	0·72			14·0
26	0·73			15·8
Oct. 6	0·76			16·3
B.A.C. 8147.				
Oct. 7	0·76	(6·5)	23 16	70 11 50·2
B.A.C. 8204.				
Sept. 22	0·72	(7·0)	23 27	18 45 36·6
B.A.C. 8247.				
Sept. 23	0·73	(7·5)	23h 35m	72° 5′ 53″·2
Oct. 7	0·76			52·2
B.A.C. 8252.				
Oct. 6	0·76	(7·0)	23 36	37 37 20·2
B.A.C. 8272.				
Oct. 6	0·76	(7·0)	23 41	62 31 13·7
B.A.C. 8280.				
Sept. 26	0·73	(7·0)	23 42	30 47 20·0
B.A.C. 8315.				
Oct. 6	0·76	(7·0)	23 48	82 32 41·4
7	0·76			42·1
B.A.C. 8338.				
Aug. 27	0·65	(7·0)	23 54	28 35 27·0
B.A.C. 8350.				
Sept. 25	0·73	(6·0)	23 55	63 38 54·8
Oct. 6	0·76			55·3
7	0·76			56·6
B.A.C. 8372.				
Oct. 6	0·76	(6·5)	23 59	32 20 0·0

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EXPLANATION OF THE MURAL CIRCLE OBSERVATIONS IN 1862.

The observations with the Mural Circle in 1862 were taken by Mr Peter Williamson, Second Assistant Astronomer, under the supervision of the Astronomer.

The subjects observed were chiefly stars remarkable for proper motion. They are designated as far as possible by the number in the British Association Catalogue, in col. 2, and by proper name or description in col. 3, assisted if necessary by notes at the foot of the page, as well as by approximate estimate of the magnitude in col. 4, and time of transit past centre of field (by an uncorrected sidereal journeyman clock, but showing fairly differences from star to star) in col. 5.

In Polar distance the star was always carefully bisected when crossing the centre of the field, either at the precise instant if its motion was steady, or in its mean path through several seconds if unsteady or undulatory, as was too often the case. Such bisection being performed by bringing the stellar image between two parallel lines about 7 seconds of space apart: the lines being illuminated in a dark field.

The same general principles of observation as in former years have been kept up with improved details described in 1860. The completion of every observation therefore in Polar distance still depends largely on the Telescope micrometer, whose numbers are a necessary addition to the readings both of the Pointer on the Limb of the Circle and of the two horizontal Microscopes A, B; all which numerical particulars are given in columns 6, 7, 8, and 9.

In columns 10 and 12, the readings of the Barometer and exterior thermometer are noted for refraction purposes: the interior thermometer being assumed to be practically the same as the exterior, for all star-observations when a thorough draught was kept up through the observing room, as was always the case during star observations. During observations for the Nadir-point, on the contrary, all shutters and windows were closed to prevent disturbance to the mercury, and then a sensible difference between the thermometers usually occurred, and is shown by the figures in the narrow column 11, compared with those in column 12.

Columns 13, 14, and 15 contain various points connected with the meteorologic and other circumstances of the observations, as they appeared to the observer at the time; and column 16 contains the reduction of the angular observations in columns 6 to 9, to the stage of "Apparent Zenith Distance South."

To this end, the readings of the Microscopes have been corrected for the error of their runs, as ascertained over 5′ spaces on the limb of the Circle, with the telescope directed first to the Zenith and then to the Nadir: also for the difference between the mean of two and the mean of six Microscopes as ascertained by examination in 1855 (see p. 76, vol. xii.); also for the Telescope micrometer readings converted into arc on the estimate of one revolution being equal to 27·704″, as ascertained by observations in the Mercury trough with the collimating eye-piece, combined with readings of all the six circumferential Microscopes. The Circle positions are then converted into Apparent Zenith Distances, by the application of a reading for the Zenith point derived from observation of the Nadir, as shown by making the bisecting wire cover its illuminated image in the Mercury trough, an observation made generally both at the beginning and conclusion of every series of star measures. The chief data of these several corrections are contained in the following Tables I., II., and III.

TABLE I.

CORRECTION FOR RUNS OF MICROSCOPES IN 1862.

Date.	Thermometer.		Runs Correction observed.				Adopted Runs Correc-tion.	For Period.
	Inte-rior.	Exte-rior.	Nadir.	Zenith.	Means of Obs.	Collected Means.		
1862.	°F.	°F.	″	″	″	″	″	1862.
Jan. 28	43·3	46·4	+1·6 +1·6	−0·2 0·0	+0·7 +0·8	+0·8	+0·8	Jan. 1 to Feb. 28.
Mar. 31	40·6	40·4	+2·3 +1·5	+1·0 +0·8	+1·6 +1·2	+1·4	+1·4	March 1 to April 4.
April 21	48·7	51·0	+1·1 +1·4	+0·8 +0·6	+1·0 +1·0	+1·0	+1·0	April 11 to April 30.
May 9	53·0	48·2	+1·6 +1·3	−0·7 +0·5	+0·4 +0·9	+0·6	+0·6	May 2 to May 31.
July 8	54·6	55·0	+1·3 +1·4	+0·3 −0·2	+0·8 +0·6	+0·7	+0·7	June 1 to July 31.
Sept. 12	57·5	61·0	+1·8 +0·7	+0·7 +0·6	+1·2 +0·6	+0·9	+0·9	Aug. 1 to Oct. 30.
Dec. 10	44·0	38·0	+1·2 +1·8	+0·2 +1·8	+0·7 +1·8	+1·2	+1·2	Nov. 3 to Dec. 30.

TABLE II.

CORRECTION TO REDUCE THE MEAN OF THE TWO HORIZONTAL, TO THE MEAN OF THE WHOLE SIX, MICROSCOPES FOR THE YEAR 1862.

Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.
0° & 180°	+1·0	30° & 210°	+0·2	60° & 240°	+0·5	90° & 270°	+2·4	120° & 300°	+3·1	150° & 330°	+2·4
1 181	+0·9	31 211	+0·2	61 241	+0·6	91 271	+2·4	121 301	+3·1	151 331	+2·4
2 182	+0·8	32 212	+0·1	62 242	+0·7	92 272	+2·5	122 302	+3·0	152 332	+2·3
3 183	+0·8	33 213	+0·1	63 243	+0·7	93 273	+2·5	123 303	+3·0	153 333	+2·3
4 184	+0·7	34 214	0·0	64 244	+0·8	94 274	+2·6	124 304	+2·9	154 334	+2·2
5 185	+0·6	35 215	0·0	65 245	+0·9	95 275	+2·6	125 305	+2·9	155 335	+2·2
6 186	+0·6	36 216	0·0	66 246	+0·9	96 276	+2·6	126 306	+2·9	156 336	+2·1
7 187	+0·6	37 217	+0·1	67 247	+1·0	97 277	+2·7	127 307	+2·9	157 337	+2·1
8 188	+0·5	38 218	+0·1	68 248	+1·0	98 278	+2·7	128 308	+2·8	158 338	+2·0
9 189	+0·5	39 219	+0·2	69 249	+1·1	99 279	+2·8	129 309	+2·8	159 339	+2·0
10 190	+0·5	40 220	+0·2	70 250	+1·1	100 280	+2·8	130 310	+2·8	160 340	+1·9
11 191	+0·4	41 221	+0·2	71 251	+1·2	101 281	+2·9	131 311	+2·8	161 341	+1·9
12 192	+0·4	42 222	+0·2	72 252	+1·2	102 282	+2·9	132 312	+2·8	162 342	+1·9
13 193	+0·3	43 223	+0·1	73 253	+1·3	103 283	+3·0	133 313	+2·7	163 343	+1·8
14 194	+0·3	44 224	+0·1	74 254	+1·3	104 284	+3·0	134 314	+2·7	164 344	+1·8
15 195	+0·2	45 225	+0·1	75 255	+1·4	105 285	+3·1	135 315	+2·7	165 345	+1·8
16 196	+0·2	46 226	+0·2	76 256	+1·5	106 286	+3·1	136 316	+2·7	166 346	+1·7
17 197	+0·2	47 227	+0·2	77 257	+1·6	107 287	+3·2	137 317	+2·7	167 347	+1·6
18 198	+0·2	48 228	+0·3	78 258	+1·7	108 288	+3·2	138 318	+2·8	168 348	+1·6
19 199	+0·2	49 229	+0·3	79 259	+1·8	109 289	+3·3	139 319	+2·8	169 349	+1·5
20 200	+0·2	50 230	+0·4	80 260	+1·9	110 290	+3·3	140 320	+2·8	170 350	+1·4
21 201	+0·2	51 231	+0·4	81 261	+1·9	111 291	+3·3	141 321	+2·8	171 351	+1·4
22 202	+0·2	52 232	+0·3	82 262	+2·0	112 292	+3·3	142 322	+2·8	172 352	+1·3
23 203	+0·2	53 233	+0·3	83 263	+2·0	113 293	+3·4	143 323	+2·7	173 353	+1·3
24 204	+0·2	54 234	+0·2	84 264	+2·1	114 294	+3·4	144 324	+2·7	174 354	+1·2
25 205	+0·2	55 235	+0·2	85 265	+2·1	115 295	+3·4	145 325	+2·7	175 355	+1·2
26 206	+0·2	56 236	+0·3	86 266	+2·2	116 296	+3·3	146 326	+2·6	176 356	+1·2
27 207	+0·2	57 237	+0·3	87 267	+2·2	117 297	+3·3	147 327	+2·6	177 357	+1·1
28 208	+0·2	58 238	+0·4	88 268	+2·3	118 298	+3·2	148 328	+2·5	178 358	+1·1
29 209	+0·2	59 239	+0·4	89 269	+2·3	119 299	+3·2	149 329	+2·5	179 359	+1·0

TABLE III.

NADIR AND ZENITH POINTS ON MURAL CIRCLE IN 1862.

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1862.	°	° ′ ″	° ′ ″	″
Jan. 2	39·4	54 3 13·1 12·5	234 3 12·8	12·6
3	40·6	3 11·8 12·6	12·2	12·5
6	40·0	12·4 12·2	12·3	12·3
8	42·2	12·1 11·5	11·8	12·0
9	43·2	12·4 12·2	12·3	12·3
10	42·2	13·0	13·0	12·7
24	40·0	12·6 12·4	12·5	12·5
28	44·6	12·8 10·8	11·8	12·0
29	43·6	12·4 10·7	11·6	12·0
Feb. 6	41·5	11·8 11·6	11·7	12·0
11	42·0	12·4 12·3	12·4	12·3
18	42·4	12·9 12·4	12·6	12·5
20	45·2	12·4 11·8	12·1	12·2
Mar. 3	33·6	11·6 11·8	11·7	12·0
4	31·6	11·9 12·0	12·0	12·0
10	4·51	12·7	12·7	12·5
1862.	°	° ′ ″	° ′ ″	″
Mar. 11	45·8	54 3 12·4 13·0	234 3 12·7	12·5
20	39·0	12·1 12·2	12·2	12·2
April 1	44·8	11·9 11·4	11·6	11·8
4	44·3	12·2 12·0	12·1	12·1
11	38·2	12·6 13·6	13·1	12·6
16	42·4	12·3 12·9	12·6	12·6
17	43·2	12·4 12·6	12·5	12·5
22	48·1	12·6 12·6	12·6	12·5
28	50·1	12·0 12·1	12·0	12·2
29	53·2	12·0 12·1	12·0	12·0
30	55·6	11·4 11·4	11·4	11·7
May 2	50·8	11·4 11·4	11·4	11·6
8	51·8	11·8 11·5	11·6	11·6
13	48·6	11·6 11·5	11·6	11·6
14	49·8	11·9 11·4	11·6	11·6

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1862.				
May 20	52·1	54° 3′ 11″·8 11·7	234° 3′ 11″·8	11″·8
26	51·6	12·0 11·4	11·7	12·0
27	56·0	11·9 12·7	12·3	12·0
June 3	52·0	12·0 12·8	12·4	12·2
4	51·0	12·0 13·0	12·5	12·2
July 9	56·0	10·8 12·1	11·4	11·8
14	56·8	11·8 12·1	12·0	12·0
16	53·6	12·2 12·7	12·4	12·3
21	51·8	12·2 12·8	12·5	12·3
22	52·1	11·8 11·3	11·6	12·0
23	53·2	12·0 12·6	12·3	12·1
25	54·0	12·2 11·7	12·0	12·1
28	53·6	12·1 12·2	12·2	12·2
29	48·9	11·7 13·6	12·6	12·4
Aug. 27	58·8	12·8 11·8	12·3	12·4
Sept. 9	52·6	12·5 13·2	12·8	12·6
10	47·8	11·8 13·2	12·5	12·6
12	57·1	12·8	12·8	12·8
15	54·4	12·7	12·7	12·8
17	54·4	12·5 13·4	13·0	13·0
1862.				
Sept 18	57·4	54° 3′ 13″·8 12·8	234° 3′ 13″·3	13″·2
22	53·3	13·6 13·0	13·3	13·2
23	52·0	13·4 12·8	13·1	13·2
25	54·0	12·9	12·9	13·0
26	55·5	13·0 13·4	13·2	13·2
30	56·4	13·2 13·4	13·3	13·3
Oct. 6	50·4	12·8 14·2	13·5	13·3
7	51·4	13·2 13·4	13·3	13·3
8	52·6	13·4 11·8	12·6	13·0
9	53·2	13·8 13·1	13·4	13·1
15	50·6	13·5 13·4	13·4	13·2
20	44·2	13·6	13·6	13·4
24	43·6	13·0 14·0	13·5	13·4
28	43·2	13·4 13·4	13·4	13·4
Nov. 3	50·0	13·4 13·4	13·4	13·7
4	44·0	14·1 14·4	14·2	14·0
5	41·5	13·8 15·0	14·4	14·2
6	39·4	14·5 13·4	14·0	14·0
7	41·0	14·2 13·6	13·9	14·0
11	36·5	14·0 14·1	14·0	14·0

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.	Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1862.					1862.				
Nov. 12	36·0	54° 3′ 14″·8 13·8	234° 3′ 14″·3	14″·1	Dec. 10	41°·0	54° 3′ 13″·0	234° 3′ 13″·0	13″·0
17	39·2	14·2 13·4	13·8	14·0	11	39·0	14·0 15·1	14·6	14·3
18	39·8	14·3 13·8	14·0	14·0	15	44·4	14·0	14·0	14·0
20	38·0	13·8	13·8	13·8	17	42·4	13·6 13·6	13·6	13·8
21	41·0	13·2	13·2	13·4	22	43·1	12·8 13·6	13·2	13·3
24	35·5	12·8 13·4	13·1	13·3	23	44·6	13·2 12·9	13·0	13·3
26	36·6	11·9 13·9	12·9	13·0	24	44·6	13·4 13·5	13·4	13·3
27	37·6	14·8 14·2	14·5	14·0	26	39·0	14·2 14·1	14·2	14·0
Dec. 4	45·3	13·7 13·7	13·7	13·8	29	43·7	14·2	14·2	14·0
5	47·0	13·4 13·7	13·6	13·6	30	41·1	12·8 13·0	12·9	13·0

For the remaining reductions, the refractions have been computed by Bessel's Table, as represented in the Rev. R. Sheepshank's compendious form; the Latitude of the Observatory has been assumed as in former years $=55° 57' 23''·2$; and the *Apparent* N. Polar Distances on the day of observation have been converted into *Mean* North Polar Distances for the beginning of the year of observation, by applying the corrections for precession, nutation, aberration, and proper motions, taken from the elements and subsidiary tables given in the Nautical Almanac and the British Association Catalogue; and whose sum is represented in the last column of each observation-page. The individual results for magnitude and place of each star are collected on pp. 202 to 210.

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ROYAL OBSERVATORY, EDINBURGH.

CATALOGUE

OF

THE MEAN PLACES OF ALL STARS

OBSERVED WITH

EITHER THE TRANSIT INSTRUMENT OR MURAL CIRCLE,

DURING

THE YEAR, AND

REDUCED TO JANUARY 1,

1862.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
4	α Andromedæ	(1·0)	......	0 1 15·59	0·60	61 40 ...	......	8	0
18	......	7·0	......	0 3 21·16	0·76	31 5 45·4	0·77	2	1
26	γ Pegasi	(2·0)	......	0 6 7·94	0·60	75 35 4·1	0·76	8	1
28	......	6·0	......	0 6 21·41	0·76	49 44 ...	......	1	0
42	......	8·0	......	0 8 52·31	0·76	86 30 57·9	0·77	2	1
48	......	8·0	......	0 9 38·77	0·77	76 51 ...	......	1	0
57	......	7·2	......	0 10 42·42	0·76	89 5 ...	......	2	0
68	......	6·8	......	0 14 4·38	0·76	22 56 ...	......	3	0
83	......	6·5	......	0 17 39·65	0·76	37 43 6·3	0·77	3	5
98	......	7·0	......	0 20 20·88	0·76	74 44 ...	......	2	0
112	12 Ceti	(6·0)	......	0 22 59·77	0·76	94 43 ...	......	4	0
113	......	......	(7·0)	0 23 ...	......	85 54 15·2	0·77	0	2
120	......	......	(6·0)	0 24 ...	......	57 10 51·0	0·76	0	1
133	......	8·8	......	0 26 26·74	0·76	70 20 ...	......	2	0
149	......	7·0	......	0 28 46·14	0·76	77 32 50·4	0·77	3	2
164	......	4·5	......	0 31 16·15	0·76	61 26 ...	......	3	0
177	......	(7·0)	......	0 34 4·24	0·76	81 23 57·8	0·77	2	2
182	......	7·0	......	0 34 36·40	0·77	32 0 ...	......	1	0
218	η Cassiopeæ	3·0	......	0 40 46·60	0·77	32 55 ...	......	1	0
259	μ Andromedæ	3·0	......	0 49 6·26	0·77	52 15 0·8	0·79	1	1
288	ε Piscium	(4·0)	......	0 55 47·00	0·79	82 52 ...	......	3	0
290	......	......	(7·0)	0 56 ...	......	36 32 7·8	0·82	0	1
314	μ Cassiopeæ	......	(5·5)	0 59 ...	......	35 45 31·8	0·80	0	2
334	β Andromedæ	2·0	......	1 2 0·65	0·80	55 6 ...	......	2	0
357	......	......	(9·0)	1 5 ...	......	58 39 29·5	0·82	0	2
420	θ¹ Ceti	(3·0)	......	1 17 7·51	0·79	98 54 ...	......	7	0
453	η Piscium	(4·0)	......	1 24 6·18	0·80	75 22 ...	......	5	0
455	......	7·0	......	1 24 37·18	0·82	73 45 29·2	0·84	1	2
459	......	......	(7·0)	1 25 ...	......	78 49 44·4	0·80	0	1
472	......	8·0	......	1 27 42·06	0·84	89 45 ...	......	2	0
514	......	7·0	......	1 33 51·78	0·84	60 39 9·0	0·84	2	1
518	υ Piscium	(5·0)	......	1 34 15·13	0·83	85 13 ...	......	5	0
538	......	6·5	......	1 39 6·23	0·84	73 16 48·1	0·85	3	1
547	......	(6·0)	......	1 40 42·65	0·83	42 47 ...	......	2	0
562	......	6·5	......	1 44 2·53	0·84	39 12 33·1	0·84	3	1
577	β Arietis	(3·0)	......	1 47 1·32	0·84	69 52 ...	......	6	0
588	......	5·5	......	1 49 29·87	0·84	26 3 9·8	0·85	1	1
620	......	7·0	......	1 54 20·16	0·84	25 34 ...	......	3	0
645	......	......	7·5	1 59 ...	......	64 49 48·0	0·85	0	2
648	α Arietis	......	......	1 59 24·01	0·77	67 11 ...	......	9	0
694	......	8·0	8·0	2 8 11·91	0·84	26 13 1·6	0·85	1	1
704	67 Ceti	(6·0)	......	2 10 6·10	0·85	97 4 ...	......	6	0
718	......	7·0	6·2	2 12 12·06	0·85	33 23 33·4	0·84	1	4
738	......	7·3	......	2 16 47·36	0·85	80 21 ...	......	3	0
760	ξ² Ceti	(4·0)	......	2 20 49·42	0·84	82 10 ...	......	6	0
764	......	7·0	......	2 22 13·44	0·86	81 3 9·6	0·86	2	4
776	......	5·8	......	2 24 21·97	0·85	88 21 ...	......	3	0
793	......	7·0	......	2 28 31·07	0·85	83 46 26·3	0·85	3	3
822	......	......	(Neb.)	2 34 ...	......	47 53 36·8	0·85	0	1
834	......	......	(6·5)	2 36 ...	......	64 57 3·8	0·85	0	2
837	γ Ceti	(3·0)	......	2 36 9·16	0·86	87 21 ...	......	4	0

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.			h. m. s.		° ′ ″		R. A.	N. P. D.
881	....	6·0	......	2 43 52·64	0·86	75 29 ...	......	2	0
891	....	(8·0)	......	2 45 21·92	0·85	84 5 36·9	0·86	1	6
920	....	7·0	......	2 50 58·90	0·86	68 56 13·0	0·86	1	2
949	α Ceti	(2·5)	......	2 55 4·05	0·87	86 27 15·2	0·87	9	3
962	....	4·0	......	2 59 7·64	0·85	40 55 2·6	0·86	3	4
980	....	6·5	......	3 2 15·80	0·85	[illegible] 38 5·5	0·87	3	3
985	....	......	8·0	3 3 ...	......	15 16 35·1	0·85	0	1
986	δ Arietis	(4·0)	......	3 3 44·57	0·88	70 48 ...	......	4	0
1055	....	7·8	......	3 16 33·70	0·85	68 27 6·5	0·86	3	6
1087	....	4·5	......	3 23 15·45	0·85	77 32 ...	......	3	0
1101	....	6·5	8·0	3 27 3·24	0·85	58 47 3·2	0·86	2	7
1126	....	7·0	......	3 32 32·10	0·85	65 7 ...	......	3	0
1166	η Tauri	(3·0)	......	3 39 17·21	0·88	66 10 29·2	0·86	9	7
1282	....	7·0	......	4 3 29·83	0·85	41 15 54·5	0·87	3	8
1309	....	4·0	......	4 8 55·18	0·86	97 52 ...	......	2	0
1318	....	......	6·0	4 10 38·98	0·92	33 49 49·7	0·86	2	8
1328	γ Tauri	3·0	......	4 11 56·61	0·86	74 43 ...	......	2	0
1347	....	8·2	......	4 15 10·28	0·88	65 55 14·1	0·95	4	1
1361	....	6·5	......	4 16 54·83	0·86	71 16 44·1	0·86	2	8
1376	ε Tauri	(4·0)	......	4 20 33·72	0·91	71 8 ...	......	11	0
1420	α Tauri	(1·0)	......	4 28 0·28	0·86	73 46 ...	......	14	0
1434	....	5·0	......	4 30 26·73	0·97	77 46 9·9	0·90	3	5
1459	....	6·5	......	4 36 48·98	0·94	34 38 57·6	0·90	4	6
1463	....	7·0	......	4 37 22·86	0·98	66 37 44·7	0·92	2	2
1491	....	5·0	......	4 43 5·60	0·95	81 20 24·3	0·91	5	6
1501	....	6·5	6·0	4 46 27·35	0·96	34 24 9·4	0·93	5	6
1520	ι Aurigæ	(3·0)	......	4 48 0·68	0·94	57 3 ...	......	8	0
1623	β Orionis	(1·0)	......	5 7 54·39	0·64	98 22 ...	......	3	0
1626	....	7·0	......	5 9 2·58	0·97	49 41 16·0	0·92	3	9
1656	....	6·5	......	5 14 12·90	0·97	81 42 41·5	0·97	3	2
1681	β Tauri	(2·0)	......	5 17 34·24	0·69	61 30 ...	......	13	0
1683	....	......	(6·0)	5 18 ...	......	55 44 2·3	0·93	0	2
1696	....	(7·5)	......	5 19 17·96	0·98	67 11 17·5	0·94	2	1
1703	....	7·0	......	5 20 12·02	0·65	73 40 43·2	0·66	3	3
1730	δ Orionis	(2·0)	......	5 24 57·43	0·70	90 21 16·0	0·96	11	2
1765	ε Orionis	......	2·0	5 29 12·67	0·75	91 17 34·9	0·98	9	1
1766	....	4·5	......	5 29 19·57	0·65	80 47 15·5	0·49	3	2
1769	....	......	(6·0)	5 30 ...	......	36 34 50·2	0·94	0	3
1772	....	......	(6·0)	5 31 ...	......	60 52 7·8	0·95	0	2
1826	....	6·3	......	5 39 17·67	0·97	60 31 55·4	0·80	3	6
1883	α Orionis	(1·0)	......	5 47 42·08	0·67	82 37 19·6	0·73	9	4
1893	....	6·7	......	5 48 53·14	0·66	80 30 53·6	0·97	3	1
1907	....	6·0	......	5 51 7·54	0·98	77 12 32·6	0·63	3	3
1930	....	7·5	......	5 54 54·46	0·49	72 20 14·9	0·01	2	1
1932	....	7·5	......	5 55 8·73	0·99	51 25 30·0	0·96	3	2
1958	ν Orionis	(5·0)	......	5 59 41·58	0·94	75 13 ...	......	3	0
1962	....	8·0	(a) (Neb.)	6 0 33·77	0·66	65 43 2·8	0·01	3	1
2002	....	4·0	......	6 6 32·56	0·98	67 27 ...	......	2	0
2022	....	5·8	......	6 9 30·10	0·99	80 0 38·8	0·70	2	4
2047	μ Geminorum	(3·0)	......	6 14 36·72	0·04	67 25 ...	......	2	0
2046	....	6·0	......	6 14 46·62	0·01	33 38 49·3	0·72	1	4

(a) Probably a star in a straggling group.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.			h m s		° ′ ″		R. A.	N. P. D.
2083	....	6·0	......	6 20 28·28	0·01	16 12 ...	......	1	0
2101	....	......	(7·5)	6 23 ...	......	67 22 2·2	0·80	0	6
2163	γ Geminorum..............	(2·0)	......	6 29 44·36	0·65	73 29 ...	......	15	0
2184	....	7·0	......	6 33 24·26	0·26	73 28 39·4	0·78	4	5
2238	....	6·5	......	6 43 37·30	0·66	66 14 20·3	0·97	3	4
2292	....	6·0	......	6 53 20·71	0·98	79 11 5·2	0·98	2	2
2306	....	5·5	......	6 55 59·24	0·98	78 50 59·8	0·98	2	2
2329	....	7·0	......	7 0 19·00	0·98	74 15 9·7	0·99	2	1
2334	....	......	(6·0)	7 1 ...	......	39 59 21·1	0·68	0	3
2363	....	7·0	......	7 6 1·21	0·98	65 3 23·2	0·98	3	1
2379	....	5·5	......	7 8 2·32	0·98	40 17 39·3	0·33	2	3
2410	δ Geminorum..............	(3·0)	......	7 11 52·72	0·39	67 46 2·3	0·51	11	4
2462	....	4·0	......	7 19 39·88	0·02	81 26 ...	......	3	0
2463	....	......	(7·0)	7 20 ...	......	62 10 18·2	0·35	0	6
2485	α² Geminorum.............	(2·0)	......	7 25 47·42	0·17	57 49 ...	......	8	0
2488	....	7·0	......	7 26 30·08	0·51	43 31 12·5	0·39	4	8
2522	α Canis Minoris..........	(1·0)	......	7 32 4·60	0·28	84 25 28·5	0·04	12	4
2555	β Geminorum..............	(1·0)	......	7 36 52·04	0·30	61 39 ...	......	15	0
2586	....	7·0	......	7 41 23·89	0·01	61 27 32·9	0·17	3	7
2672	6 Cancri.................	(5·5)	......	7 55 2·29	0·06	61 49 ...	......	8	0
2683	....	7·0	......	7 56 46·62	0·02	70 46 16·0	0·03	2	3
2688	....	(7·0)	......	7 57 9·40	0·00	62 4 54·7	0·01	1	1
2737	....	6·7	......	8 3 13·63	0·01	74 57 54·0	0·06	3	2
2748	....	7·0	......	8 4 38·81	0·03	75 35 14·6	0·02	3	2
2761	....	7·1	......	8 6 40·60	0·03	76 32 15·7	0·00	4	1
2778	β Cancri.................	4·2	......	8 9 1·73	0·02	80 23 ...	......	4	0
2862	η Cancri.................	(6·0)	......	8 24 43·38	0·00	69 6 ...	......	1	0
2867	....	7·0	......	8 25 9·12	0·02	79 28 7·2	0·04	2	2
2882	....	5·8	......	8 27 54·55	0·03	29 34 57·4	0·14	3	1
2937	....	5·8	......	8 35 17·80	0·03	68 2 ...	......	3	0
2971	ε Hydræ..................	(4·0)	......	8 39 27·91	0·08	83 4 37·3	0·08	6	3
2988	....	8·0	......	8 42 46·22	0·04	34 32 ...	......	2	0
3004	....	......	(7·0)	8 45 ...	......	23 57 9·2	0·14	0	1
3013	....	7·0	......	8 45 6·77	0·06	84 8 34·3	0·08	1	3
3053	....	......	(6·0)	8 50 ...	......	80 4 58·8	0·10	0	3
3055	α Cancri.................	5·0	......	8 50 56·24	0·06	77 36 ...	......	1	0
3083	....	7·5	......	8 55 35·11	0·06	38 37 44·8	0·10	1	2
3103	....	7·5	......	8 58 31·23	0·06	72 20 11·1	0·10	1	1
3133	....	7·0	......	9 5 0·16	0·06	85 34 11·2	0·08	1	2
3157	....	7·0	......	9 9 53·96	0·06	29 38 24·9	0·14	1	1
3171	83 Cancri................	(6·0)	......	9 11 16·51	0·14	71 43 ...	......	3	0
3223	α Hydræ..................	(2·0)	......	9 20 48·28	0·14	98 4 ...	......	6	0
3242	θ Ursæ Majoris...........	......	(3·0)	9 24 ...	......	37 41 45·1	0·14	0	1
3312	ο Leonis.................	(4·0)	......	9 33 46·84	0·17	79 29 ...	......	1	0
3325	....	......	(6·0)	9 37 ...	......	26 6 49·3	0·14	0	1
3331	ε Leonis.................	(3·0)	......	9 38 0·81	0·15	65 35 32·7	0·16	10	3
3336	....	......	(5·5)	9 39 ...	......	82 39 21·8	0·07	0	1
3371	μ Leonis.................	3·0	......	9 44 54·56	0·18	63 20 ...	......	2	0
3375	....	6·2	......	9 45 22·80	0·14	54 22 6·1	0·11	2	3
3380	....	(6·0)	......	9 46 28·09	0·19	83 23 36·6	0·14	1	2
3415	π Leonis.................	(4·5)	......	9 52 55·11	0·13	81 18 ...	......	5	0

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Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
3418	....	8·0	......	9 53 41·94	0·17	80 23 10·6	0·17	1	3
3420	....	7·0	......	9 54 3·42	0·11	57 48 17·0	0·11	1	1
3427	....	......	(7·0)	9 56 ...	......	56 41 15·5	0·07	0	1
3431	....	7·0	......	9 56 13·05	0·16	56 53 ...	......	2	0
3438	....	......	9·0	9 58 ...	......	84 19 41·2	0·14	0	2
3439	....	......	(7·0)	9 58 ...	......	54 19 39·6	0·13	0	1
3459	α Leonis........................	(1·0)	......	10 1 1·16	0·15	77 22 ...	......	10	0
3484	....	7·5	......	10 6 14·41	0·15	57 53 30·8	0·12	4	2
3523	γ^1 Leonis........................	(2·0)	......	10 12 21·57	0·15	69 28 ...	......	4	6
3528	....	5·0	......	10 13 54·40	0·11	8 45 ..	......	1	0
3529	....	7·0	......	10 13 18·90	0·17	82 52 35·8	0·12	1	2
3592	....	7·5	......	10 22 37·17	0·12	87 47 57·3	0·14	3	5
3609	ρ Leonis........................	(4·0)	......	10 25 32·56	0·15	79 59 ...	......	6	0
3662	....	7·0	......	10 34 21·74	0·12	78 32 26·8	0·15	2	4
3708	*l* Leonis........................	(6·0)	......	10 42 0·10	0·17	78 44 ...	......	4	0
3726	....	6·3	......	10 45 8·25	0·14	88 14 35·9	0·15	3	4
3768	....	5·0	......	10 53 26·00	0·16	86 38 ...	......	2	0
3780	....	7·2	......	10 56 30·74	0·16	81 40 28·3	0·14	2	1
3788	χ Leonis........................	(5·0)	......	10 57 53·76	0·27	81 55 ...	......	2	0
3821	....	5·0	......	11 3 19·69	0·14	20 58 ...	......	1	0
3834	δ Leonis........................	(2·5)	......	11 6 45·91	0·24	68 43 14·9	0·17	3	1
3836	....	6·0	......	11 6 47·90	0·14	87 0 ...	......	1	0
3869	....	6·0	......	11 15 15·51	0·14	71 48 21·2	0·16	1	2
3900	τ Leonis........................	4·0	......	11 20 50·28	0·14	86 23 ...	......	1	0
3946	υ Leonis........................	(4·5)	......	11 29 53·01	0·21	90 4 ...	......	4	0
3995	β Leonis........................	(2·5)	......	11 42 1·12	0·24	74 39 ...	......	7	0
4005	....	......	(6·0)	11 44 ...	......	76 56 13·7	0·19	0	1
4052	....	5·0	......	11 53 47·95	0·27	82 37 ...	......	1	0
4145	η Virginis........................	(3·5)	......	12 12 50·78	0·27	89 54 ...	......	6	0
4199	....	7·0	......	12 20 44·12	0·29	63 19 24·9	0·28	1	2
4205	....	6·5	......	12 21 44·44	0·29	63 0 ...	......	1	0
4231	....	8·0	......	12 26 39·66	0·29	64 47 21·8	0·24	1	3
4340	δ Virginis........................	4·0	......	12 48 39·15	0·29	85 51 ...	......	1	0
4364	....	7·0	......	12 54 49·35	0·29	67 59 10·8	0·29	1	5
4421	β Comæ........................	4·0	......	13 5 25·75	0·29	61 25 19·2	0·28	1	4
4457	....	......	(6·5)	13 13 ...	......	54 8 47·1	0·30	0	4
4503	....	7·0	......	13 22 14·70	0·29	85 24 46·5	0·30	1	2
4526	....	6·5	......	13 26 15·92	0·31	64 56 8·5	0·29	2	1
4532	ζ Virginis........................	(4·0)	......	13 27 39·72	0·30	89 53 ...	......	5	0
4552	....	(5·0)	......	13 31 19·70	0·33	53 0 8·4	0·31	1	2
4575	....	(6·0)	......	13 37 12·81	0·33	66 36 9·2	0·30	1	6
4606	....	......	7·0	13 42 ...	......	57 54 36·5	0·29	0	1
4610	....	......	(6·0)	13 43 ...	......	58 7 21·4	0·30	0	2
4627	....	......	(7·0)	13 45 ...	......	54 32 33·9	0·32	0	3
4628	....	......	(6·0)	13 45 ...	......	54 37 35·6	0·33	0	1
4648	η Bootis........................	(3·0)	......	13 48 6·85	0·29	70 55 ...	......	9	0
4652	....	......	(7·0)	13 50 ...	......	57 17 33·9	0·30	0	4
4672	τ Virginis........................	......	(4·5)	13 54 37·54	0·29	87 47 ...	......	5	0
4676	....	......	(7·0)	13 55 ...	......	57 46 0·3	0·33	0	3
4678	....	7·0	......	13 58 25·96	0·33	57 40 25·2	0·31	1	5

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.			h. m. s.		° ′ ″		R. A.	N. P. D.
4694	....	......	(7·0)	14 0 ...	......	58 29 18·6	0·33	0	6
4716	κ Virginis........................	6·0	......	14 5 32·30	0·33	99 38 ...	......	1	0
4723	....	7·0	......	14 7 46·38	0·33	60 14 52·6	0·32	1	4
4729	α Bootis........................	(1·0)	......	14 9 22·04	0·35	70 5 51·6	0·32	7	4
4738	....	......	(7·0)	14 11 ...	......	49 36 51·3	0·32	0	2
4756	....	7·0	......	14 13 41·11	0·33	37 19 48·2	0·34	1	2
4797	....	6·5	......	14 22 33·57	0·33	53 11 3·7	0·33	1	7
4809	ρ Bootis........................	(4·0)	......	14 25 52·76	0·32	59 1 ...	......	6	0
4820	....	......	(6·0)	14 28 ...	......	56 51 31·6	0·31	0	5
4863	....	......	(6·0)	14 37 ...	......	52 39 14·5	0·33	0	5
4876	ε Bootis........................	(3·0)	......	14 38 57·63	0·34	62 20 33·0	0·32	8	2
4934	....	......	(6·5)	14 51 ...	......	48 18 22·6	0·32	0	6
4942	....	7·0	......	14 54 8·54	0·33	49 18 19·8	0·32	1	1
4965	....	......	(5·5)	14 58 ...	......	44 48 52·6	0·32	0	4
4969	ψ Bootis........................	(5·0)	......	14 58 32·04	0·35	62 31 ...	......	4	0
4992	....	6·0	......	15 2 20·46	0·38	34 51 41·4	0·32	2	4
5000	....	6·0	......	15 5 3·50	0·30	56 23 48·6	0·34	2	3
5001	....	7·0	......	15 5 5·76	0·38	60 15 ...	......	2	0
5034	β Libræ........................	(2·5)	......	15 9 35·04	0·35	98 52 ...	......	5	0
5071	(a)	6·0	......	15 16 1·82	0·34	37 32 35·2	0·34	3	8
5091	....	6·0	......	15 20 20·84	0·34	26 10 ...	......	3	0
5143	α Coronæ Borealis........	(2·5)	......	15 28 50·77	0·37	62 49 ...	......	11	0
5196	α Serpentis........................	(2·5)	......	15 37 28·34	0·37	83 8 ...	......	10	0
5245	ε Serpentis........................	(3·0)	......	15 43 56·38	0·36	85 6 ...	......	3	0
5284	γ Serpentis........................	(3·0)	......	15 50 4·83	0·36	73 53 9·4	0·37	8	9
5414	δ Ophiuchi........................	(3·0)	......	16 7 6·93	0·39	93 20 ...	......	7	0
5415	(b)	......	(6·0)	16 7 ...	......	31 42 6·7	0·37	0	5
5452	....	6·3	......	16 14 5·25	0·40	68 31 55·7	0·39	3	4
5466	γ Herculis........................	4·0	......	16 15 50·04	0·42	70 31 ...	......	2	0
5493	....	6·0	......	16 19 53·10	0·37	87 20 ...	......	2	0
5504	....	7·5	......	16 21 48·14	0·37	74 20 22·9	0·36	2	1
5507	....	7·0	......	16 22 7·31	0·42	74 16 ...	......	3	0
5527	....	7·0	......	16 24 34·30	0·39	69 12 59·1	0·38	3	1
5529	....	8·0	......	16 25 18·08	0·42	76 17 ...	......	2	0
5537	....	7·0	6·0	16 27 1·42	0·39	79 20 14·3	0·42	3	1
5597	....	6·2	......	16 35 17·52	0·41	64 52 21·1	0·39	3	4
5604	ζ Herculis........................	(3·0)	......	16 36 5·08	0·40	58 9 ...	......	2	0
5615	....	(6·0)	......	16 38 9·28	0·40	53 13 ...	......	3	0
5620	....	6·0	......	16 39 7·58	0·43	74 8 ...	......	1	0
5634	....	7·0	......	16 41 36·83	0·42	78 37 ...	......	3	0
5647	....	......	(6·0)	16 43 ...	......	76 29 43·7	0·40	0	3
5666	....	7·5	......	16 47 5·96	0·40	74 22 ...	......	3	0
5708	κ Ophiuchi........................	(4·0)	......	16 51 8·26	0·46	80 24 ...	......	6	0
5716	....	7·0	......	16 52 23·34	0·44	74 20 15·9	0·39	3	3
5726	....	6·5	......	16 53 45·75	0·43	83 12 ...	......	3	0
5732	....	6·0	......	16 55 16·77	0·44	74 50 47·1	0·42	3	1
5776	....	6·0	......	17 1 10·32	0·42	41 0 17·1	0·42	2	1
5777	....	8·0	......	17 1 45·04	0·41	54 29 ...	......	2	0
5787	....	6·8	......	17 3 9·81	0·43	79 46 ...	......	3	0
5821	α Herculis........................	3·5	......	17 8 21·40	0·45	75 27 0·6	0·41	11	3

(a) A large difference (2′) from Tabular N. P. D.

(b) 6′ 45″ difference from Tabular place in N. P. D.

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Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
5863	....	4·5	......	17 15 20·92	0·49	57 21 10·3	0·41	2	2
5893	....	4·0	......	17 19 40·12	0·46	85 44 ...	......	1	0
5917	....	5·0	......	17 23 54·66	0·47	29 50 7·8	0·42	3	2
5941	α Ophiuchi............	(2·0)	......	17 28 31·77	0·59	77 20 ...	......	10	0
5996	....	3·0	......	17 36 39·33	0·50	85 22 ...	......	3	0
6021	μ Herculis............	(4·0)	......	17 41 3·55	0·54	62 12 ...	......	8	0
6035	....	7·0	......	17 43 37·46	0·49	80 6 21·4	0·41	2	3
6123	....	5·0	......	17 58 26·83	0·46	87 27 54·3	0·45	1	3
6143	....	4·0	......	18 0 48·38	0·46	80 27 ...	......	1	0
6213	....	6·0	......	18 12 29·24	0·42	82 47 37·5	0·46	1	3
6245	....	......	(6·0)	18 17 ...	......	72 14 28·2	0·55	0	1
6429	β Lyræ............	(3·0)	......	18 44 59·18	0·51	56 47 45·4	0·57	6	1
6431	....	7·0	......	18 44 42·77	0·57	19 21 ...	......	1	0
6468	....	6·0	......	18 49 49·06	0·52	56 12 ...	......	3	0
6460	....	6·0	......	18 51 51·13	0·51	57 16 25·8	0·54	3	1
6467	ι Aquilæ............	3·0	......	18 53 21·53	0·52	75 7 ...	......	3	0
6527	....	7·5	......	18 58 49·90	0·52	71 4 ...	......	2	0
6528	ζ Aquilæ............	(3·0)	......	18 59 4·03	0·58	76 20 21·1	0·55	5	4
6542	....	6·5	......	19 0 53·26	0·52	65 57 ...	......	2	0
6567	....	8·0	......	19 5 29·30	0·53	58 35 ...	......	3	0
6595	ω Aquilæ............	(5·0)	......	19 11 20·32	0·54	78 39 ...	......	4	0
6602	....	6·0	......	19 11 53·45	0·46	67 13 15·7	0·56	1	3
6617	....	6·3	......	19 13 23·63	0·53	78 43 ...	......	3	0
6644	....	5·5	......	19 18 23·41	0·56	78 20 54·9	0·55	2	1
6646	δ Aquilæ............	(3·5)	......	19 18 32·44	0·53	87 9 ...	......	7	0
6652	....	......	(7·0)	19 19 ...	......	69 59 53·4	0·57	0	1
6674	α Vulpeculæ............	4·5	......	19 22 57·71	0·52	65 37 ...	......	3	0
6701	μ Aquilæ............	4·0	......	19 27 20·84	0·55	82 55 ...	......	3	0
6729	....	5·0	......	19 32 22·88	0·55	84 54 50·8	0·56	3	3
6762	....	7·0	......	19 38 16·76	0·55	63 12 ...	......	3	0
6772	γ Aquilæ............	(3·0)	......	19 39 41·87	0·68	79 43 14·3	0·55	12	3
6791	....	7·2	......	19 42 22·78	0·56	78 39 25·9	0·56	2	2
6802	α Aquilæ............	(1·5)	......	19 44 2·91	0·66	81 30 ...	......	15	0
6833	β Aquilæ............	(3·5)	......	19 48 32·03	0·68	83 56 ...	......	13	0
6852	....	6·0	......	19 51 7·10	0·55	30 39 20·6	0·56	3	3
6855	....	......	(7·5)	19 52 ...	......	73 52 34·7	0·56	0	3
6934	θ Aquilæ............	4·0	......	20 4 10·86	0·56	91 14 ...	......	2	0
6941	....	(7·0)	......	20 4 59·08	0·56	69 16 26·8	0·55	3	2
6966	....	5·0	......	20 9 25·12	0·56	64 49 39·1	0·56	2	4
7000	....	7·0	......	20 12 36·31	0·56	12 35 ...	......	2	0
7006	....	7·5	......	20 14 38·62	0·56	53 18 ...	......	1	0
7014	....	6·0	......	20 16 20·38	0·55	85 5 ...	......	2	0
7086	....	6·5	......	20 26 0·27	0·56	34 23 39·1	0·55	2	5
7088	ε Delphini............	(4·0)	......	20 26 37·18	0·56	79 10 ...	......	2	0
7149	α Delphini............	(3·5)	......	20 33 13·65	0·56	74 34 ...	......	2	0
7150	....	7·0	......	20 33 14·95	0·54	70 14 21·5	0·55	2	4
7157	....	......	(8·0)	20 34 ...	......	74 50 46·3	0·69	0	1
7161	....	......	(7·0)	20 35 ...	......	44 49 11·7	0·56	0	3
7220	η Cephei............	3·0	......	20 42 28·90	0·55	28 41 47·7	0·69	3	1
7256	32 Vulpeculæ............	(4·5)	......	20 48 40·78	0·57	62 28 ...	......	7	0

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
7268	....	......	(6·5)	20 50 ...	......	43 [illegible] 36·7	0·58	0	5
7285	....	6·5	......	20 53 16·25	0·55	83 1 8·6	0·53	4	1
7290	....	......	(caret)	20 53 ...	......	46 3 53·6	0·56	0	2
7336	61¹ Cygni........................	(5·5)	......	21 0 42·90	0·59	51 55 39·3	0·55	4	3
7354	....	7·0	......	21 4 19·24	0·65	68 6 21·4	0·62	3	2
7368	ζ Cygni........................	(3·0)	......	21 7 3·86	[illegible]·61	60 20 16·0	0·55	8	2
7380	α Equulei........................	6·0	......	21 8 55·42	0·61	85 19 ...	......	3	0
7410	....	(5·5)	......	21 14 50·14	0·56	66 43 26·4	0·64	3	3
7417	....	......	(6·0)	21 15 ...	......	31 57 34·2	0·56	0	1
7430	....	6·0	......	21 17 0·90	0·56	29 49 ...	......	2	0
7450	....	7·0	......	21 20 2·14	0·60	71 13 15·2	0·58	3	6
7478	β Aquarii........................	(3·0)	......	21 24 17·49	0·64	96 11 ...	......	9	0
7496	....	7·5	......	21 27 18·66	0·66	42 10 ...	......	3	0
7497	....	7·5	......	21 27 41·51	0·62	88 46 57·9	0·62	2	4
7514	....	(5·0)	......	21 30 24·14	0·60	98 28 ...	......	3	0
7528	....	(5·5)	......	21 32 35·35	0·60	70 21 22·8	0·57	3	2
7561	ε Pegasi........................	(2·5)	......	21 37 24·44	0·55	80 45 22·4	0·69	7	1
7566	....	6·0	......	21 37 43·53	0·71	52 21 ...	......	3	0
7590	....	7·0	......	21 40 30·98	0 70	73 26 33·6	0·57	3	1
7627	16 Pegasi........................	(5·5)	......	21 46 47·11	0·70	64 43 ...	......	4	0
7644	....	7·0	......	21 50 18·34	0·71	18 9 40·3	0·70	3	2
7688	α Aquarii........................	(3·0)	......	21 58 41·67	0·70	90 59 20·0	0·67	7	2
7706	....	4·0	......	22 0 35·38	0·72	65 20 ...	......	3	0
7708	....	......	(5·5)	22 1 ...	0·69	28 23 27·6	0·69	0	3
7759	....	6·0	......	22 7 28·47	0·71	29 55 22·8	0·68	3	2
7779	....	......	(7·5)	22 10 ...	......	17 22 12·9	0·72	0	2
7795	γ Aquarii........................	(3·0)	......	22 14 31·62	0·71	92 5 ...	......	3	0
7869	ζ Aquarii........................	(4·0)	......	22 28 15·80	0·71	90 50 ...	......	8	0
7906	ξ Pegasi........................	(3·0)	......	22 34 34·78	0·64	79 53 18·3	0·70	11	5
7958	μ Pegasi........................	3·5	......	22 43 20·75	0·71	66 7 ...	......	3	0
7970	λ Aquarii........................	3·5	......	[illegible] 45 24·71	0·71	98 18 ...	......	3	0
7977	....	7·5	......	22 46 49·31	0·72	88 53 24·0	0·72	3	4
7996	....	6·8	......	22 50 31·22	0·71	86 55 42·2	0·73	3	2
8024	....	6·8	......	22 55 41·32	0·71	33 38 7·7	0·71	3	4
8034	α Pegasi........................	(2·0)	......	22 57 53·30	0·60	75 32 12·9	0·73	12	5
8065	....	8·0	......	23 2 19·50	0·71	88 36 ...	......	3	0
8083	....	6·1	......	23 6 39·36	0·71	33 35 35·8	0·70	4	4
8091	....	7·5	......	23 8 13·96	0·74	62 40 48·6	0·74	2	2
8105	γ Piscium........................	(4·5)	......	[illegible] 10 0·68	0·70	87 28 ...	......	6	0
8135	....	6·5	......	23 14 12·77	0·71	46 38 15·4	0·73	3	4
8137	....	7·0	......	23 14 13·90	0·76	28 47 ...	......	1	0
8147	....	7·0	......	23 15 53·49	0·72	70 11 50·2	0·76	3	1
8169	κ Piscium........................	(5·5)	......	23 [illegible] 51·47	0·75	89 30 ...	......	4	0
8204	....	7·0	......	23 26 39·31	0·74	18 45 36·6	0·72	3	1
8233	ι Piscium........................	(4·5)	......	23 32 51·17	0·75	85 7 ...	......	9	0
8247	....	8·5	......	23 35 32·74	0·74	72 5 52·7	0·74	2	2
8252	....	7·0	......	23 36 23·15	0·73	37 37 20·2	0·76	1	1
8269	....	8·0	......	23 40 41·66	0·74	86 32 ...	......	2	0
8272	....	......	(7·0)	23 41 ...	......	82 31 13·7	0·76	0	1
8260	....	......	(7·0)	23 42 ...	......	30 47 20·0	0·73	0	1

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Stars.		Magnitude by Transit Observations	Magnitude by Circle Observations	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.			h m s		° ′ ″		R. A.	N. P. D.
8298	....	7·0	......	23 45 23·10	0·76	13 10 ...	......	1	0
8315	....	......	(7·0)	23 48 ...	......	82 32 41·8	0·76	0	2
8331	ω Piscium	(4·5)	......	23 52 13·59	0·78	83 54 ...	......	5	0
8338	....	......	(7·0)	23 54 ...	......	28 35 27·0	0·65	0	1
8350	....	......	(6·0)	23 55 ...	......	63 38 55·6	0·75	0	3
8364	....	(7·0)	......	23 57 49·36	0·76	32 14 ...	......	1	0
8372	....	(6·5)	......	23 59 3·89	0·76	32 20 0·0	0·76	1	1

ROYAL OBSERVATORY, EDINBURGH.

OBSERVATIONS

MADE WITH

THE TRANSIT INSTRUMENT,

AND

CALCULATION

OF

APPARENT RIGHT ASCENSIONS.

1863.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1863.
1863.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Jan. 2	7561	ε Pegasi	………	80 43	5·0	13·4	22·0	30·3	37 39·0	21 37 21·94	− 0·44	+ 6·00	+ 5·98	− 0·06
	7686	α Aquarii	………	90 57	22·8	31·0	39·5	47·8	58 56·2	21 58 39·46	− 0·48	+ 5·94	+ 5·96	− 0·18
	2410	(a) δ Geminorum	………	67 46	35·6	44·4	53·7	2·6	12 11·5	7 11 53·56	− 0·39	+ 5·85	+ 5·82	− 2·68
	2522	α Canis Minoris	………	84 26	48·2	56·5	4·9	13·1	32 21·6	7 32 4·86	− 0·45	+ 5·79	+ 5·83	− 2·43
	2555	β Geminorum	………	61 39	34·0	43·2	53·0	2·2	37 12·1	7 36 52·90	− 0·35	+ 5·94	+ 5·84	− 2·77
	2672	6 Cancri	………	61 50	44·5	53·7	3·2	12·6	55 22·3	7 55 3·26	− 0·35	+ 5·75	+ 5·86	− 2·71
Jan. 5	6281	(b) δ Ursæ Minoris S.P.	………	3 24	19·0	43·0	1·5	23·5	20 42·0	6 16 1·80	− 1·97	………	+ 3·09	+ 29·26
	2163	γ Geminorum	………	73 29	30·5	39·0	47·8	56·4	30 5·1	6 29 47·76	− 0·40	………	+ 3·09	− 2·63
	2485	α² Geminorum	………	57 49	32·0	41·5	51·4	1·2	26 11·1	7 25 51·44	− 0·31	+ 3·05	+ 3·05	− 2·92
	2522	α Canis Minoris	………	84 26	51·0	59·2	7·8	15·9	32 24·3	7 32 7·64	− 0·45	+ 3·05	+ 3·04	− 2·47
	2555	β Geminorum	………	61 39	37·0	46·2	56·0	5·3	37 15·0	7 36 55·90	− 0·34	+ 2·97	+ 3·03	− 2·81
	2672	6 Cancri	………	61 50	47·2	56·4	6·0	15·3	55 25·0	7 55 5·98	− 0·34	+ 3·07	+ 3·02	− 2·76
Jan. 7	1958	ν Orionis	………	75 13	29·9	38·4	47·0	55·5	0 4·2	5 59 47·00	− 0·34	+ 0·92	+ 0·99	− 2·59
	6281	δ Ursæ Minoris S.P.	………	3 24	20·0	44·5	2·5	25·0	20 43·0	6 16 3·00	− 0·95	………	+ 0·98	+ 29·22
	2163	γ Geminorum	………	73 29	32·7	41·0	50·0	58·5	30 7·2	6 29 49·88	− 0·34	………	+ 0·98	− 2·65
	2410	δ Geminorum	………	67 46	40·9	49·5	58·4	7·2	12 16·4	7 11 58·48	− 0·32	+ 0·92	+ 0·96	− 2·74
	2485	α² Geminorum	………	57 49	34·0	43·6	53·6	3·2	26 13·2	7 25 53·52	− 0·27	+ 0·96	+ 0·96	− 2·95
	2522	α Canis Minoris	………	84 26	52·9	1·1	9·6	17·9	32 26·2	7 32 9·54	− 0·37	+ 1·10	+ 0·96	− 2·50
	2555	β Geminorum	………	61 39	39·0	48·3	58·0	7·2	37 17·0	7 36 57·90	− 0·29	+ 0·95	+ 0·95	− 2·84
	2971	ι Hydræ	………	83 6	16·2	24·5	33·0	41·3	39 50·0	8 39 33·00	− 0·37	+ 0·89	+ 0·93	− 2·40
Jan. 12	2410	δ Geminorum	………	67 46	44·8	53·9	2·9	11·6	12 20·9	7 12 2·80	− 0·32	− 3·34	− 3·32	− 2·80
	2485	α² Geminorum	………	57 49	38·2	48·0	58·0	7·6	26 17·8	7 25 57·92	− 0·27	− 3·37	− 3·32	− 3·02
	2522	α Canis Minoris	………	84 26	57·3	5·5	14·0	22·2	32 31·0	7 32 14·00	− 0·37	− 3·30	− 3·32	− 2·56
	2555	β Geminorum	………	61 39	43·4	52·7	2·3	11·6	37 21·2	7 37 2·24	− 0·29	− 3·32	− 3·33	− 2·91
	2672	6 Cancri	………	61 50	53·7	3·0	12·5	21·9	55 31·4	7 55 12·50	− 0·29	− 3·38	− 3·33	− 2·[illegible]
	2971	ι Hydræ	………	83 6	20·5	28·9	37·2	45·7	39 54·1	8 39 37·28	− 0·37	− 3·29	− 3·35	− 2·50
Jan. 13	2410	δ Geminorum	………	67 46	45·8	54·5	3·9	12·2	12 21·6	7 12 3·58	− 0·32	− 4·12	− 4·10	− 2·80
	2485	α² Geminorum	………	57 49	39·0	48·8	59·0	8·4	26 18·5	7 25 58·74	− 0·27	− 4·18	− 4·11	− 3·03
	2522	α Canis Minoris	………	84 26	58·0	6·1	14·8	23·0	32 31·5	7 32 14·68	− 0·37	− 3·97	− 4·11	− 2·57
	2555	β Geminorum	………	61 39	44·1	53·6	3·0	12·2	37 22·0	7 37 2·98	− 0·29	− 4·05	− 4·11	− 2·[illegible]
	2672	6 Cancri	………	61 50	54·5	3·8	13·3	22·9	55 32·3	7 55 13·36	− 0·29	− 4·23	− 4·13	− 2·69
	2971	(c) ι Hydræ	………	83 6	21·6	29·8	38·2	46·5	39 55·1	8 39 38·22	− 0·37	− 4·22	− 4·15	− 2·51
Jan. 14	1883	α Orionis	………	82 37	36·2	44·4	53·0	1·2	48 9·9	5 47 52·92	− 0·37	− 4·74	− 4·81	− 2·48
	1958	ν Orionis	………	75 13	35·7	44·1	53·0	1·4	0 10·1	5 59 52·86	− 0·34	− 4·92	− 4·82	− 2·[illegible]
	6281	δ Ursæ Minoris S. P.	………	3 24	27·0	50·0	7·5	31·0	20 50·0	6 16 9·10	− 0·95	………	− 4·84	+ 28·84
	2163	γ Geminorum	………	73 29	38·5	46·9	55·9	4·2	30 13·0	6 29 55·70	− 0·34	………	− 4·84	− 2·69
	2410	δ Geminorum	………	67 46	46·3	55·3	4·4	13·1	12 22·3	7 12 4·28	− 0·32	− 4·81	− 4·85	− 2·81
	2485	α² Geminorum	………	57 49	39·9	49·5	59·4	9·0	26 19·0	7 25 59·36	− 0·27	− 4·79	− 4·86	− 3·04
	2522	α Canis Minoris	………	84 26	58·9	7·1	15·5	23·7	32 32·4	7 32 15·52	− 0·37	− 4·81	− 4·86	− 2·57
	2555	β Geminorum	………	61 39	45·0	54·2	3·9	13·1	37 22·9	7 37 3·82	− 0·29	− 4·88	− 4·87	− 2·93
	2971	ι Hydræ	………	83 6	22·3	30·5	39·2	47·4	39 56·0	8 39 39·08	− 0·37	− 5·07	− 4·92	− 2·52
Jan. 20	2410	δ Geminorum	………	67 46	51·1	0·0	9·1	18·0	12 27·0	7 12 9·04	− 0·32	− 9·53	− 9·55	− 2·85
	2485	α² Geminorum	………	57 49	44·6	54·2	4·1	14·0	26 24·0	7 26 4·18	− 0·27	− 9·56	− 9·57	− 3·09
	2555	β Geminorum	………	61 39	49·9	59·0	8·6	18·0	37 27·5	7 37 8·60	− 0·29	− 9·60	− 9·58	− 2·99
	2672	6 Cancri	………	61 50	0·0	9·1	18·9	28·1	55 38·0	7 55 18·82	− 0·29	− 9·60	− 9·59	− 2·98

(a) Gale from S.W. (b) Foggy. Definition bad. (c) Faint. Cloudy.

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Date.	No. in British Association Catalogue.	OBJECT OBSERVED.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1863.
1863.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Jan. 20	2971	ε Hydræ	....	83 6	27·0	35·2	43·9	52·0	40 0·5	8 39 43·72	− 0·37	− 9·61	− 9·62	− 2·62
Jan. 22	2485	α² Geminorum	....	57 49	47·0	56·6	6·5	16·1	26 26·1	7 26 6·46	− 0·27	− 11·83	− 11·74	− 3·10
	2522	α Canis Minoris	....	84 26	5·8	14·0	22·3	30·8	32 39·0	7 32 22·38	− 0·37	− 11·61	− 11·75	− 2·63
	2555	β Geminorum	....	61 39	52·0	1·1	10·9	20·1	37 30·0	7 37 10·82	− 0·29	− 11·81	− 11·76	− 3·00
	2672	6 Cancri	....	61 50	2·2	11·5	21·1	30·4	55 39·9	7 55 21·02	− 0·29	− 11·78	− 11·77	− 3·00
	2971	ε Hydræ	....	83 6	29·1	37·5	46·0	51·2	40 2·9	8 39 45·94	− 0·37	− 11·81	− 11·80	− 2·65
Jan. 23	2410	δ Geminorum	....	67 46	54·1	3·0	12·0	21·0	12 30·2	7 12 12·06	− 0·32	− 12·54	− 12·59	− 2·86
	2485	α² Geminorum	....	57 49	47·8	57·3	7·4	17·0	26 27·0	7 26 7·30	− 0·27	− 12·66	− 12·60	− 3·11
	2522	α Canis Minoris	....	84 26	6·6	14·9	23·4	31·6	32 40·1	7 32 23·32	− 0·37	− 12·54	− 12·61	− 2·64
	2555	β Geminorum	....	61 39	52·9	2·1	11·8	21·1	37 30·7	7 37 11·72	− 0·29	− 12·70	− 12·62	− 3·01
	2672	6 Cancri	....	61 50	3·0	12·2	22·0	31·1	55 40·0	7 55 21·81	− 0·29	− 12·60	− 12·62	− 3·00
	3331	ε Leonis	....	65 37	1·7	10·7	20·0	29·0	38 38·3	9 38 19·94	− 0·31	− 12·75	− 12·67	− 2·70
Jan. 27	4	(a) α Andromedæ	....	61 37	59·5	9·0	18·4	27·9	1 37·4	0 1 18·44	− 0·29	+ 1·11	+ 1·13	− 0·56
	26	γ Pegasi	....	75 32	53·8	2·1	11·0	19·4	6 28·1	0 6 10·88	− 0·35	+ 1·12	+ 1·12	− 0·62
	2410	δ Geminorum	....	67 46	40·8	49·6	58·9	7·6	12 16·9	7 11 58·76	− 0·32	+ 0·77	+ 0·80	− 2·87
	2485	α² Geminorum	....	57 49	34·2	44·0	54·0	3·6	26 13·8	7 25 53·32	− 0·27	+ 0·73	+ 0·80	− 3·12
	2522	α Canis Minoris	....	84 26	53·1	1·4	10·0	18·2	32 26·9	7 32 9·92	− 0·37	+ 0·87	+ 0·79	− 2·65
	2555	β Geminorum	....	61 39	39·5	48·8	58·2	7·7	37 17·2	7 36 58·28	− 0·29	+ 0·75	+ 0·78	− 3·02
	2971	ε Hydræ	....	83 6	16·6	25·0	33·5	41·9	39 50·4	8 39 33·48	− 0·37	+ 0·69	+ 0·74	− 2·68
Jan. 30	2522	α Canis Minoris	....	84 26	56·7	4·9	13·4	21·6	32 30·1	7 32 13·34	− 0·37	− 2·54	− 2·59	− 2·66
	2555	β Geminorum	....	61 39	42·9	52·1	1·9	11·0	37 20·7	7 37 1·72	− 0·29	− 2·67	− 2·60	− 3·04
	2971	ε Hydræ	....	83 6	20·1	28·3	36·9	45·1	39 53·7	8 39 36·62	− 0·37	− 2·62	− 2·63	− 2·71
	3171	83 Cancri	....	71 44	8·1	16·9	25·9	34·1	11 43·4	9 11 25·74	− 0·33	− 2·77	− 2·65	− 2·80
	3331	ε Leonis	....	65 37	51·6	0·4	10·0	19·0	38 28·3	9 38 9·86	− 0·31	− 2·55	− 2·67	− 2·82
Feb. 2	2410	δ Geminorum	....	67 46	47·0	55·7	4·9	13·6	12 22·9	7 12 4·82	− 0·34	− 5·27	− 5·26	− 2·87
	2485	α² Geminorum	....	57 49	40·4	50·0	0·0	9·9	26 19·9	7 26 0·04	− 0·29	− 5·36	− 5·25	− 3·13
	2522	α Canis Minoris	....	84 26	59·1	7·4	16·0	24·2	32 32·8	7 32 15·90	− 0·39	− 5·08	− 5·24	− 2·66
	2555	β Geminorum	....	61 39	45·4	54·9	4·3	13·7	37 23·3	7 37 4·32	− 0·31	− 5·25	− 5·24	− 3·04
	3171	83 Cancri	....	71 44	11·0	19·4	28·1	37·1	11 46·0	9 11 28·38	− 0·35	− 5·36	− 5·21	− 2·83
	3331	ε Leonis	....	65 37	54·3	3·3	12·7	21·5	38 31·0	9 38 12·56	− 0·33	− 5·19	− 5·20	− 2·86
	3415	π Leonis	....	81 20	49·8	58·0	6·6	14·9	53 23·4	9 53 6·64	− 0·38	− 5·23	− 5·20	− 2·65
	3459	α Leonis	....	77 23	55·7	4·0	12·6	21·0	1 29·9	10 1 12·64	− 0·36	− 5·22	− 5·19	− 2·67
Feb. 3	2862	η Cancri	....	69 7	36·9	45·5	54·8	3·4	25 12·5	8 24 54·62	− 0·34	− 4·45	− 4·39	− 2·91
	2971	ε Hydræ	....	83 6	21·9	30·0	38·6	47·0	39 55·4	8 39 38·56	− 0·38	− 4·34	− 4·39	− 2·74
	3171	83 Cancri	....	71 44	10·0	18·5	27·5	36·1	11 45·3	9 11 27·48	− 0·35	− 4·45	− 4·37	− 2·84
	3331	ε Leonis	....	65 37	53·6	2·5	11·7	20·8	38 30·0	9 38 11·72	− 0·33	− 4·34	− 4·35	− 2·87
	3523	γ^1 Leonis	....	69 30	14·5	23·2	32·4	41·0	12 50·0	10 12 32·22	− 0·34	− 4·26	− 4·33	− 2·72
Feb. 4	2555	β Geminorum	....	61 39	43·8	53·1	2·8	12·1	37 21·9	7 37 2·74	− 0·31	− 3·67	− 3·70	− 3·04
	2862	(b) η Cancri	....	69 7	36·1	44·9	54·0	2·8	25 11·9	8 24 53·94	− 0·34	− 3·77	− 3·68	− 2·91
	2971	ε Hydræ	....	83 6	21·0	29·4	38·0	46·0	39 54·8	8 39 37·84	− 0·38	− 3·60	− 3·68	− 2·74
	3171	83 Cancri	....	71 44	9·1	17·9	27·0	35·4	11 44·3	9 11 26·74	− 0·35	− 3·70	− 3·66	− 2·85
Feb. 6	2522	α Canis Minoris	....	84 26	55·8	4·0	12·5	20·6	32 29·2	7 32 12·42	− 0·39	− 1·61	− 1·69	− 2·65
	2555	β Geminorum	....	61 39	42·0	51·2	0·9	10·1	37 19·9	7 37 0·82	− 0·31	− 1·76	− 1·69	− 3·03

(a) Pendulum of Brisbane Clock removed on the 26th to get additional pin-holes, and replaced on the 27th.

(b) Definition extremely bad.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1863.
1863				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Feb. 6	2672	6 Cancri	....	61 50	52·0	1·4	11·0	20·2	55 30·0	7 55 10·92	− 0·31	− 1·60	− 1·68	− 3·06
	2862	η Cancri	....	69 7	34·2	43·0	51·9	0·8	25 9·8	8 24 51·94	− 0·34	− 1·76	− 1·66	− 2·92
Feb. 8	2410	δ Geminorum	....	67 46	40·9	49·6	58·7	7·6	12 16·9	7 11 58·74	− 0·35	+ 0·80	+ 0·90	− 2·83
	2485	α² Geminorum	....	57 49	34·0	43·9	54·0	3·4	26 13·5	7 25 53·76	− 0·30	+ 0·91	+ 0·92	− 3·11
	2522	α Canis Minoris	....	84 26	53·2	1·4	9·9	18·1	32 26·6	7 32 9·81	− 0·40	+ 0·97	+ 0·94	− 2·64
	2555	β Geminorum	....	61 39	39·2	48·5	58·0	7·4	37 17·1	7 36 58·04	− 0·32	+ 1·03	+ 0·95	− 3·03
Feb. 9	3171	83 Cancri	....	71 44	3·8	12·4	21·1	30·0	11 38·9	9 11 21·24	− 0·36	+ 1·85	+ 1·89	− 2·89
	3331	ε Leonis	....	65 37	47·2	56·3	5·7	14·8	38 23·9	9 38 5·59	− 0·34	+ 1·88	+ 1·90	− 2·94
	3415	π Leonis	....	81 20	42·8	51·0	59·5	7·9	53 16·4	9 52 59·52	− 0·39	+ 1·89	+ 1·92	− 2·74
	3459	α Leonis	....	77 23	48·5	56·9	5·5	13·9	1 22·6	10 1 5·18	− 0·38	+ 2·05	+ 1·93	− 2·76
	3609	ρ Leonis	....	80 1	20·0	26·3	37·0	45·3	25 54·0	10 25 36·92	− 0·39	+ 1·89	+ 1·94	− 2·70
	3708	l Leonis	....	78 46	47·1	55·7	4·4	12·8	42 21·4	10 42 4·28	− 0·38	+ 1·96	+ 1·95	− 2·65
Feb. 10	2971	ε Hydræ	....	83 6	14·9	23·0	31·4	39·7	39 48·1	8 39 31·42	− 0·40	+ 2·87	+ 2·86	− 2·77
	3171	83 Cancri	....	71 44	2·8	11·4	20·4	29·0	11 37·9	9 11 20·30	− 0·36	+ 2·80	+ 2·88	− 2·90
	3331	ε Leonis	....	65 37	46·4	55·2	4·6	13·9	38 23·0	9 38 4·62	− 0·34	+ 2·85	+ 2·88	− 2·95
	3415	π Leonis	....	81 20	41·7	50·0	58·5	6·9	53 15·4	9 52 58·50	− 0·39	+ 2·92	+ 2·90	− 2·75
	3459	α Leonis	....	77 23	47·5	56·0	4·6	13·0	1 21·9	10 1 4·60	− 0·38	+ 2·94	+ 2·92	− 2·77
Feb. 12	2971	ε Hydræ	....	83 6	12·6	20·9	29·5	37·6	39 46·0	8 39 29·32	− 0·41	+ 4·98	+ 4·97	− 2·77
	3171	83 Cancri	....	71 44	0·8	9·3	18·1	26·9	11 36·0	9 11 18·22	− 0·37	+ 4·90	+ 5·01	− 2·91
	3331	ε Leonis	....	65 37	44·1	53·1	2·4	11·5	38 20·9	9 38 2·40	− 0·35	+ 5·09	+ 5·03	− 2·96
	3415	π Leonis	....	81 20	39·6	47·9	56·5	4·8	53 13·3	9 52 56·42	− 0·40	+ 5·02	+ 5·05	− 2·76
	3459	α Leonis	....	77 23	45·4	53·9	2·5	11·0	1 19·6	10 1 2·48	− 0·39	+ 5·09	+ 5·06	− 2·79
Feb. 13	2971	ε Hydræ	....	83 6	11·2	19·5	28·0	36·0	39 44·9	8 39 27·98	− 0·41	+ 6·32	+ 6·33	− 2·77
	3171	83 Cancri	....	71 44	59·3	8·0	17·0	25·6	11 34·5	9 11 16·98	− 0·37	+ 6·24	+ 6·35	− 2·91
	3331	ε Leonis	....	65 37	43·0	52·0	1·2	10·3	38 19·5	9 38 1·20	− 0·35	+ 6·30	+ 6·37	− 2·97
	3459	α Leonis	....	77 23	44·2	52·5	1·1	9·7	1 18·3	10 1 1·16	− 0·39	+ 6·41	+ 6·39	− 2·79
	3523	γ¹ Leonis	....	69 30	4·0	12·8	21·8	30·5	12 39·4	10 12 21·70	− 0·36	+ 6·42	+ 6·40	− 2·86
Feb. 15	2410	δ Geminorum	....	67 46	33·0	42·0	51·2	0·0	12 9·2	7 11 51·08	− 0·37	+ 8·43	+ 8·42	− 2·60
	2485	α² Geminorum	....	57 49	26·7	36·2	46·4	56·0	26 5·[illegible]	7 25 46·24	− 0·32	+ 8·41	+ 8·42	− 3·07
	2522	α Canis Minoris	....	84 26	45·8	53·7	2·3	10·8	32 19·0	7 32 2·32	− 0·41	+ 8·46	+ 8·43	− 2·60
	2555	β Geminorum	....	61 39	31·8	41·0	50·8	0·0	37 9·6	7 36 50·64	− 0·33	+ 8·40	+ 8·44	− 2·99
Feb. 16	2862	η Cancri	....	69 7	23·1	31·8	41·0	49·5	24 58·9	8 24 40·86	− 0·36	+ 9·34	+ 9·43	− 2·92
	2971	ε Hydræ	....	83 6	8·0	16·3	24·9	33·0	39 41·6	8 39 24·76	− 0·41	+ 9·53	+ 9·44	− 2·76
	3171	83 Cancri	....	71 44	56·2	4·9	13·9	22·3	11 31·2	9 11 13·70	− 0·37	+ 9·43	+ 9·46	− 2·92
	3331	ε Leonis	....	65 37	39·8	49·0	58·0	7·1	38 16·3	9 37 58·04	− 0·35	+ 9·48	+ 9·48	− 2·99
	3415	π Leonis	....	81 20	35·1	43·5	52·0	0·2	53 8·9	9 52 51·94	− 0·40	+ 9·53	+ 9·50	− 2·79
	3459	α Leonis	....	77 23	41·0	49·3	58·2	6·5	1 15·1	10 0 58·02	− 0·39	+ 9·58	+ 9·51	− 2·82
Feb. 21	3171	83 Cancri	....	71 44	50·4	59·0	8·0	16·6	11 25·5	9 11 7·90	− 0·38	+ 15·25	+ 15·37	− 2·93
	3331	ε Leonis	....	65 37	33·9	42·9	52·2	1·1	38 10·4	9 37 52·10	− 0·36	+ 15·45	+ 15·39	− 3·01
	3415	π Leonis	....	81 20	29·2	37·5	46·1	54·6	53 3·0	9 52 46·10	− 0·41	+ 15·41	+ 15·40	− 2·82
	3459	α Leonis	....	77 23	35·1	43·4	52·2	0·8	1 9·3	10 0 52·16	− 0·39	+ 15·47	+ 15·42	− 2·85

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1863.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Feb. 23	3331	ι Leonis	....	65 37	31.1	40.2	49.8	58.9	38 8.0	9 37 49.60	− 0.36	+ 17.95	+ 18.02	− 3.01
	3415	π Leonis	....	81 20	26.7	35.0	43.6	52.0	53 0.4	9 52 43.54	− 0.42	+ 17.98	+ 18.01	− 2.83
	3459	α Leonis	....	77 23	32.7	41.0	49.5	58.0	1 6.7	10 0 49.58	− 0.39	+ 18.06	+ 18.05	− 2.86
	3523	γ^1 Leonis	....	69 30	52.5	1.1	10.2	19.0	12 28.1	10 12 10.18	− 0.38	+ 18.04	+ 18.06	− 2.94
	3609	ζ Leonis	....	80 1	3.7	12.0	20.9	29.1	25 37.9	10 25 20.72	− 0.41	+ 18.24	+ 16.07	− 2.83
	3708	l Leonis	....	78 46	31.5	39.9	48.4	56.9	42 5.2	10 41 48.38	− 0.40	+ 18.04	+ 16.08	− 2.81
Feb. 27	3331	ι Leonis	....	65 37	25.8	34.6	43.9	52.9	38 2.2	9 37 43.88	− 0.36	+ 23.68	+ 23.73	− 3.02
	3415	π Leonis	....	81 20	21.0	29.3	37.8	46.1	52 54.6	9 52 37.76	− 0.42	+ 23.77	+ 23.75	− 2.83
	3459	α Leonis	....	77 23	27.0	35.2	44.0	52.3	1 1.0	10 0 43.90	− 0.39	+ 23.75	+ 23.77	− 2.87
	3523	γ^1 Leonis	....	69 30	46.8	55.4	4.4	13.2	12 22.2	10 12 4.40	− 0.38	+ 23.84	+ 23.79	− 2.96
	3946	υ Leonis	....	90 6	18.9	27.1	35.5	43.8	29 52.1	11 29 35.48	− 0.45	+ 23.78	+ 23.87	− 2.76
	3995	β Leonis	....	74 42	26.2	34.7	43.4	52.0	42 0.8	11 41 43.42	− 0.39	+ 23.90	+ 23.88	− 2.75
Feb. 28	2862	(a) η Cancri	....	69 7	7.8	16.5	25.7	34.2	24 43.3	8 21 25.50	− 0.40	+ 24.69	+ 24.78	− 2.87
	2971	ι Hydræ	....	83 6	52.6	1.0	9.2	17.6	39 26.2	8 39 9.32	− 0.44	+ 24.96	+ 24.80	− 2.72
	3171	83 Cancri	....	71 44	41.0	49.4	58.5	7.0	11 16.0	9 10 58.38	− 0.41	+ 24.78	+ 24.84	− 2.91
	3415	π Leonis	....	81 20	19.9	28.2	36.8	45.0	52 53.7	9 52 36.72	− 0.43	+ 24.83	+ 24.86	− 2.84
Mar. 1	2862	η Cancri	....	69 7	6.2	15.0	24.1	32.9	24 42.0	8 24 24.01	− 0.40	+ 26.15	+ 26.24	− 2.87
	2971	ι Hydræ	....	83 6	51.2	59.6	8.0	16.3	39 24.9	8 39 8.00	− 0.45	+ 26.29	+ 26.26	− 2.72
	3171	83 Cancri	....	71 44	39.2	48.0	57.0	5.6	11 14.4	9 10 56.81	− 0.42	+ 26.33	+ 26.30	− 2.91
	3331	ι Leonis	....	65 37	23.0	32.0	41.3	50.1	38 59.5	9 38 41.18	− 0.39	+ 26.41	+ 26.31	− 3.02
	3415	π Leonis	....	81 20	18.5	26.9	35.4	43.7	52 52.1	9 52 35.32	− 0.44	+ 26.24	+ 26.32	− 2.84
Mar. 4	3459	α Leonis	....	77 23	19.9	28.1	37.0	45.3	0 54.1	10 0 36.88	− 0.51	+ 30.90	+ 31.02	− 2.88
	3788	χ Leonis	....	81 57	12.5	20.7	29.2	37.5	57 46.0	10 57 29.18	− 0.53	+ 31.10	+ 31.08	− 2.85
	3834	δ Leonis	....	68 45	3.6	12.2	21.4	30.1	6 39.3	11 6 21.32	− 0.48	+ 31.20	+ 31.10	− 2.93
	3946	υ Leonis	....	90 6	11.8	20.0	28.2	36.5	29 45.0	11 29 28.30	− 0.58	+ 31.14	+ 31.12	− 2.81
	4145	η Virginis	....	89 56	9.5	17.6	26.0	34.2	12 42.8	12 12 26.02	− 0.58	+ 31.15	+ 31.17	− 2.75
	4268	γ^3 Virginis	....	90 44	58.6	6.8	15.2	23.3	34 31.8	12 34 15.14	− 0.59	....	+ 31.19	− 2.71
Mar. 6	3331	ι Leonis	....	65 37	15.0	24.1	33.4	42.3	37 51.6	9 37 33.28	− 0.48	+ 34.38	+ 34.39	− 3.00
	3415	π Leonis	....	81 20	10.5	18.9	27.3	35.5	52 44.2	9 52 27.28	− 0.56	+ 34.39	+ 34.41	− 2.83
	3459	α Leonis	....	77 23	16.4	24.9	33.6	42.0	0 50.6	10 0 33.50	− 0.54	+ 34.31	+ 34.42	− 2.88
	3946	υ Leonis	....	90 6	8.5	16.5	25.1	33.3	29 41.5	11 29 24.08	− 0.62	+ 34.52	+ 34.51	− 2.83
	4145	η Virginis	....	89 56	6.0	14.3	22.9	30.9	12 39.3	12 12 22.68	− 0.62	+ 34.56	+ 34.55	− 2.78
Mar. 11	3415	(b) π Leonis	....	81 20	4.2	12.4	21.0	29.2	52 38.0	9 52 20.96	− 0.63	+ 40.77	+ 40.80	− 2.82
	3459	α Leonis	....	77 23	10.2	18.4	27.2	35.5	0 44.0	10 0 27.06	− 0.60	+ 40.80	+ 40.60	− 2.87
	3484	....	8.0	57 56	21.0	30.9	40.9	50.5	6 0.4	10 5 40.74	− 0.49	....	+ 40.60	− 3.14
	3529	....	7.0	82 55	28.0	36.2	44.8	53.0	13 1.7	10 12 44.74	− 0.64	....	+ 40.60	− 2.85
	3592	....	6.0	87 50	46.4	54.5	3.0	11.2	22 19.9	10 22 3.00	− 0.67	....	+ 40.80	− 2.84
	3609	ζ Leonis	....	80 1	41.5	49.8	58.3	6.6	25 15.3	10 24 58.30	− 0.62	+ 40.92	+ 40.60	− 2.88
	3662	....	7.0	78 35	33.9	42.0	50.7	59.0	34 7.8	10 33 50.68	− 0.62	....	+ 40.80	− 2.80
	3708	l Leonis	....	78 46	9.0	17.3	26.0	34.2	41 43.0	10 41 25.90	− 0.62	+ 40.82	+ 40.80	− 2.89
	3726	....	6.0	88 17	17.4	25.6	34.1	42.3	44 50.8	10 44 34.04	− 0.67	....	+ 40.80	− 2.86
	3768	d Leonis	5.0	85 41	35.1	43.3	51.9	0.0	53 8.6	10 52 51.78	− 0.66	....	+ 40.60	− 2.87
	3821	....	5.0	21 0	1.6	24.8	48.5	11.2	3 35.3	11 2 48.28	− 0.06	....	+ 40.80	− 5.17
	3836	....	6.5	87 2	57.2	5.4	14.0	22.0	6 30.6	11 6 13.84	− 0.67	....	+ 40.80	− 2.67
	3869	....	6.0	71 51	23.9	32.3	41.6	50.1	14 59.0	11 14 41.38	− 0.58	....	+ 40.80	− 2.93

(a) Pendulum adjusted to reduced rate.

(b) The standard stars indicate a total change of rate during the time of observation.

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1863.				° ′	s	s	s	s	m s	h m s	s	s	s	s
Mar. 11	3900	τ Leonis	4·0	86 26	59·7	7·9	16·2	24·2	20 33·0	11 20 16·20	− 0·66	....	+ 40·80	− 2·87
	3946	υ Leonis	....	90 6	2·2	10·4	19·0	27·1	29 35·6	11 29 15·56	− 0·68	+ 40·73	+ 40·60	− 2·86
	4052	π Virginis	5·5	82 40	57·0	5·2	13·6	22·0	53 30·5	11 53 13·68	− 0·64	....	+ 40·60	− 2·85
	4145	η Virginis	....	89 56	0·0	8·1	16·7	24·9	12 33·2	12 12 16·58	− 0·68	+ 40·78	+ 40·60	− 2·84
	360	α Ursæ Minoris S. P.	....	1 25	38·0	26·0	55·5	36·5	19 12·0	13 7 57·60	− 7·85	....	+ 40·80	+ 28·80
	4532	ζ Virginis	....	89 55	48·7	56·9	5·2	13·4	27 22·0	13 27 5·21	− 0·68	....	+ 40·60	− 2·68
Mar. 16	3708	l Leonis	....	78 46	4·5	12·9	21·6	30·0	41 38·5	10 41 21·50	− 0·55	+ 45·15	+ 45·17	− 2·89
	3788	χ Leonis	....	81 57	58·2	6·6	15·2	23·4	57 31·9	10 57 15·06	− 0·56	+ 45·28	+ 45·19	− 2·88
	3821	....	6·0	21 0	57·2	20·2	44·0	6·8	3 30·6	11 2 43·76	− 0·16	....	+ 45·20	− 5·15
	3834	δ Leonis	....	68 45	49·7	58·2	7·5	16·1	6 25·3	11 6 7·36	− 0·49	+ 45·21	+ 45·20	− 2·97
	3869	....	6·0	71 51	19·2	28·0	37·0	45·7	14 54·6	11 14 36·90	− 0·52	....	+ 45·21	− 2·94
	3900	τ Leonis	4·0	86 26	55·0	3·2	11·6	20·0	20 28·4	11 20 11·64	− 0·58	....	+ 45·21	− 2·89
	360	α Ursæ Minoris S. P.	....	1 25	29·5	16·5	45·0	28·5	19 3·5	13 7 48·60	− 4·99	....	+ 45·26	+ 30·43
Mar. 17	3415	π Leonis	....	81 20	58·4	6·9	15·3	23·6	52 32·2	9 52 15·38	− 0·46	+ 46·15	+ 46·24	− 2·79
	3459	α Leonis	....	77 23	4·2	12·8	21·4	29·9	0 38·4	10 0 21·34	− 0·45	+ 46·34	+ 46·25	− 2·84
	3484	....	7·0	67 56	15·6	25·2	35·2	45·0	5 54·9	10 5 35·18	− 0·37	....	+ 46·26	− 3·11
	3529	....	6·0	82 55	22·0	30·4	39·0	47·2	12 55·9	10 12 38·90	− 0·47	....	+ 46·26	− 2·83
	3592	....	6·0	87 50	40·8	49·0	57·3	5·6	22 14·0	10 21 57·34	− 0·49	....	+ 46·27	− 2·82
	3609	g Leonis	....	80 1	36·0	44·2	53·0	1·1	25 9·8	10 24 52·82	− 0·46	+ 46·22	+ 46·27	− 2·86
	3662	....	8·0	78 35	28·0	36·3	45·0	53·3	34 2·0	10 33 44·92	− 0·45	....	+ 46·28	− 2·88
	3726	....	6·0	88 17	11·6	20·0	28·4	36·5	44 45·2	10 44 28·38	− 0·49	....	+ 46·28	− 2·86
	3768	d Leonis	5·0	85 41	29·2	37·8	46·3	54·4	53 3·0	10 52 46·14	− 0·48	....	+ 46·[illegible]	− 2·87
	3780	....	7·0	81 43	34·1	42·4	51·0	59·2	56 8·0	10 55 50·94	− 0·46	....	+ 46·29	− 2·89
	3821	....	6·0	21 0	66·0	19·2	43·0	5·5	3 29·4	11 2 42·62	− 0·24	....	+ 46·30	− 5·15
	3834	δ Leonis	....	68 45	48·2	57·0	6·2	15·0	6 24·2	11 6 6·12	− 0·41	+ 46·37	+ 46·30	− 2·97
	3869	....	7·0	71 51	18·1	26·7	35·7	44·3	14 53·4	11 14 35·64	− 0·44	....	+ 46·31	− 2·95
	3900	τ Leonis	5·0	86 26	54·0	2·2	10·5	19·0	20 27·3	11 20 10·60	− 0·48	....	+ 46·31	− 2·89
	3946	υ Leonis	....	90 6	56·5	4·7	13·1	21·4	29 30·0	11 29 13·14	− 0·50	+ 46·30	+ 46·32	− 2·89
	3996	....	7·0	84 5	6·1	14·3	23·0	31·1	41 39·7	11 41 22·84	− 0·47	....	+ 46·33	− 2·89
	4005	....	6·0	77 0	53·4	1·8	10·7	18·9	43 27·7	11 43 10·50	− 0·45	....	+ 46·33	− 2·91
	4052	π Virginis	....	82 40	51·4	59·5	8·1	16·4	53 25·0	11 53 8·08	− 0·47	....	+ 46·34	− 2·89
	360	α Ursæ Minoris S. P.	....	1 25	27·0	10·0	42·5	25·5	18 56·5	13 7 44·30	− 1·67	....	+ 46·38	+ 30·71
	4532	ζ Virginis	....	89 55	43·0	51·2	59·8	8·0	27 16·4	13 26 59·68	− 0·50	....	+ 46·39	− 2·78
Mar. 18	3834	δ Leonis	....	68 45	47·5	56·1	5·2	14·0	6 23·2	11 6 5·20	− 0·43	+ 47·32	+ 47·32	− 2·98
	3946	υ Leonis	....	90 6	55·6	3·9	12·2	20·4	29 29·[illegible]	11 29 12·22	− 0·51	+ 47·23	+ 47·[illegible]	− 2·89
	3995	β Leonis	....	74 42	3·0	11·4	20·1	28·8	41 37·6	11 41 20·18	− 0·46	+ 47·36	+ 47·34	− 2·90
	4005	....	6·0	77 0	52·4	0·8	9·4	17·9	43 26·8	11 43 9·46	− 0·46	....	+ 47·34	− 2·91
	4052	π Virginis	....	82 40	50·5	58·7	7·2	15·5	53 24·0	11 53 7·18	− 0·49	....	+ 47·35	− 2·90
	4145	η Virginis	....	89 56	53·2	1·3	9·9	18·1	12 26·[illegible]	12 12 9·82	− 0·51	+ 47·43	+ 47·37	− 2·90
Mar. 25	3834	δ Leonis	....	68 45	37·0	46·0	55·1	3·9	6 13·1	11 5 55·02	− 0·52	+ 57·58	+ 57·61	− 2·97
	3946	υ Leonis	....	90 6	45·4	53·7	2·0	10·2	29 18·7	11 29 2·00	− 0·63	+ 57·59	+ 57·63	− 2·[illegible]
	3995	β Leonis	....	74 42	52·9	1·2	10·1	18·5	41 27·3	11 41 10·00	− 0·55	+ 57·65	+ 57·64	− 2·92
	4005	....	....	77 0	42·2	50·7	59·2	7·8	43 16·5	11 42 59·28	− 0·55	....	+ 57·65	− 2·93
	360	α Ursæ Minoris S. P.	....	1 25	18·0	59·5	32·0	13·5	18 48·5	13 7 34·30	− 4·85	....	+ 57·70	+ 32·44
	4532	ζ Virginis	....	89 55	32·0	40·2	48·8	56·9	27 5·3	13 26 48·64	− 0·63	....	+ 57·72	− 2·88
	4648	τ Bootis	....	70 56	57·6	6·2	15·3	23·9	47 33·0	13 47 15·20	− 0·53	+ 57·78	+ 57·73	− 2·76
	4672	τ Virginis	....	87 49	29·8	38·0	46·3	54·4	54 3·0	13 53 46·30	− 0·62	+ 57·70	+ 57·74	− 2·82

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1863.
1863.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Mar. 26	4145	η Virginis	....	89 56	41·5	49·6	58·0	6·1	12 14·6	12 11 57·96	− 0·62	+ 59·45	+ 59·46	− 2·95
	360	α Ursæ Minoris S. P.	....	1 25	15·5	58·5	29·5	12·0	18 45·5	13 7 32·20	− 4·61	....	+ 59·52	+ 32·58
	4180	α Virginis	....	100 28	45·9	54·2	2·8	11·1	17 19·7	13 17 2·74	− 0·67	....	+ 59·53	− 3·00
	4532	ζ Virginis	....	89 55	30·2	38·4	46·9	55·1	27 3·8	13 26 46·84	− 0·62	+ 59·53	+ 59·53	− 2·89
	4648	η Bootis	....	70 56	55·8	4·2	13·5	22·1	47 31·1	13 47 13·31	− 0·52	+ 59·64	+ 59·55	− 2·77
	4672	τ Virginis	....	87 49	27·8	36·0	44·6	52·8	54 1·3	13 53 44·50	− 0·61	+ 59·51	+ 59·56	− 2·84
April 1	360	(a) α Ursæ Minoris S. P.	....	1 25	6·0	49·5	19·5	5·0	19 38·0	13 8 23·60	− 5·59	....	+ 8·77	+ 33·06
	4532	ζ Virginis	....	89 55	21·2	29·4	37·9	46·1	27 51·6	13 27 37·84	− 0·69	....	+ 8·79	− 2·96
	4648	η Bootis	....	70 56	46·8	55·1	4·5	13·0	48 22·1	13 48 4·30	− 0·59	+ 8·83	+ 8·81	− 2·85
	4729	α Bootis	....	70 8	1·8	10·4	19·4	28·0	9 37·1	14 9 19·31	− 0·58	+ 8·83	+ 8·82	− 2·77
	4808	ξ Bootis	....	59 3	30·5	40·2	50·1	59·7	26 9·4	14 25 49·98	− 0·52	+ 8·80	+ 8·83	− 2·72
April 4	3708	l Leonis	....	73 46	36·9	45·1	53·9	2·1	42 10·9	10 41 53·78	− 0·63	+ 12·87	+ 12·83	− 2·81
	3788	χ Leonis	....	81 57	30·9	39·2	47·7	56·0	58 4·3	10 57 47·62	− 0·65	+ 12·76	+ 12·84	− 2·83
	3834	δ Leonis	....	68 45	21·8	30·6	39·9	48·5	6 57·7	11 6 39·70	− 0·58	+ 12·92	+ 12·86	− 2·93
	3946	υ Leonis	....	90 6	30·1	38·3	46·8	55·1	30 3·5	11 29 46·76	− 0·70	+ 12·89	+ 12·88	− 2·90
	3995	β Leonis	....	74 42	37·6	46·0	55·0	3·3	42 12·2	11 41 54·82	− 0·61	+ 12·89	+ 12·89	− 2·92
April 6	3788	χ Leonis	....	81 57	28·3	36·5	45·0	53·4	58 2·0	10 57 45·01	− 0·67	+ 15·35	+ 15·36	− 2·82
	3834	δ Leonis	....	68 45	19·1	28·1	37·2	46·0	6 55·1	11 6 37·10	− 0·60	+ 15·53	+ 15·37	− 2·92
	3946	υ Leonis	....	90 6	27·7	35·9	44·3	52·6	30 1·0	11 29 44·30	− 0·72	+ 15·36	+ 15·38	− 2·89
	3995	β Leonis	....	74 42	35·0	43·5	52·3	0·9	42 9·8	11 41 52·30	− 0·64	+ 15·43	+ 15·40	− 2·91
	360	α Ursæ Minoris S. P.	....	1 25	3·0	43·5	15·0	55·0	19 28·5	13 8 17·00	− 5·95	....	+ 15·46	+ 32·99
	4532	ζ Virginis	....	89 55	14·5	22·6	31·1	39·3	27 17·8	13 27 31·06	− 0·72	....	+ 15·47	− 3·01
	4808	ξ Bootis	....	59 3	24·2	33·5	43·6	53·0	26 2·9	14 25 43·44	− 0·55	+ 15·44	+ 15·51	− 2·79
	4876	ι Bootis	....	62 22	29·2	38·4	48·0	57·4	39 6·8	14 38 47·96	− 0·57	+ 15·61	+ 15·53	− 2·75
April 7	4145	η Virginis	....	89 56	21·4	32·7	41·0	49·2	12 57·8	12 12 41·02	− 0·68	+ 16·48	+ 16·46	− 2·98
	4199	....	7·0	63 22	15·5	24·9	34·2	43·4	20 53·0	12 20 34·20	− 0·54	....	+ 16·46	− 3·01
	4205	....	6·0	63 3	15·9	25·0	34·6	43·7	21 53·3	12 21 34·50	− 0·54	....	+ 16·46	− 3·01
	4231	....	7·5	64 50	11·0	20·3	29·6	38·6	26 48·0	12 26 29·50	− 0·55	....	+ 16·47	− 3·00
	4244	....	7·0	52 49	55·6	5·9	16·2	26·9	28 37·1	12 28 16·34	− 0·45	....	+ 16·47	− 3·11
	360	α Ursæ Minoris S. P.	....	1 25	59·0	41·0	13·0	53·0	19 28·5	13 8 14·90	− 4·78	....	+ 16·50	+ 32·92
	4532	ζ Virginis	....	89 55	13·4	21·3	30·0	38·1	27 46·8	13 27 29·92	− 0·66	....	+ 16·51	− 3·01
	4550	....	7·0	36 39	28·8	42·4	56·8	10·6	31 24·7	13 30 56·66	− 0·39	....	+ 16·51	− 3·26
	4729	α Bootis	....	70 8	54·2	2·8	11·8	20·5	9 29·4	14 9 11·74	− 0·58	+ 16·50	+ 16·54	− 2·84
	4808	ξ Bootis	....	59 3	23·0	32·4	42·3	52·0	26 2·0	14 25 42·34	− 0·52	+ 16·52	+ 16·55	− 2·80
	4876	ι Bootis	....	62 22	28·1	37·5	47·0	56·2	39 5·9	14 38 46·94	− 0·54	+ 16·61	+ 16·56	− 2·76
April 9	360	α Ursæ Minoris S. P.	....	1 25	53·0	36·5	10·5	......	19 25·0	13 8 9·66	− 1·49	....	+ 18·71	+ 32·78
	4421	β Comæ	4·0	61 28	54·6	3·9	13·4	22·9	5 32·5	13 5 13·46	− 0·46	....	+ 18·71	− 3·00
	4457	....	6·0	54 11	10·3	20·3	31·0	41·0	12 51·4	13 12 30·80	− 0·44	....	+ 18·72	− 3·04
	4468	....	7·5	75 10	4·9	13·2	22·0	30·4	14 39·2	13 14 21·94	− 0·51	....	+ 18·72	− 2·97
	4503	....	7·0	85 27	46·0	54·0	2·6	10·9	22 19·3	13 22 2·60	− 0·55	....	+ 18·72	− 3·01
	4513	....	6·0	65 5	48·9	57·9	7·2	16·2	24 25·6	13 24 7·16	− 0·47	....	+ 18·73	− 2·96
	4526	....	6·0	64 58	45·0	54·1	3·6	12·3	26 21·9	13 26 3·38	− 0·47	....	+ 18·73	− 2·96
	4532	ζ Virginis	....	89 55	11·1	19·3	27·7	36·0	27 44·4	13 27 27·70	− 0·57	....	+ 18·73	− 3·03
	4550	....	6·5	36 39	26·2	40·1	54·6	8·1	31 22·3	13 30 54·28	− 0·38	....	+ 18·74	− 3·04
	4575	....	6·0	66 39	43·4	52·3	1·6	10·4	37 19·7	13 37 1·48	− 0·48	....	+ 18·74	− 2·94
	4648	η Bootis	....	70 56	36·7	45·4	54·4	3·2	48 12·0	13 47 54·34	− 0·49	+ 18·77	+ 18·75	− 2·93

(a) Clock put forward 1 minute.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance act to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock Interpolated.	Correction to Mean R.A., Jan. 1, 1863.
1863.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
April 9	4672	τ Virginis	....	87 49	8·8	17·0	25·4	33·7	54 42·2	13 54 25·42	− 0·56	+ 18·72	+ 18·76	− 3·02
	4716	ι Virginis	4·0	99 40	3·8	12·0	20·7	28·9	5 37·5	14 5 20·58	− 0·60	....	+ 18·77	− 3·08
	4723	....	....	60 17	14·7	24·0	33·9	43·2	7 53·1	14 7 33·78	− 0·46	....	+ 18·77	− 2·89
	4729	α Bootis	....	70 8	51·8	0·4	9·3	18·2	9 27·1	14 9 9·36	− 0·49	+ 18·82	+ 18·78	− 2·87
	4756	....	7·0	37 22	0·5	13·9	28·1	41·5	13 55·5	14 13 27·90	− 0·39	....	+ 18·78	− 3·06
	4797	....	6·0	53 13	39·8	10·0	20·7	30·9	22 41·3	14 22 20·54	− 0·44	....	+ 18·79	− 2·66
	4808	ρ Bootis	....	59 3	20·8	30·2	40·1	49·8	25 59·6	14 25 40·10	− 0·45	+ 18·72	+ 18·79	− 2·83
	4820	....	6·0	56 54	46·6	56·5	6·7	16·4	28 26·6	14 28 6·56	− 0·45	....	+ 18·80	− 2·83
	4863	....	7·5	52 41	30·7	41·0	51·6	1·8	37 12·5	14 36 51·52	− 0·44	....	+ 18·80	− 2·81
	4876	ε Bootis	....	62 22	26·0	35·2	44·6	54·0	39 3·6	14 38 44·68	− 0·47	+ 18·63	+ 18·81	− 2·79
April 13	360	α Ursae Minoris S. P.	....	1 25	52·0	35·5	......	46·0	19 20·0	13 8 9·10	− 6·79	....	+ 25·14	+ 32·23
	4532	ζ Virginis	....	89 55	5·0	13·2	21·6	29·8	27 38·3	13 27 21·58	− 0·77	....	+ 25·15	− 3·06
	4648	η Bootis	....	70 56	30·5	39·2	48·3	56·8	48 5·8	13 47 48·12	− 0·66	+ 25·19	+ 25·16	− 2·[illegible]
	4672	τ Virginis	....	87 49	2·6	10·8	19·3	27·4	54 35·0	13 54 19·20	− 0·76	+ 25·17	+ 25·16	− 3·06
	4729	(a) α Bootis	....	70 8	45·3	54·4	3·3	11·8	9 20·7	14 9 3·14	− 0·65	+ 25·24	+ 25·18	− 2·91
	4876	(b) ε Bootis	....	62 22	19·9	29·2	38·8	46·0	38 57·5	14 36 36·66	− 0·61	+ 25·02	+ 25·19	− 2·64
April 15	3995	β Leonis	....	74 42	22·2	30·8	39·6	48·0	41 57·0	11 41 39·52	− 0·66	+ 28·20	+ 28·21	− 2·88
	4231	....	7·0	64 50	59·5	8·6	18·0	26·9	26 36·4	12 26 17·88	− 0·60	....	+ 28·24	− 3·00
	4244	....	6·5	52 49	43·5	54·0	4·7	15·0	28 25·5	12 28 4·64	− 0·53	....	+ 28·24	− 3·09
	4340	δ Virginis	3·0	85 54	1·0	9·2	17·8	26·0	48 34·4	12 45 17·68	− 0·71	+ 28·28	+ 28·26	− 3·02
	4364	....	6·0	68 2	10·0	18·9	26·0	37·0	54 46·2	12 54 28·02	− 0·62	....	+ 28·27	− 3·00
	4421	β Comae	....	61 28	45·0	54·4	4·0	13·5	5 23·0	13 5 3·98	− 0·58	....	+ 28·28	− 3·02
	360	α Ursae Minoris S. P.	....	1 25	49·5	31·5	3·0	......	19 18·5	13 8 3·98	− 5·86	....	+ 28·28	+ 31·87
	4457	....	6·5	54 11	0·9	11·1	21·4	31·6	12 42·0	13 12 21·40	− 0·54	....	+ 28·28	− 3·06
	4468	....	7·0	75 10	55·4	3·9	12·6	21·1	14 30·0	13 14 12·60	− 0·66	....	+ 28·29	− 3·00
	4513	(c)	....	65 5	39·5	48·4	57·9	6·8	24 16·3	13 23 57·78	− 0·60	....	+ 28·29	− 3·00
April 16	360	α Ursae Minoris S. P.	....	1 25	51·0	30·0	3·0	......	19 15·0	13 8 2·87	− 4·92	....	+ 29·93	+ 31·66
	4457	....	6·0	54 11	59·2	9·4	19·9	30·0	12 40·4	13 12 19·78	− 0·52	....	+ 29·93	− 3·06
	4468	....	7·0	75 10	53·8	2·1	10·9	19·4	14 28·3	13 14 10·90	− 0·63	....	+ 29·93	− 3·00
	4503	....	....	65 27	34·9	43·2	51·5	59·9	22 6·3	13 21 51·56	− 0·67	....	+ 29·94	− 3·05
	4513	(d)	....	65 5	37·8	46·9	56·4	5·2	24 14·7	13 23 56·20	− 0·57	....	+ 29·94	− 3·00
	4526	....	5·0	64 58	31·0	43·0	52·4	1·5	26 10·8	13 25 52·34	− 0·57	....	+ 29·94	− 3·00
	4532	ζ Virginis	....	69 55	59·9	8·1	16·8	25·0	27 33·4	13 27 16·64	− 0·70	....	+ 29·94	− 3·07
	4550	....	....	36 39	15·2	29·0	43·3	57·0	31 11·4	13 30 43·18	− 0·40	....	+ 29·95	− 3·30
	4575	....	7·0	66 39	32·2	41·2	50·6	59·4	37 8·9	13 36 50·46	− 0·59	....	+ 29·95	− 2·99
	4597	τ Bootis	5·5	71 54	1·2	9·7	19·0	27·5	40 36·4	13 40 18·76	− 0·61	....	+ 29·96	− 2·99
	4621	....	7·0	70 43	50·0	58·9	7·9	16·4	43 25·4	13 43 7·72	− 0·61	....	+ 29·96	− 2·99
	4632	....	6·0	54 54	58·0	8·1	18·5	28·5	45 39·0	13 45 18·42	− 0·52	....	+ 29·96	− 3·01
	4648	η Bootis	....	70 56	25·8	34·4	43·4	52·0	48 1·0	13 47 43·32	− 0·61	+ 29·96	+ 29·97	− 2·98
	4672	τ Virginis	....	87 49	57·7	5·9	14·3	22·5	54 31·0	13 54 14·28	− 0·69	+ 30·05	+ 29·97	− 3·08
	4678	....	7·0	57 43	42·6	52·1	2·2	12·0	56 22·0	13 56 2·18	− 0·53	....	+ 29·97	− 2·98
	4694	....	....	58 32	35·8	45·4	55·4	5·0	0 14·9	13 59 55·30	− 0·54	....	+ 29·97	− 2·97
	4716	....	3·0	99 40	52·7	0·9	9·4	17·9	5 26·3	14 5 9·44	− 0·76	....	+ 29·97	− 3·21
	4723	(e)	....	60 17	3·5	13·0	22·9	32·2	7 42·0	14 7 22·72	− 0·55	....	+ 29·97	− 2·95
	4737	....	6·0	74 8	12·0	20·5	29·3	37·9	10 46·7	14 10 29·28	− 0·62	....	+ 29·97	− 2·97
	4756	....	6·5	37 22	49·3	3·0	17·0	30·6	13 44·4	14 13 16·86	− 0·42	....	+ 29·97	− 3·13
	4797	....	....	53 13	46·8	59·0	0·9	20·0	22 30·6	14 22 9·66	− 0·51	....	+ 29·98	− 2·94
	4808	ρ Bootis	....	59 3	9·7	19·2	29·1	38·9	25 46·0	14 25 29·10	− 0·54	+ 29·89	+ 29·98	− 2·91

(a) Definition bad. Blurred. (b) Very faint. Overcast. (c) Night overcast. (d) 2nd star. (e) Double. 10th and 12th mags.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1863.
1863.				° ′	s.	s.	s.	s.	m s.	h m s.	s.	s.	s.	s.
April 16	4820	....	6·0	56 54	36·0	45·6	55·8	5·5	28 15·6	14 27 55·70	− 0·53	....	+23·98	− 2·92
	4863	....	7·0	52 41	19·5	29·9	40·7	51·0	37 1·5	14 36 40·52	− 0·51	....	+29·99	− 2·90
	4876	ε Bootis..................	....	62 22	15·0	24·1	33·7	43·1	38 52·7	14 38 33·72	− 0·56	+29·97	+29·99	− 2·88
	4969	ψ Bootis..................	....	62 32	49·1	58·4	8·0	17·2	58 26·9	14 58 7·92	− 0·56	+30·04	+30·01	− 2·84
	4992	....	5·0	34 57	26·3	40·9	55·8	9·9	2 24·7	15 1 55·52	− 0·40	....	+30·01	− 2·87
	5000	....	....	56 25	19·2	29·2	39·4	49·2	4 59·5	15 4 39·30	− 0·53	....	+30·01	− 2·81
	5071	....	5·5	37 36	9·6	23·0	36·9	50·4	16 4·1	15 15 36·80	− 0·41	....	+30·02	− 2·84
April 17	4145	η Virginis..................	....	89 56	9·5	17·6	26·2	34·3	12 42·9	12 12 26·10	− 0·67	+31·38	+31·47	− 2·97
	4199	....	....	63 22	0·8	9·9	19·2	28·4	20 38·0	12 20 19·26	− 0·54	....	+31·48	− 3·00
	4231	....	7·0	64 50	56·0	5·2	14·5	23·9	26 33·0	12 26 14·58	− 0·56	....	+31·48	− 2·99
	4421	β Comæ..................	....	61 28	41·9	51·0	0·6	10·0	5 19·8	13 5 0·66	− 0·54	....	+31·50	− 3·02
	360	α Ursæ Minoris S. P....	....	1 25	48·0	30·0	59·0	......	19 13·5	13 8 0·99	− 4·21	....	+31·51	+31·43
	4462	....	7·0	84 30	54·0	2·2	10·9	19·0	13 27·6	13 13 10·74	− 0·64	....	+31·52	− 3·04
	4470	....	6·0	87 14	59·2	7·4	16·0	24·1	14 32·7	13 14 15·88	− 0·66	....	+31·52	− 3·06
	4503	....	7·0	85 27	33·2	41·4	49·0	58·1	22 6·6	13 21 49·66	− 0·65	....	+31·53	− 3·05
	4513	....	6·0	65 5	36·1	45·3	54·7	3·6	24 13·0	13 23 54·58	− 0·56	....	+31·54	− 3·00
	4526	....	......	64 58	32·4	41·3	50·6	59·9	26 9·1	13 25 50·66	− 0·56	....	+31·54	− 3·00
	4532	ζ Virginis..................	....	89 55	59·4	6·7	15·0	23·2	27 31·8	13 27 15·02	− 0·67	+31·59	+31·55	− 3·08
	4550	....	6·5	36 39	13·7	27·5	41·9	55·5	31 9·6	13 30 41·64	− 0·40	....	+31·55	− 3·30
	4559	....	6·0	78 36	4·4	13·0	21·4	29·9	32 38·7	13 32 21·48	− 0·61	....	+31·56	− 3·02
	4575	....	6·0	66 39	30·7	39·6	48·9	57·8	37 7·0	13 36 48·80	− 0·57	....	+31·56	− 2·99
	4597	....	6·0	71 54	59·7	8·2	17·1	25·8	40 34·6	13 40 17·08	− 0·59	....	+31·57	− 3·00
	4610	....	6·0	58 4	40·4	49·9	59·8	9·4	42 19·5	13 41 59·80	− 0·52	....	+31·57	− 3·00
	4627	....	7·0	54 35	13·1	23·2	33·7	43·8	44 54·2	13 44 33·60	− 0·50	....	+31·58	− 3·02
	4648	η Bootis..................	....	70 56	24·1	32·8	41·7	50·4	47 59·4	13 47 41·68	− 0·59	+31·59	+31·58	− 2·99
	5196	α Serpentis..................	....	83 9	46·5	54·7	3·1	11·4	37 20·1	15 37 3·16	− 0·64	+31·67	+31·68	− 2·90
April 20	4672	τ Virginis..................	....	87 49	51·3	59·5	7·9	16·1	54 24·5	13 54 7·86	− 0·69	+36·50	+36·55	− 3·11
	4729	α Bootis..................	....	70 8	34·4	43·0	51·9	0·7	9 9·5	14 8 51·90	− 0·60	+36·48	+36·56	− 2·96
	4876	ε Bootis..................	....	62 22	8·3	17·7	27·2	36·4	38 46·0	14 38 27·12	− 0·57	+36·63	+36·58	− 2·93
	4969	ψ Bootis..................	....	62 32	42·8	51·9	1·5	10·6	58 20·2	14 58 1·40	− 0·56	+36·62	+36·60	− 2·90
	5034	β Libræ..................	....	98 54	48·9	57·1	5·6	14·0	9 22·4	15 9 5·60	− 0·76	+36·64	+36·62	− 3·21
	5143	α Coronæ Borealis........	....	62 50	1·2	10·4	20·1	29·2	28 38·9	15 28 19·96	− 0·56	+36·71	+36·64	− 2·81
	5196	α Serpentis..................	....	83 9	41·5	49·8	58·3	6·6	37 15·0	15 36 58·24	− 0·67	+36·67	+36·66	− 2·95
April 21	360	(a) α Ursæ Minoris S. P	....	1 25	39·0	23·0	53·5	36·0	....	13 7 56·89	− 5·62	....	+38·00	+30·38
	4648	η Bootis..................	....	70 56	17·8	26·3	35·2	44·0	47 53·0	13 47 35·26	− 0·62	+38·07	+38·00	− 3·02
	4672	τ Virginis..................	....	87 49	49·5	58·0	6·3	14·7	54 23·0	13 54 6·36	− 0·71	+38·03	+38·00	− 3·12
	4678	....	....	57 43	34·5	44·2	54·2	4·0	56 14·1	13 55 54·20	− 0·55	....	+38·00	− 3·01
	4694	....	7·0	58 32	27·6	37·3	47·3	57·0	0 6·9	13 59 47·22	− 0·55	....	+38·00	− 3·00
	4716	κ Virginis..................	3·0	99 40	44·6	52·9	1·3	9·9	5 18·4	14 5 1·42	− 0·78	....	+38·00	− 3·19
	4723	(b)	....	60 17	55·6	5·0	14·9	24·2	7 34·0	14 7 14·74	− 0·56	....	+38·00	− 2·99
	4729	α Bootis..................	....	70 8	32·6	41·4	50·6	59·2	9 8·5	14 8 50·50	− 0·62	+37·91	+38·00	− 2·97
	4876	ε Bootis..................	....	62 22	7·6	16·2	25·9	35·0	38 41·7	14 38 25·68	− 0·58	+37·59	+38·00	− 2·94
	5143	α Coronæ Borealis........	....	62 50	0·0	9·2	18·8	27·9	28 37·3	15 28 18·64	− 0·58	+38·07	+38·00	− 2·83
	5196	α Serpentis..................	....	83 9	40·2	48·4	57·0	5·2	37 13·9	15 36 56·94	− 0·68	+38·00	+38·00	− 2·97
April 22	360	α Ursæ Minoris S. P....	....	1 25	38·0	22·0	52·5	34·0	19 7·0	13 7 54·70	− 4·58	....	+39·45	+30·08
	4532	ζ Virginis..................	....	89 55	50·8	58·9	7·2	15·6	27 23·9	13 27 7·28	− 0·71	....	+39·46	− 3·10
	4648	η Bootis..................	....	70 56	16·4	25·0	34·0	42·6	47 51·6	13 47 33·92	− 0·62	+39·41	+39·48	− 3·02

(a) The standard stars of this night show no rate, or an inversion of the ordinary rate for the period of observation.

(b) Double.

Date	No. in British Association Catalogue		Object Observed	Magnitude Estimated	North Polar Distance	Wires observed I.	II.	III.	IV.	V.	Reduction to Mean of Wires	Correction for Instrumental Deviations	Correction of Clock observed	Correction of Clock interpolated	Correction to Mean R.A. Jan. 1, 1863
1863.					° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
April 22	4672		τ Virginis	....	87 49	48·1	56·4	4·9	13·1	54 21·7	13 54 4·84	− 0·70	+ 39·55	+ 39·49	− 3·13
	4729		α Bootis	....	70 8	31·2	40·1	49·0	57·8	9 6·6	14 8 48·94	− 0·61	+ 39·47	+ 39·50	− 2·98
April 27	4808	(a)	ρ Bootis	....	59 3	52·6	2·1	12·4	21·6	25 31·5	14 25 12·04	− 0·57	+ 47·07	+ 47·18	− 3·00
	4876		ε Bootis	....	62 22	58·0	7·1	16·8	26·0	38 35·5	14 38 16·68	− 0·59	+ 47·15	+ 47·20	− 2·90
	4969		ψ Bootis	....	62 32	32·1	41·5	50·9	0·1	58 9·9	14 57 50·90	− 0·59	+ 47·22	+ 47·22	− 2·97
	5143		α Coronæ Borealis	....	62 50	50·9	0·0	9·5	18·9	28 28·4	15 28 9·54	− 0·59	+ 47·26	+ 47·23	− 2·91
	5196		α Serpentis	....	83 9	31·0	39·1	47·8	56·0	38 4·7	15 37 47·72	− 0·70	+ 47·33	+ 47·25	− 3·06
	5414		δ Ophiuchi	....	93 21	10·0	18·2	26·8	35·0	6 43·5	16 6 26·70	− 0·76	+ 47·29	+ 47·28	− 3·14
April 29	4729		α Bootis	....	70 8	20·8	29·4	38·3	47·2	8 56·2	14 8 38·38	− 0·62	+ 50·08	+ 50·12	− 3·02
	4808		ρ Bootis	....	59 3	49·6	59·1	9·0	18·6	25 28·1	14 25 8·94	− 0·56	+ 50·16	+ 50·14	− 3·02
	5034		β Libræ	....	98 54	35·3	43·8	52·3	0·5	9 9·0	15 8 52·18	− 0·77	+ 50·19	+ 50·17	− 3·33
	5143		α Coronæ Borealis	....	62 50	47·9	57·2	6·8	16·0	28 25·5	15 28 6·68	− 0·58	+ 50·13	+ 50·19	− 2·93
	5196		α Serpentis	....	83 9	28·1	36·5	45·0	53·1	37 1·6	15 36 44·86	− 0·69	+ 50·20	+ 50·20	− 3·09
May 1	4876		ε Bootis	....	62 22	51·8	1·0	10·6	29·8	38 39·5	14 38 10·54	− 0·59	+ 53·32	+ 53·30	− 3·02
	5143		α Coronæ Borealis	....	62 50	45·0	54·2	3·6	12·8	28 22·3	15 28 3·58	− 0·58	+ 53·26	+ 53·32	− 2·96
	5196		α Serpentis	....	83 9	25·0	33·3	41·8	50·0	36 58·4	15 36 41·70	− 0·69	+ 53·40	+ 53·33	− 3·12
	5414		δ Ophiuchi	....	93 21	3·9	12·2	20·8	29·0	6 37·5	16 6 20·68	− 0·73	+ 53·35	+ 53·37	− 3·21
May 2	4532	(b)	ζ Virginis	....	89 55	35·1	43·3	51·9	0·0	27 8·4	13 26 51·71	− 0·71	+ 54·96	+ 55·00	− 3·13
	4648		η Bootis	....	70 56	0·9	9·1	18·3	27·0	47 36·0	13 47 18·32	− 0·62	+ 55·04	+ 55·00	− 3·05
	4672		τ Virginis	....	87 49	32·9	41·0	49·5	57·5	54 6·1	13 53 49·40	− 0·70	+ 55·03	+ 55·00	− 3·17
	4729		α Bootis	....	70 8	15·8	24·4	33·4	42·2	8 51·2	14 8 33·40	− 0·61	+ 55·06	+ 55·00	− 3·03
	4808		ρ Bootis	....	59 3	44·9	54·4	4·2	13·9	25 23·7	14 25 4·22	− 0·56	+ 54·91	+ 55·00	− 3·03
May 5	4364	(c)	....	6·0	68 2	38·9	47·9	57·0	5·6	54 15·0	12 53 56·86	− 0·58	....	+ 59·63	− 2·96
	360		α Ursæ Minoris S. P.	....	1 25	27·0	7·0	34·0	.....	18 51·0	13 7 38·02	− 2·83	....	+ 59·63	+ 24·61
	4462		....	7·0	84 30	26·2	34·4	43·0	51·2	12 59·6	13 12 42·88	− 0·64	....	+ 59·63	− 3·06
	4470		....	6·0	87 14	31·3	39·5	48·1	56·2	14 4·8	13 13 47·98	− 0·64	....	+ 59·63	− 3·08
	4532		ζ Virginis	....	89 55	30·5	38·6	47·1	55·2	27 3·8	13 26 47·04	− 0·66	....	+ 59·63	− 3·13
	4610		....	6·0	58 4	12·0	21·9	31·6	41·4	41 51·4	13 41 31·66	− 0·52	....	+ 59·63	− 3·03
	4632		....	6·0	54 54	28·4	38·4	48·8	58·9	45 9·3	13 44 48·76	− 0·52	....	+ 59·63	− 3·04
	4648		η Bootis	....	70 56	56·1	4·8	13·6	22·3	47 31·3	13 47 13·62	− 0·58	+ 59·70	+ 59·63	− 3·05
	4676		....	7·0	57 48	2·0	11·8	21·9	31·4	54 41·5	13 54 21·72	− 0·52	....	+ 59·63	− 3·04
	4678		....	7·0	57 43	13·0	22·8	32·6	42·3	55 52·3	13 55 32·60	− 0·52	....	+ 59·63	− 3·04
	4694		....	7·0	58 32	6·0	15·9	25·9	35·4	59 45·4	13 59 25·72	− 0·53	....	+ 59·63	− 3·04
	4992		....	5·0	34 57	56·9	11·4	26·1	40·4	1 55·0	15 1 26·96	− 0·44	....	+ 59·63	− 3·15
	5000		....	6·0	56 25	50·0	59·8	10·0	19·9	4 30·0	15 4 9·94	− 0·52	....	+ 59·63	− 3·02
	5143		α Coronæ Borealis	....	62 50	38·5	47·7	57·4	6·8	28 16·0	15 27 57·28	− 0·55	+ 59·57	+ 59·63	− 3·00
	5196		α Serpentis	....	83 9	18·7	26·9	35·5	43·8	36 52·3	15 36 35·44	− 0·63	+ 59·65	+ 59·63	− 3·17
	5414		δ Ophiuchi	....	93 21	57·9	5·9	14·5	22·7	6 31·1	16 6 14·42	− 0·67	+ 59·61	+ 59·63	− 3·27
May 7	4729	(d)	α Bootis	....	70 8	7·9	16·7	25·6	34·4	8 43·3	14 8 25·58	− 0·60	+ 62·88	+ 62·83	− 3·04
	4808		ρ Bootis	....	59 3	36·9	46·5	56·4	6·0	25 15·9	14 24 56·34	− 0·55	+ 62·80	+ 62·83	− 3·05
	4820		....	6·0	56 54	3·2	12·9	23·0	32·6	27 42·9	14 27 22·92	− 0·55	....	+ 62·83	− 3·05
	4863		....	7·0	52 41	47·0	57·3	7·9	18·2	36 29·0	14 36 7·88	− 0·53	....	+ 62·83	− 3·05
	4876		ε Bootis	....	62 22	42·2	51·4	1·2	10·3	38 20·0	14 38 1·02	− 0·57	+ 62·85	+ 62·83	− 3·05
	4934		....	7·0	48 20	28·1	39·2	50·8	1·8	50 13·1	14 49 50·60	− 0·51	....	+ 62·83	− 3·05
	4942		....	6·5	49 50	49·9	0·6	11·8	22·4	53 33·6	14 53 11·66	− 0·51	....	+ 62·83	− 3·04

(a) Definition very bad. (b) An inversion of clock rate during time of observation.
(c) Apparent inversion of clock rate during observation, probably caused by swerving of the piers under temperature.
(d) No clearly perceptible clock rate this night during the observations, probably from swerving of the piers from temperature.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1863.
1863.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
May 7	4965	……………	6·0	44 51	53·4	5·0	17·0	28·8	57 41·0	14 57 17·04	− 0·49	………	+ 62·83	− 3·06
	4992	……………	5·0	34 57	53·8	6·2	24·0	37·1	1 52·0	15 1 22·82	− 0·44	………	+ 62·83	− 3·16
	5000	……………	7·0	56 25	46·8	56·6	6·9	16·6	4 27·0	15 4 6·78	− 0·54	………	+ 62·83	− 3·03
	5034	β Libræ	………	98 54	22·9	31·0	39·7	47·9	8 56·5	15 8 39·60	− 0·74	+ 62·83	+ 62·83	− 3·42
	5071	……………	6·0	37 36	37·3	50·7	4·4	18·0	15 32·0	15 15 4·48	− 0·44	………	+ 62·83	− 3·09
	5091	……………	5·5	26 11	15·2	3·6	22·9	41·8	20 1·0	15 19 22·90	− 0·38	………	+ 62·83	− 3·31
	5143	α Coronæ Borealis	………	62 50	35·5	44·7	54·1	3·3	28 12·9	15 27 54·10	− 0·57	+ 62·79	+ 62·83	− 3·02
	5196	α Serpentis	………	83 9	15·8	24·0	32·4	40·7	36 49·0	15 36 32·38	− 0·66	+ 62·76	+ 62·83	− 3·19
	5245	ε Serpentis	4·0	85 8	43·7	52·0	0·4	8·6	43 17·0	15 43 11·34	− 0·67	………	+ 62·83	− 3·21
	5284	γ Serpentis	5·0	73 51	51·1	59·6	8·4	17·0	49 25·9	15 49 8·40	− 0·62	………	+ 62·83	− 3·08
	5415	……………	5·5	31 50	51·2	6·7	22·8	38·5	5 54·6	16 5 22·76	− 0·42	………	+ 62·83	− 3·01
	5452	……………	6·0	68 33	50·8	59·6	8·7	17·5	13 26·7	16 13 8·66	− 0·53	………	+ 62·83	− 3·00
	5466	γ Herculis	3·5	70 32	35·7	44·6	53·4	2·2	15 11·1	16 14 53·40	− 0·60	………	+ 62·83	− 3·01
	5493	……………	6·0	87 21	40·5	48·7	57·2	5·4	19 14·0	16 18 57·16	− 0·68	………	+ 62·83	− 3·20
	5504	……………	7·0	74 21	34·4	43·0	51·7	0·2	21 9·1	16 20 51·68	− 0·62	………	+ 62·83	− 3·04
	5527	……………	6·0	69 11	19·6	28·5	37·8	46·3	23 55·5	16 23 37·58	− 0·59	………	+ 62·83	− 2·98
	5537	……………	6·5	79 21	48·3	56·6	5·0	13·3	26 22·1	16 26 5·06	− 0·64	………	+ 62·83	− 3·08
	5597	……………	6·0	64 53	2·1	11·2	20·6	29·6	34 39·1	16 34 20·58	− 0·58	………	+ 62·83	− 2·93
	5615	……………	6·0	53 14	51·2	1·4	11·9	22·2	37 32·8	16 37 11·90	− 0·53	………	+ 62·83	− 2·85
	5625	……………	7·0	87 31	43·9	52·1	0·4	8·7	39 17·1	16 39 0·44	− 0·68	………	+ 62·83	− 3·16
	5686	……………	7·5	71 23	52·1	0·7	9·3	18·0	46 26·7	16 46 9·36	− 0·62	………	+ 62·83	− 2·99
	5708	α Ophiuchi	………	80 25	55·0	3·4	11·9	20·1	50 28·8	16 50 11·84	− 0·65	+ 62·91	+ 62·83	− 3·04
May 8	4532	ζ Virginis	………	89 55	25·5	33·8	42·1	50·3	26 58·9	13 26 42·12	− 0·73	+ 64·60	+ 64·59	− 3·13
	4552	……………	6·0	53 3	0·5	10·9	21·6	31·8	30 42·4	13 30 21·44	− 0·55	………	+ 64·59	− 3·03
	4559	……………	6·0	78 36	31·5	39·9	48·7	57·0	32 5·8	13 31 48·58	− 0·67	………	+ 64·60	− 3·06
	4610	……………	6·0	58 4	7·4	17·0	27·0	36·6	41 46·7	13 41 26·94	− 0·56	………	+ 64·60	− 3·03
	4627	……………	6·5	54 35	40·3	50·6	1·0	11·0	44 21·6	13 41 0·90	− 0·56	………	+ 64·61	− 3·04
	4648	η Bootis	………	70 56	51·3	0·0	8·9	17·5	47 26·6	13 47 8·86	− 0·63	+ 64·52	+ 64·61	− 3·05
	4676	……………	7·0	57 48	57·2	6·9	17·0	26·6	54 36·8	13 51 16·90	− 0·56	………	+ 64·62	− 3·04
	4729	α Bootis	………	70 8	6·1	15·1	24·0	32·6	8 41·6	14 8 23·94	− 0·62	+ 64·54	+ 64·62	− 3·04
	4737	……………	6·5	74 8	37·4	46·0	54·9	3·4	10 12·2	14 9 54·78	− 0·65	………	+ 64·63	− 3·10
	4756	……………	7·0	37 22	15·0	28·6	42·6	56·0	13 10·0	14 12 42·44	− 0·46	………	+ 64·63	− 3·18
	4797	……………	6·0	53 13	14·1	24·8	35·3	45·5	21 56·0	14 21 35·20	− 0·55	………	+ 64·64	− 3·05
	4809	……………	6·0	62 45	57·0	6·2	15·6	24·9	25 34·3	14 25 15·60	− 0·59	………	+ 64·64	− 3·06
	4863	……………	7·0	52 41	45·2	55·5	6·0	16·5	36 27·2	14 36 6·08	− 0·55	………	+ 64·64	− 3·05
	4876	ε Bootis	………	62 22	40·7	49·7	59·2	8·6	38 18·1	14 37 59·26	− 0·59	+ 64·63	+ 64·64	− 3·05
	4934	……………	7·0	48 20	26·5	37·6	49·0	0·0	50 11·3	14 49 48·88	− 0·52	………	+ 64·65	− 3·06
	4942	……………	6·0	49 50	48·1	58·9	10·0	20·9	53 31·9	14 53 9·96	− 0·53	………	+ 64·65	− 3·05
	5001	……………	7·0	60 17	48·1	57·6	7·4	16·9	4 26·8	15 4 7·36	− 0·58	………	+ 64·66	− 3·05
	5034	β Libræ	………	98 54	21·0	29·4	37·9	46·1	8 54·8	15 8 37·80	− 0·78	+ 64·68	+ 64·67	− 3·43
	5071	……………	5·5	37 36	35·2	48·8	2·9	16·1	15 30·0	15 15 2·60	− 0·44	………	+ 64·67	− 3·09
	5091	……………	5·5	26 11	43·4	1·9	21·0	39·8	19 59·0	15 19 21·02	− 0·37	………	+ 64·67	− 3·32
	5143	α Coronæ Borealis	………	62 50	33·6	42·9	52·3	1·5	28 11·0	15 27 52·26	− 0·59	+ 64·66	+ 64·68	− 3·03
	5196	α Serpentis	………	83 9	13·9	22·0	30·5	38·9	36 47·4	15 36 30·54	− 0·69	+ 64·64	+ 64·68	− 3·20
	5245	(a) ε Serpentis	………	85 8	41·9	50·2	58·8	7·0	43 15·4	15 42 58·66	− 0·71	………	+ 64·68	− 3·22
	5284	γ Serpentis	………	73 54	49·5	58·0	6·9	15·2	49 24·0	15 49 6·72	− 0·65	………	+ 64·69	− 3·09
	5415	……………	6·0	31 50	49·0	4·8	21·1	36·7	5 52·6	16 5 20·84	− 0·42	………	+ 64·70	− 3·03
	5452	……………	6·0	68 33	49·0	57·9	7·0	15·9	13 24·8	16 13 6·92	− 0·61	………	+ 64·71	− 3·02
	5466	γ Herculis	4·0	70 32	34·0	42·9	51·8	0·3	15 9·4	16 14 51·68	− 0·63	………	+ 64·71	− 3·03
	5493	……………	6·5	87 21	38·7	47·0	55·4	3·8	19 12·2	16 18 55·42	− 0·71	………	+ 64·71	− 3·21

(a) Definition becoming bad. Stars unsteady.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1863.
1863.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
May 8	5504	....	7.0	74 21	32.8	41.3	50.0	58.5	21 7.2	16 20 49.96	− 0.65	....	+ 64.72	− 3.06
	5527	....	6.0	69 14	18.0	26.8	36.0	44.5	23 53.9	16 23 35.84	− 0.61	....	+ 64.72	− 3.00
	5537	....	7.0	79 21	46.4	54.8	3.4	11.8	26 20.3	16 26 3.34	− 0.67	....	+ 64.73	− 3.10
	5597	....	6.0	64 53	0.3	9.5	18.9	28.0	34 37.3	16 34 18.80	− 0.61	....	+ 64.73	− 2.94
	5615	....	6.0	53 14	49.3	59.6	10.1	20.5	37 31.0	16 37 10.10	− 0.55	....	+ 64.74	− 2.87
	5625	....	7.0	87 31	42.0	50.4	58.9	7.0	39 15.5	16 38 58.76	− 0.71	....	+ 64.74	− 3.19
	5647	....	7.0	76 31	57.3	5.6	14.2	22.9	42 31.8	16 42 14.36	− 0.66	....	+ 64.75	− 3.04
	5686	....	7.5	74 23	50.4	58.9	7.7	16.0	46 25.0	16 46 7.60	− 0.65	....	+ 64.76	− 3.00
	5708	κ Ophiuchi........................	....	80 25	53.0	1.4	10.0	18.5	50 27.0	16 50 9.98	− 0.68	+ 64.82	+ 64.77	− 3.06
May 10	360	α Ursæ Minoris S. P....	....	1 26	17.5	4.5	33.0	16.0	18 43.5	13 7 34.90	− 5.65	....	+ 68.28	+ 22.17
	4532	ζ Virginis........................	....	89 55	21.9	30.0	38.4	45.6	26 55.2	13 26 38.42	− 0.76	+ 68.33	+ 68.30	− 3.13
	4648	η Bootis........................	....	70 56	47.5	56.1	5.1	13.9	47 22.9	13 47 5.10	− 0.65	+ 68.30	+ 68.30	− 3.06
	4672	τ Virginis........................	....	87 49	19.6	27.8	36.4	44.4	53 53.0	13 53 36.24	− 0.74	+ 68.26	+ 68.31	− 3.19
May 23	5034	β Libræ........................	....	98 54	30.1	38.6	47.0	55.5	10 4.0	15 9 47.04	− 0.80	− 4.42	− 4.44	− 3.55
	5143	α Coronæ Borealis........	....	62 50	43.0	51.9	1.5	10.8	29 20.2	15 29 1.48	− 0.60	− 4.44	− 4.44	− 3.14
	5196	α Serpentis........................	....	83 9	23.0	31.3	40.0	48.0	37 56.7	15 37 39.80	− 0.71	− 4.46	− 4.44	− 3.31
May 26	4808	ρ Bootis........................	....	59 3	43.9	53.3	3.4	12.9	26 22.6	14 26 3.22	− 0.58	− 4.06	− 4.06	− 3.04
	4876	ε Bootis........................	....	62 22	49.2	58.5	8.0	17.2	39 26.9	14 39 7.96	− 0.60	− 4.04	− 4.06	− 3.07
	4934	....	7.0	48 20	35.2	46.3	57.6	8.7	51 20.0	14 50 57.56	− 0.53	....	− 4.06	− 3.05
	4942	....	7.0	49 50	56.9	7.6	18.8	29.5	54 40.7	14 54 18.70	− 0.54	....	− 4.05	− 3.06
	4965	....	6.0	44 51	0.4	12.0	24.1	35.7	58 47.8	14 58 24.00	− 0.51	....	− 4.05	− 3.06
	5001	....	6.0	60 17	57.0	6.4	16.1	25.6	5 35.4	15 5 16.10	− 0.59	....	− 4.05	− 3.10
	5091	....	5.0	26 11	52.0	10.8	30.0	48.5	21 7.8	15 20 29.82	− 0.36	....	− 4.05	− 3.26
	5143	α Coronæ Borealis........	....	62 50	42.5	51.7	1.1	10.3	29 20.0	15 29 1.12	− 0.60	− 4.07	− 4.05	− 3.15
	5196	α Serpentis........................	....	83 9	22.7	31.0	39.4	47.8	37 56.1	15 37 39.40	− 0.71	− 4.04	− 4.05	− 3.36
	5245	ε Serpentis........................	....	85 8	51.0	59.1	7.6	16.0	44 24.3	15 44 7.60	− 0.72	....	− 4.04	− 3.39
	5415	....	....	31 50	58.4	13.9	30.0	45.8	7 2.0	16 6 30.02	− 0.42	....	− 4.04	− 3.16
	5452	....	7.0	68 33	57.9	6.7	15.9	24.6	14 33.8	16 14 15.78	− 0.63	....	− 4.04	− 3.21
	5466	γ Herculis........................	6.0	70 32	43.0	51.6	0.9	9.4	16 16.5	16 16 0.68	− 0.64	....	− 4.04	− 3.23
	5493	....	....	67 21	47.8	56.0	4.5	12.6	20 21.3	16 20 4.44	− 0.72	....	− 4.04	− 3.45
June 3	360	α Ursæ Minoris S. P....	....	1 25	43.5	26.5	57.5	39.5	20 10.0	13 8 59.40	− 4.85	....	− 0.74	+ 5.64
	4532	ζ Virginis........................	....	89 55	30.7	38.8	47.4	55.5	28 4.0	13 27 47.28	− 0.75	....	− 0.74	− 3.04
	4648	η Bootis........................	....	70 56	56.4	5.0	14.0	22.9	48 31.8	13 48 14.02	− 0.65	− 0.71	− 0.74	− 2.97
	5196	α Serpentis........................	....	83 9	19.4	27.7	36.2	44.4	37 53.0	15 37 36.14	− 0.71	− 0.75	− 0.74	− 3.39
	5414	δ Ophiuchi........................	....	93 21	58.6	6.6	15.2	23.4	7 31.9	16 7 15.14	− 0.77	− 0.68	− 0.74	− 3.60
	5504	....	....	74 21	38.5	47.0	55.6	4.3	22 12.9	16 21 55.66	− 0.67	....	− 0.74	− 3.34
	5527	....	....	69 14	23.8	32.4	41.3	50.3	24 59.4	16 24 41.44	− 0.61	....	− 0.74	− 3.28
	5537	....	....	79 21	52.4	0.5	9.3	17.6	27 26.0	16 27 9.16	− 0.69	....	− 0.74	− 3.40
	5597	....	....	64 53	6.3	15.5	24.7	33.8	35 43.0	16 35 24.66	− 0.63	....	− 0.74	− 3.25
	5615	....	....	53 14	55.0	5.5	16.0	26.1	38 36.8	16 38 15.88	− 0.57	....	− 0.74	− 3.16
	5634	....	....	76 38	27.7	36.0	44.7	53.0	42 1.7	16 41 44.62	− 0.69	....	− 0.74	− 3.40
	5686	....	....	74 23	56.2	4.6	13.4	22.0	47 30.8	16 47 13.40	− 0.67	....	− 0.74	− 3.35
	5708	κ Ophiuchi........................	....	80 25	59.3	7.4	16.0	24.2	51 33.0	16 51 15.98	− 0.70	− 0.80	− 0.74	− 3.42
	5776	....	....	41 1	60.8	3.6	16.4	26.8	1 41.9	17 1 16.30	− 0.50	....	− 0.74	− 3.13
	5787	....	....	79 47	0.5	8.8	17.4	25.8	3 34.4	17 3 17.38	− 0.70	....	− 0.74	− 3.42
	5821	α Herculis........................	....	75 27	11.8	20.1	28.8	37.3	8 46.0	17 8 28.80	− 0.68	− 0.65	− 0.74	− 3.36

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1863.
1863.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
June 3	5941	α Ophiuchi	....	77 20	22·5	30·9	39·5	47·8	28 56·5	17 28 39·44	− 0·68	− 0·83	− 0·74	− 3·36
June 4	3834	δ Leonis	....	68 45	34·0	43·8	52·7	1·5	7 10·8	11 6 52·74	− 0·66	− 0·70	− 0·70	− 2·27
	3995	β Leonis	....	74 42	50·8	59·2	8·0	16·5	42 25·4	11 42 7·98	− 0·70	− 0·67	− 0·70	− 2·43
	5507	....	7·0	74 17	57·4	6·0	14·7	23·2	22 32·1	16 22 14·68	− 0·69	....	− 0·72	− 3·34
	5529	(a)	8·0	78 18	8·8	17·0	25·5	34·0	25 42·8	16 25 25·62	− 0·70	....	− 0·72	− 3·40
	5604	ζ Herculis	....	58 9	52·1	2·0	11·0	21·5	36 31·5	16 36 11·66	− 0·60	− 0·74	− 0·72	− 3·18
	5625	....	8·0	87 31	47·9	56·0	4·5	12·7	40 21·2	16 40 4·46	− 0·77	....	− 0·73	− 3·54
	5634	....	7·0	78 38	27·6	35·9	44·6	53·0	42 1·6	16 41 44·54	− 0·71	....	− 0·73	− 3·41
	5686	....	8·0	74 23	56·2	4·4	13·5	22·0	47 30·8	16 47 13·38	− 0·69	....	− 0·73	− 3·36
	5708	κ Ophiuchi	....	80 25	59·0	7·3	15·8	24·2	51 32·9	16 51 15·84	− 0·71	....	− 0·73	− 3·43
	5726	....	6·0	83 13	36·8	45·0	53·5	1·7	54 10·3	16 53 53·46	− 0·73	....	− 0·74	− 3·48
	5776	....	5·5	41 1	51·0	3·5	16·2	28·8	1 41·8	17 1 16·26	− 0·51	....	− 0·74	− 3·14
	5821	α Herculis	....	75 27	11·8	20·4	28·9	37·2	8 46·0	17 8 28·86	− 0·70	....	− 0·74	− 3·37
	5863	ω Herculis	....	57 21	16·8	26·6	36·8	46·4	15 56·5	17 15 36·62	− 0·61	....	− 0·74	− 3·20
	5893	σ Ophiuchi	4·0	85 45	31·2	39·4	48·0	56·3	20 4·8	17 19 47·94	− 0·75	....	− 0·75	− 3·52
	5917	....	5·5	29 51	26·6	43·2	59·3	16·6	21 33·8	17 24 0·02	− 0·42	....	− 0·75	− 3·19
	5941	α Ophiuchi	....	77 20	22·5	30·8	39·5	47·8	28 56·4	17 28 39·40	− 0·69	− 0·77	− 0·75	− 3·39
	6021	μ Herculis	....	62 12	51·7	1·0	10·4	19·8	41 29·4	17 41 10·46	− 0·64	− 0·72	− 0·76	− 3·21
June 11	5604	ζ Herculis	....	58 9	53·0	2·5	12·6	22·1	36 32·1	16 36 12·46	− 0·65	− 1·25	− 1·16	− 3·22
	5708	κ Ophiuchi	....	80 25	59·6	8·0	16·4	24·9	51 33·4	16 51 16·46	− 0·76	− 1·15	− 1·16	− 3·49
	5821	α Herculis	....	75 27	12·1	20·8	29·5	37·9	8 46·5	17 8 29·36	− 0·73	− 1·08	− 1·16	− 3·44
	5941	(b) α Ophiuchi	....	77 20	23·0	31·4	39·9	48·3	28 57·0	17 28 39·92	− 0·74	− 1·16	− 1·16	− 3·47
June 26	4649	η Bootis	....	70 56	1·9	10·5	19·4	28·1	48 37·1	13 48 19·40	− 0·73	− 6·20	− 6·19	− 2·78
	4729	α Bootis	....	70 8	16·9	25·5	34·5	43·2	9 52·4	14 9 34·50	− 0·73	− 6·13	− 6·20	− 2·82
	5821	α Herculis	....	75 27	17·7	26·0	34·6	43·1	8 51·9	17 8 34·66	− 0·75	− 6·29	− 6·30	− 3·51
	6021	μ Herculis	....	62 12	57·5	6·8	16·3	25·8	41 35·4	17 41 16·36	− 0·69	− 6·39	− 6·32	− 3·39
June 27	5414	δ Ophiuchi	....	93 21	6·2	14·5	23·0	31·1	7 39·6	16 7 22·88	− 0·81	− 8·31	− 8·41	− 3·67
	5604	ζ Herculis	....	58 9	0·0	9·8	19·8	29·5	36 39·4	16 36 19·70	− 0·65	− 8·50	− 8·42	− 3·21
	5708	κ Ophiuchi	....	80 25	7·0	15·3	23·8	32·2	51 40·9	16 51 23·84	− 0·74	− 8·49	− 8·43	− 3·55
	5821	α Herculis	....	75 27	19·6	27·9	37·0	45·2	8 54·1	17 8 36·76	− 0·73	− 8·40	− 8·44	− 3·52
July 3	6281	(c) δ Ursæ Minoris	....	3 24	12·0	31·0	53·5	12·0	21 34·5	18 16 52·60	+ 0·37	....	− 13·75	− 7·11
	6356	α Lyræ	....	51 20	14·9	25·1	35·9	46·3	32 57·1	18 32 35·86	− 0·61	− 13·80	− 13·75	− 3·44
	6429	β Lyræ	....	56 47	59·5	9·0	19·5	29·0	45 39·4	18 45 19·28	− 0·63	− 13·81	− 13·75	− 3·49
	6528	ζ Aquilæ	....	76 10	7·8	16·2	25·0	33·4	59 42·0	18 59 24·88	− 0·68	....	− 13·75	− 3·69
	6646	δ Aquilæ	....	87 8	37·1	45·4	53·8	1·9	19 10·6	19 18 53·76	− 0·74	....	− 13·75	− 3·85
	6772	γ Aquilæ	....	79 42	46·1	54·3	3·0	11·2	40 19·9	19 40 2·90	− 0·71	− 13·70	− 13·75	− 3·71
	6502	α Aquilæ	....	81 28	7·1	15·5	24·2	32·4	44 41·1	19 44 24·06	− 0·71	− 13·70	− 13·75	− 3·75
	6833	β Aquilæ	....	83 54	36·5	44·7	53·3	1·4	49 10·0	19 48 53·16	− 0·72	− 13·72	− 13·75	− 3·76
July 4	5821	α Herculis	....	75 27	25·6	34·0	42·8	51·3	9 0·0	17 8 42·74	− 0·68	− 14·42	− 14·45	− 3·53
	5941	α Ophiuchi	....	77 20	36·4	44·6	53·4	1·5	29 10·4	17 28 53·26	− 0·67	− 14·43	− 14·46	− 3·61
	6021	μ Herculis	....	62 12	5·9	15·0	24·5	33·8	41 43·4	17 41 24·52	− 0·62	....	− 14·48	− 3·41
	6281	δ Ursæ Minoris	....	3 24	13·0	32·5	54·0	13·0	21 36·0	18 16 53·70	+ 0·10	....	− 14·50	− 6·99
	6355	α Lyræ	....	51 20	15·2	25·9	36·8	47·3	32 58·0	18 32 36·64	− 0·60	− 14·58	− 14·51	− 3·45
	6429	β Lyræ	....	56 47	0·0	10·0	20·1	29·8	45 39·9	18 45 19·96	− 0·62	− 14·50	− 14·52	− 3·49

(a) Very faint. (b) From this date to June 23rd experiments were tried on the rate of the clock by heating up the clock closet by means of gas, and occasionally oil lamps. (c) An inversion of the clock rate apparently during observation.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1863.
1863.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
July 5	5604	ζ Herculis	....	58 9	6.8	16.4	26.3	36.0	36 46.1	16 36 26.32	− 0.60	− 15.21	− 15.18	− 3.17
	5708	κ Ophiuchi	....	80 25	13.7	22.0	30.4	38.9	51 47.4	16 51 30.48	− 0.66	− 15.21	− 15.18	− 3.55
	5821	α Herculis	....	75 27	26.3	34.8	43.4	51.9	9 0.7	17 8 43.42	− 0.66	− 15.12	− 15.18	− 3.53
	5941	α Ophiuchi	....	77 20	37.1	45.4	54.0	2.4	29 11.0	17 28 53.98	− 0.65	− 15.16	− 15.18	− 3.62
July 6	6021	μ Herculis	....	62 12	7.0	16.2	25.9	35.1	41 44.7	17 41 25.78	− 0.59	− 15.89	− 15.88	− 3.41
	6355	α Lyræ	....	51 20	16.7	27.1	37.9	48.3	32 59.2	18 32 37.84	− 0.58	− 15.80	− 15.90	− 3.45
	6429	(a) β Lyræ	....	56 47	1.7	11.2	21.5	31.2	45 41.2	18 45 21.36	− 0.59	− 15.91	− 15.91	− 3.51
	6528	ζ Aquilæ	....	76 19	9.9	18.4	27.1	35.4	59 44.1	18 59 26.95	− 0.62	− 15.87	− 15.92	− 3.71
	6646	δ Aquilæ	....	87 8	39.2	47.6	56.0	4.2	19 12.5	19 18 55.90	− 0.67	− 15.97	− 15.94	− 3.88
	6833	β Aquilæ	....	83 51	38.9	47.0	55.4	3.7	49 12.2	19 48 55.41	− 0.65	− 16.00	− 15.96	− 3.81
July 7	5894	....	6.0	82 17	46.3	54.4	3.0	11.2	20 20.0	17 20 2.98	− 0.64	....	− 16.36	− 3.67
	5917	....	6.0	29 51	42.1	58.5	15.6	32.1	24 49.4	17 24 15.54	− 0.54	....	− 16.38	− 3.07
	5941	α Ophiuchi	....	77 20	38.2	46.5	55.1	3.5	29 12.2	17 28 55.10	− 0.62	− 16.31	− 16.39	− 3.62
	5996	....	....	85 23	46.4	54.6	3.1	11.3	37 19.8	17 37 3.04	− 0.65	....	− 16.39	− 3.77
	6021	μ Herculis	....	62 12	7.4	16.8	26.1	35.5	41 45.0	17 41 26.16	− 0.58	....	− 16.40	− 3.41
	6035	....	7.0	80 7	44.4	52.6	1.1	9.3	44 18.0	17 44 1.08	− 0.64	....	− 16.40	− 3.69
	6123	70 Ophiuchi	4.0	87 28	36.0	44.3	52.6	0.3	59 9.4	17 58 52.61	− 0.65	....	− 16.40	− 3.84
	6137	....	7.0	87 32	32.0	40.3	48.9	57.1	1 5.6	18 [illegible] 48.78	− 0.66	....	− 16.40	− 3.85
	6281	δ Ursæ Minoris	....	3 21	14.5	34.0	56.5	16.5	21 37.5	18 16 55.80	− 0.74	....	− 16.40	− 6.59
	6355	α Lyræ	....	51 20	17.1	27.7	38.5	49.0	33 0.0	18 32 38.46	− [illegible].59	− 16.40	− 16.41	− 3.45
	6429	β Lyræ	....	56 47	2.0	11.7	22.0	31.6	45 41.8	18 45 21.82	− 0.58	− 16.38	− 16.41	− 3.51
	6469	....	6.0	56 13	51.7	1.9	11.9	21.7	50 31.9	18 50 11.82	− 0.59	....	− 16.41	− 3.52
	6480	....	6.0	57 16	54.1	4.0	14.1	23.9	52 33.9	18 52 14.00	− 0.58	....	− 16.41	− 3.53
	6487	ε Aquilæ	4.0	75 6	27.9	36.3	45.0	53.4	54 2.3	18 53 44.98	− 0.62	....	− 16.42	− 3.71
	6527	....	7.5	71 3	55.6	4.3	13.2	21.9	59 30.8	18 59 13.16	− [illegible].61	....	− 16.42	− 3.67
	6762	....	7.5	63 10	21.3	30.5	39.9	49.2	38 58.5	19 38 39.88	− [illegible].59	....	− 16.43	− 3.62
	6791	....	8.0	78 38	29.5	37.8	46.5	55.0	43 3.4	19 42 46.41	− 0.62	....	− 16.43	− 3.76
	6833	β Aquilæ	....	83 54	39.4	47.4	56.0	4.1	49 12.7	19 48 55.92	− 0.65	− 16.47	− 16.44	− 3.62
	6855	....	8.0	73 51	3.8	12.2	21.1	29.6	52 38.4	19 52 21.02	− 0.62	....	− 16.44	− 3.70
	6934	θ Aquilæ	4.0	91 12	18.6	26.8	35.0	43.3	4 51.8	20 4 35.10	− 0.67	....	− 16.45	− 3.90
	6966	....	5.5	64 48	30.0	38.9	48.4	57.0	10 6.6	20 [illegible] 48.18	− 0.59	....	− 16.45	− 3.63
	7006	....	7.5	53 17	40.8	51.0	1.5	11.8	15 22.4	20 15 1.50	− 0.58	....	− 16.45	− 3.60
	7086	ε Delphini	....	79 8	44.0	52.2	1.0	9.4	27 17.9	20 27 0.90	− 0.63	....	− 16.46	− 3.72
	7149	α Delphini	5.5	74 33	20.0	28.5	37.4	45.9	33 54.6	20 33 37.28	− 0.62	....	− 16.46	− 3.67
	7256	32 Vulpeculæ	....	62 26	45.3	54.5	4.0	13.2	49 22.9	20 49 3.98	− 0.59	− 16.48	− 16.47	− 3.59
July 10	4876	ε Bootis	....	62 22	1.8	11.0	20.5	29.9	39 39.5	14 39 20.34	− 0.57	− 17.01	− 17.02	− 2.71
	6355	(b) α Lyræ	....	51 20	17.9	28.2	39.1	49.8	33 0.6	18 32 39.12	− 0.57	− 17.07	− 17.08	− 3.47
	6429	β Lyræ	....	56 47	2.7	12.5	22.6	32.2	45 42.6	18 45 22.52	− 0.57	− 17.07	− 17.09	− 3.53
	6574	....	6.0	68 40	47.9	56.4	5.4	14.2	7 23.6	19 7 5.50	− 0.58	....	− 17.09	− 3.67
	6602	....	6.0	67 12	59.0	8.1	17.3	26.1	12 35.3	19 12 17.16	− 0.59	....	− 17.10	− 3.66
	6617	....	6.5	78 42	31.0	39.4	48.1	56.3	14 5.0	19 13 47.96	− 0.61	....	− 17.10	− 3.79
	6644	δ Aquilæ	6.0	78 20	30.6	39.0	47.9	56.1	19 4.8	19 18 47.68	− 0.60	....	− 17.10	− 3.79
	6674	α Vulpeculæ	....	65 36	3.3	12.3	21.9	30.8	23 40.0	19 23 21.66	− 0.58	....	− 17.10	− 3.66
	6701	μ Aquilæ	6.0	82 54	28.5	36.9	45.3	53.5	28 2.0	19 27 45.[illegible]	− 0.62	....	− 17.11	− 3.85
	6729	....	8.0	84 54	30.8	39.1	47.6	55.9	33 4.4	19 32 47.56	− 0.63	....	− 17.11	− 3.88
	6762	....	....	63 10	22.0	31.1	40.6	50.0	38 59.4	19 38 40.62	− 0.58	....	− 17.12	− 3.65
	6772	γ Aquilæ	....	79 42	49.5	57.8	6.3	14.7	40 23.2	19 40 6.30	− [illegible].61	− 17.10	− 17.12	− 3.81
	6802	α Aquilæ	....	81 28	10.8	19.0	27.6	35.9	44 44.5	19 44 27.56	− 0.61	− 17.20	− 17.13	− 3.85

(a) Faint. (b) Cloudy.

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Date.	No. in British Association Catalogue	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1863.
1863.				° '	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
July 13	6772	γ Aquilæ	....	79 42	49.6	58.0	6.5	14.9	40 23.4	19 40 6.48	− 0.60	− 17.26	− 17.24	− 3.84
	6802	α Aquilæ	....	81 28	10.9	19.2	27.6	36.0	44 44.5	19 44 27.64	− 0.61	− 17.25	− 17.25	− 3.88
	6833	β Aquilæ	....	83 54	40.0	48.2	56.8	5.0	49 13.6	19 48 56.72	− 0.61	− 17.23	− 17.26	− 3.90
	7088	ι Delphini	4.0	79 8	45.0	53.1	1.7	10.1	27 18.9	20 27 1.76	− 0.60	....	− 17.28	− 3.61
	7149	α Delphini	4.0	74 33	21.0	29.4	38.1	46.6	33 55.3	20 33 38.08	− 0.60	....	− 17.28	− 3.77
	7220	η Cephei	....	28 40	17.4	34.4	52.0	9.2	43 26.8	20 42 51.96	− 0.57	....	− 17.29	− 4.01
	7368	ζ Cygni	....	60 18	9.0	18.2	28.0	37.5	7 47.1	21 7 27.96	− 0.58	− 17.30	− 17.30	− 3.69
July 14	6355	(a) α Lyræ	....	51 20	18.2	28.7	39.5	50.1	33 0.9	18 32 39.48	− 0.57	− 17.43	− 17.45	− 3.47
	6429	β Lyræ	....	56 47	3.1	13.0	23.0	32.9	45 43.0	18 45 23.00	− 0.57	− 17.55	− 17.45	− 3.53
	6528	ζ Aquilæ	....	76 19	11.5	20.0	28.5	37.0	59 45.9	18 59 28.58	− 0.59	− 17.44	− 17.45	− 3.77
	6772	γ Aquilæ	....	79 42	49.9	58.0	6.8	15.0	40 23.7	19 40 6.68	− 0.60	− 17.45	− 17.45	− 3.85
	6802	α Aquilæ	....	81 28	11.0	19.2	27.9	36.1	44 44.7	19 44 27.78	− 0.60	− 17.39	− 17.45	− 3.89
	6833	β Aquilæ	....	83 54	40.1	48.4	57.0	5.2	49 13.9	19 48 56.92	− 0.60	− 17.43	− 17.45	− 3.91
July 17	6772	γ Aquilæ	....	79 42	51.6	0.0	8.5	16.8	40 25.7	19 40 8.52	− 0.58	− 19.29	− 19.29	− 3.87
	6802	α Aquilæ	....	81 28	13.0	21.1	29.8	38.0	44 46.6	19 44 29.70	− 0.58	− 19.30	− 19.29	− 3.92
	6833	β Aquilæ	....	83 54	42.0	50.5	58.9	7.0	49 15.7	19 48 58.82	− 0.58	− 19.32	− 19.29	− 3.94
	7256	32 Vulpeculæ	....	62 26	48.3	57.3	6.9	16.2	49 25.9	20 49 8.92	− 0.56	− 19.28	− 19.29	− 3.76
	7368	ζ Cygni	....	60 16	10.5	20.0	30.0	39.5	7 49.7	21 7 30.00	− 0.57	− 19.28	− 19.29	− 3.76
July 18	5941	α Ophiuchi	....	77 20	41.8	50.1	58.9	7.2	29 16.0	17 28 58.80	− 0.56	− 20.09	− 20.09	− 3.60
	6021	μ Herculis	....	62 12	11.2	20.5	30.0	39.4	41 49.0	17 41 30.02	− 0.54	− 20.21	− 20.09	− 3.38
	6281	δ Ursæ Minoris	....	3 24	17.5	36.0	59.5	18.5	21 43.0	18 16 58.90	− 1.74	....	− 20.09	− 4.69
	6355	α Lyræ	....	51 20	20.8	31.2	42.3	52.5	33 3.3	18 32 42.02	− 0.56	− 19.92	− 20.09	− 3.46
	6429	β Lyræ	....	56 47	5.9	15.4	25.6	35.1	45 45.6	18 45 25.52	− 0.55	− 20.08	− 20.09	− 3.54
	6528	ζ Aquilæ	....	76 19	14.2	22.8	31.4	39.9	59 48.6	18 59 31.38	− 0.56	....	− 20.09	− 3.79
July 21	5821	α Herculis	....	75 27	33.8	42.1	50.9	59.4	9 8.0	17 8 50.84	− 0.57	− 22.69	− 22.76	− 3.47
	6355	α Lyræ	....	51 20	23.7	31.2	45.0	55.4	33 6.3	18 32 44.92	− 0.57	− 22.80	− 22.78	− 3.55
	6429	β Lyræ	....	56 47	8.5	18.0	28.3	38.0	45 48.2	18 45 28.20	− 0.56	− 22.75	− 22.78	− 3.54
	6468	....	6.0	56 13	58.2	8.1	18.3	28.1	50 38.3	18 50 18.20	− 0.56	....	− 22.78	− 3.55
	6480	....	5.0	57 16	0.4	10.4	20.6	30.1	52 40.3	18 52 20.36	− 0.56	....	− 22.78	− 3.56
	6487	ι Aquilæ	3.0	75 6	34.4	42.8	51.5	0.0	53 8.9	18 52 51.52	− 0.57	....	− 22.78	− 3.78
	6527	....	8.0	71 3	2.0	10.6	19.8	28.4	59 37.3	18 59 19.62	− 0.57	....	− 22.78	− 3.74
	6542	....	6.0	65 57	4.6	13.4	22.0	31.6	1 41.0	19 1 22.74	− 0.57	....	− 22.78	− 3.68
	6602	2 Vulpeculæ	6.5	67 12	4.9	14.0	23.1	32.0	12 41.0	19 12 23.00	− 0.57	....	− 22.79	− 3.72
	6617	....	7.0	78 42	37.0	45.2	53.9	2.2	14 11.0	19 13 53.86	− 0.57	....	− 22.79	− 3.86
	6644	δ Aquilæ	....	78 20	36.6	45.0	53.6	1.9	19 10.6	19 18 53.54	− 0.57	....	− 22.79	− 3.87
	6674	α Vulpeculæ	....	65 36	9.5	18.0	27.6	36.6	23 45.8	19 23 27.50	− 0.57	....	− 22.79	− 3.72
	6701	μ Aquilæ	4.5	82 54	34.4	42.6	51.1	59.4	28 8.1	19 27 51.12	− 0.58	....	− 22.79	− 3.94
	6729	....	5.5	84 54	36.6	45.0	53.3	1.6	33 10.0	19 32 53.30	− 0.59	....	− 22.79	− 3.97
	6762	....	6.0	63 10	27.8	36.9	46.4	55.6	39 5.0	19 38 46.34	− 0.56	....	− 22.80	− 3.73
	6772	γ Aquilæ	....	79 42	55.1	3.4	12.0	20.5	40 29.1	19 40 12.02	− 0.58	− 22.76	− 22.80	− 3.90
	6791	....	8.0	78 38	36.0	44.3	53.0	1.3	43 10.0	19 42 52.92	− 0.57	....	− 22.80	− 3.90
	6833	β Aquilæ	....	83 54	45.6	54.0	2.5	10.6	49 19.1	19 49 2.36	− 0.58	− 22.82	− 22.80	− 3.98
	6855	....	8.0	73 51	10.2	18.6	27.5	36.0	52 44.9	19 52 27.44	− 0.57	....	− 22.80	− 3.85
Aug. 6	4876	ι Bootis	....	62 22	12.9	22.2	32.0	41.0	39 50.6	14 39 31.74	− 0.56	− 28.64	− 28.55	− 2.29
	5034	β Libræ	....	98 54	53.8	2.0	10.6	18.9	10 27.5	15 10 10.56	− 0.60	− 28.52	− 28.55	− 3.17
	5143	α Coronæ Borealis	....	62 50	6.1	15.5	25.0	34.3	29 43.9	15 29 24.96	− 0.56	− 28.55	− 28.55	− 2.55

(a) Stars very unsteady.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1868.
				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
1863. Aug. 6	5196	α Serpentis	....	83 9	46·7	54·9	3·4	11·7	38 20·2	15 38 3·38	− 0·58	− 28·49	− 28·55	− 3·02
	5414	δ Ophiuchi	....	93 21	26·0	34·2	42·7	50·9	7 59·3	16 7 42·62	− 0·59	− 28·55	− 28·55	− 3·39
Aug. 18	6429	β Lyræ	....	56 47	17·3	27·1	37·2	47·0	45 57·4	18 45 37·20	− 0·54	− 32·01	− 31·98	− 3·30
	6528	ζ Aquilæ	....	76 19	26·0	34·3	43·0	51·4	0 0·1	18 59 42·96	− 0·57	− 31·91	− 31·99	− 3·70
	6772	γ Aquilæ	....	79 42	4·3	12·7	21·2	29·6	40 38·1	19 40 21·18	− 0·56	− 31·93	− 32·00	− 3·91
	6833	β Aquilæ	....	83 54	54·9	3·0	11·5	19·8	49 28·3	19 49 11·50	− 0·56	− 31·95	− 32·00	− 4·01
	6855	....	7·0	73 51	19·4	28·0	36·8	45·3	52 54·0	19 52 36·70	− 0·56	....	− 32·01	− 3·66
	7478	β Aquarii	....	96 8	40·9	49·1	57·8	5·9	25 14·7	21 24 57·68	− 0·58	− 32·15	− 32·05	− 4·31
	7868	ζ Aquarii	....	90 47	39·0	47·5	55·9	4·0	29 12·4	22 28 55·76	− 0·57	− 32·08	− 32·08	− 4·21
	7908	ζ Pegasi	....	79 50	57·9	6·1	14·8	23·0	35 31·7	22 35 14·70	− 0·56	− 32·20	− 32·09	− 4·17
	8034	α Pegasi	....	75 29	16·1	24·4	33·0	41·6	58 50·2	22 58 33·06	− 0·56	− 32·05	− 32·10	− 4·17
Aug. 19	7171	α Cygni	....	45 12	59·5	10·9	23·0	34·5	37 46·6	20 37 22·90	− 0·56	....	− 32·70	− 3·88
	7256	32 Vulpeculæ	....	62 26	1·9	11·0	20·4	29·8	49 39·6	20 49 20·51	− 0·54	− 32·71	− 32·70	− 3·97
	7285	....	7·0	82 59	39·9	48·1	56·6	4·9	54 13·4	20 53 56·62	− 0·56	....	− 32·70	− 4·14
	7478	β Aquarii	....	96 8	41·5	49·7	58·2	6·5	25 15·0	21 24 58·18	− 0·58	− 32·64	− 32·71	− 4·32
	7497	....	8·0	88 45	5·4	13·7	22·0	30·2	28 38·7	21 28 22·00	− 0·57	....	− 32·71	− 4·23
	7514	ζ Aquarii	....	96 26	48·3	56·5	5·0	13·2	31 22·0	21 31 5·00	− 0·59	....	− 32·71	− 4·34
	7528	....	6·0	70 20	57·8	6·4	15·4	24·1	33 33·3	21 33 15·40	− 0·55	....	− 32·71	− 4·12
	7561	ε Pegasi	....	80 43	48·0	56·3	4·9	13·2	38 21·8	21 38 4·84	− 0·55	− 32·67	− 32·71	− 4·18
	7590	....	7·0	73 24	54·0	2·5	11·4	19·8	41 28·6	21 41 11·26	− 0·55	....	− 32·72	− 4·14
	7627	16 Pegasi	....	64 41	8·9	18·0	27·3	36·4	47 45·8	21 47 27·28	− 0·55	− 32·77	− 32·72	− 4·15
	7706	ι Pegasi	4·0	65 17	57·2	6·2	15·7	24·6	1 34·0	22 1 15·54	− 0·55	....	− 32·72	− 4·18
	7759	....	5·0	29 53	35·0	51·6	8·8	25·2	8 42·2	22 8 8·56	− 0·61	....	− 32·73	− 4·96
	7795	γ Aquarii	....	92 2	55·6	4·0	12·4	20·6	15 29·0	22 15 12·32	− 0·57	....	− 32·73	− 4·24
	7868	ζ Aquarii	....	90 47	39·6	48·0	56·4	4·8	29 13·0	22 28 56·40	− 0·57	− 32·71	− 32·73	− 4·22
	7908	ζ Pegasi	....	79 50	58·6	6·9	15·4	23·7	35 32·2	22 35 15·36	− 0·56	− 32·85	− 32·74	− 4·16
	8034	α Pegasi	....	75 29	16·6	24·9	33·8	42·2	58 50·9	22 58 33·68	− 0·56	− 32·66	− 32·75	− 4·18
Aug. 20	6772	γ Aquilæ	....	79 42	5·5	14·0	22·7	31·0	40 39·5	19 40 22·54	− 0·54	− 33·32	− 33·40	− 3·90
	6833	β Aquilæ	....	83 54	56·0	4·3	12·9	21·2	49 29·9	19 49 12·86	− 0·55	− 33·33	− 33·41	− 4·00
	6852	....	5·5	30 38	13·2	29·3	46·0	2·1	52 18·8	19 51 45·88	− 0·60	....	− 33·42	− 3·48
	6934	θ Aquilæ	4·0	91 12	35·6	43·8	52·1	0·3	5 9·0	20 4 52·16	− 0·55	....	− 33·43	− 4·16
	6966	....	....	64 48	47·0	56·1	5·6	14·5	10 24·0	20 10 5·44	− 0·54	....	− 33·43	− 3·82
	7000	....	6·0	12 34	3·0	40·5	19·4	57·0	14 35·4	20 13 19·06	− 0·85	....	− 33·43	− 4·25
	7014	....	6·0	85 4	44·8	53·0	1·5	9·6	17 18·1	20 17 1·10	− 0·54	....	− 33·44	− 4·09
	7086	....	5·0	34 22	10·2	24·8	40·0	54·4	27 9·6	20 26 39·80	− 0·59	....	− 33·44	− 3·53
	7149	α Delphini	....	74 33	37·2	45·8	54·6	3·1	34 11·9	20 33 54·52	− 0·54	....	− 33·44	− 4·00
	7256	32 Vulpeculæ	....	62 26	2·5	11·9	21·2	30·5	49 40·0	20 49 21·22	− 0·54	− 33·39	− 33·44	− 3·97
	7285	....	6·5	82 59	40·6	49·0	57·2	5·4	54 14·2	20 53 57·28	− 0·55	....	− 33·45	− 4·14
	7336	61[1] Cygni	....	51 53	2·9	13·2	23·9	34·2	1 45·0	21 1 23·84	− 0·55	....	− 33·46	− 4·22
	7354	....	8·5	68 4	41·0	49·9	59·0	7·8	5 17·0	21 4 58·94	− 0·53	....	− 33·46	− 4·05
	7368	ζ Cygni	....	60 18	25·5	34·9	44·5	54·0	8 3·8	21 7 44·54	− 0·55	− 33·57	− 33·47	− 4·03
	7380	....	4·0	85 18	20·0	28·2	36·9	45·0	9 53·5	21 9 36·72	− 0·54	....	− 33·47	− 4·18
	7410	....	6·0	66 41	13·0	21·9	31·0	40·0	15 49·2	21 15 31·02	− 0·53	....	− 33·48	− 4·07
	7450	....	7·0	71 11	25·5	34·1	43·2	51·8	21 0·8	21 20 43·08	− 0·54	....	− 33·48	− 4·10
	7478	β Aquarii	....	96 8	42·4	50·5	59·1	7·2	25 15·8	21 24 59·00	− 0·56	− 33·48	− 33·48	− 4·32
	7561	ε Pegasi	....	80 43	48·8	57·1	5·7	14·0	38 22·7	21 38 5·66	− 0·54	− 33·50	− 33·49	− 4·18
	7908	ζ Pegasi	....	79 50	59·1	7·6	16·1	24·3	35 33·0	22 35 16·02	− 0·54	− 33·52	− 33·50	− 4·19
	8034	α Pegasi	....	75 29	17·5	25·9	34·6	43·0	58 51·7	22 58 34·54	− 0·54	− 33·53	− 33·51	− 4·19

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1863.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Aug. 24	5941	α Ophiuchi	....	77 20	57·1	5·5	14·3	22·7	29 31·5	17 29 14·22	− 0·55	− 35·91	− 35·97	− 3·21
	6021	μ Herculis	....	62 12	26·5	35·9	45·4	54·8	42 4·2	17 41 45·36	− 0·55	− 36·00	− 35·98	− 2·92
	6966	....	5·0	64 48	49·4	58·6	8·0	17·0	10 26·7	20 10 7·94	− 0·55	....	− 36·02	− 3·80
	7006	(a)	....	53 17	0·2	10·8	21·2	31·5	15 42·1	20 15 21·16	− 0·55	....	− 36·02	− 3·73
	7014	....	6·0	85 4	47·4	55·5	4·1	12·3	17 20·9	20 17 4·01	− 0·55	....	− 36·02	− 4·07
	7086	....	6·0	34 22	12·9	27·3	42·5	56·9	27 11·9	20 26 42·30	− 0·61	....	− 36·03	− 3·78
	7149	α Delphini	....	74 33	39·9	48·3	57·0	5·5	34 14·4	20 33 57·02	− 0·54	....	− 36·03	− 3·99
	7256	32 Vulpeculæ	....	62 26	5·2	14·4	24·0	33·1	49 42·9	20 49 23·92	− 0·55	− 36·10	− 36·04	− 3·95
	7285	....	6·0	82 59	43·3	51·6	0·0	8·3	54 16·9	20 54 0·02	− 0·56	....	− 36·04	− 4·14
	7478	β Aquarii	....	96 8	45·0	53·1	1·7	9·9	25 18·4	21 25 1·62	− 0·57	− 36·08	− 36·05	− 4·33
	7497	....	7·0	88 45	8·8	17·0	25·4	33·5	28 42·1	21 28 25·36	− 0·56	....	− 36·05	− 4·25
	7514	ξ Aquarii	....	98 26	51·6	59·9	8·4	16·7	31 25·2	21 31 8·36	− 0·57	....	− 36·06	− 4·36
	7528	....	6·0	70 20	1·3	10·0	19·0	27·7	33 36·4	21 33 18·88	− 0·55	....	− 36·06	− 4·14
	7561	ε Pegasi	....	80 43	51·2	59·6	8·2	16·5	38 25·0	21 38 8·10	− 0·55	− 35·92	− 36·06	− 4·19
	7590	....	7·0	73 24	57·4	6·0	14·9	23·4	41 32·0	21 41 14·74	− 0·55	....	− 36·06	− 4·16
	7627	16 Pegasi	....	64 41	12·1	21·3	30·6	39·7	47 49·0	21 47 30·54	− 0·55	− 36·01	− 36·07	− 4·17
	7706	ι Pegasi	5·0	65 17	0·7	9·7	19·0	28·0	1 37·4	22 1 18·96	− 0·55	....	− 36·07	− 4·20
	7759	....	5·0	29 53	38·8	55·1	11·9	28·7	8 45·5	22 8 12·00	− 0·63	....	− 36·08	− 4·88
	7795	γ Aquarii	....	92 2	59·0	7·2	15·8	23·9	15 32·3	22 15 15·64	− 0·56	....	− 36·08	− 4·28
	7868	η Aquarii	....	90 47	43·2	51·4	59·9	8·0	29 16·6	22 28 59·82	− 0·56	− 36·10	− 36·09	− 4·26
	7908	ζ Pegasi	....	79 50	1·9	10·1	18·8	27·0	35 35·8	22 35 18·72	− 0·54	− 36·18	− 36·10	− 4·23
	8034	α Pegasi	....	75 29	20·0	28·5	37·1	45·8	58 54·5	22 58 37·18	− 0·54	− 36·12	− 36·12	− 4·24
Aug. 29	6646	δ Aquilæ	....	87 8	4·0	12·1	20·7	28·9	19 37·3	19 19 20·60	− 0·55	− 40·78	− 40·68	− 3·89
	6772	γ Aquilæ	....	79 42	12·9	21·2	30·0	38·1	40 46·9	19 40 29·82	− 0·54	− 40·67	− 40·68	− 3·83
	6802	α Aquilæ	....	81 28	34·2	42·5	51·1	59·2	45 7·8	19 44 50·96	− 0·54	− 40·62	− 40·68	− 3·90
	6833	β Aquilæ	....	83 54	3·5	11·7	20·1	28·1	49 37·8	19 49 20·14	− 0·55	− 40·67	− 40·68	− 3·94
	7368	ζ Cygni	....	60 18	32·5	42·0	51·9	1·2	8 10·9	21 7 51·70	− 0·56	− 40·75	− 40·72	− 4·01
	7561	ε Pegasi	....	80 43	56·0	4·3	13·0	21·2	38 29·9	21 38 12·88	− 0·54	− 40·70	− 40·72	− 4·20
Sept. 2	6833	β Aquilæ	....	83 54	6·7	14·9	23·4	31·6	49 40·0	19 49 23·32	− 0·55	− 43·89	− 43·88	− 3·90
	6934	θ Aquilæ	6·0	91 12	46·0	54·2	2·7	10·9	5 19·1	20 5 2·58	− 0·55	....	− 43·89	− 4·07
	7000	....	6·0	12 34	12·0	49·6	29·0	6·5	14 45·0	20 13 28·42	− 0·87	....	− 43·89	− 3·46
	7014	....	6·0	85 4	55·2	3·4	11·9	20·0	17 28·5	20 17 11·80	− 0·54	....	− 43·89	− 4·01
	7086	....	6·0	34 22	20·5	35·0	50·0	4·5	27 19·5	20 26 49·90	− 0·59	....	− 43·89	− 3·61
	7150	....	7·0	79 13	49·4	57·7	6·4	14·8	34 23·4	20 34 6·34	− 0·54	....	− 43·89	− 3·99
	7256	32 Vulpeculæ	....	62 26	12·7	22·0	31·8	41·1	49 50·8	20 49 31·68	− 0·54	− 43·92	− 43·89	− 3·90
	7268	....	6·0	43 5	36·5	48·3	0·9	12·9	52 25·1	20 52 0·74	− 0·56	....	− 43·89	− 3·86
	7290	....	....	46 2	50·7	2·0	13·9	25·1	54 37·0	20 54 13·74	− 0·55	....	− 43·89	− 3·88
	7336	61¹ Cygni	....	51 53	13·0	23·5	34·2	44·7	1 55·5	21 1 34·18	− 0·55	....	− 43·89	− 4·16
	7356	....	6·0	68 5	52·5	1·0	10·3	19·1	5 28·4	21 5 10·26	− 0·53	....	− 43·89	− 4·01
	7368	ζ Cygni	....	60 18	35·6	45·0	55·0	4·3	8 14·0	21 7 54·78	− 0·55	− 43·86	− 43·89	− 3·98
	7380	α Equulei	....	85 18	30·4	38·6	47·1	55·3	10 3·9	21 9 47·06	− 0·54	....	− 43·89	− 4·17
	7410	....	....	66 41	23·2	32·2	41·5	50·1	15 59·8	21 15 41·36	− 0·54	....	− 43·89	− 4·05
	7430	....	6·5	29 47	17·8	34·3	51·2	7·9	18 24·7	21 17 51·18	− 0·62	....	− 43·89	− 4·25
	7450	....	6·0	71 11	36·0	44·6	53·6	2·0	21 11·1	21 20 53·46	− 0·54	....	− 43·90	− 4·09
	7497	....	7·0	58 45	16·8	25·0	33·5	41·5	28 50·0	21 28 33·36	− 0·56	....	− 43·90	− 4·25
	7514	ξ Aquarii	5·0	98 26	59·2	7·5	16·2	24·5	31 33·1	21 31 16·10	− 0·57	....	− 43·90	− 4·37
	7528	....	7·0	70 20	9·0	17·9	26·8	55·5	33 44·5	21 33 26·74	− 0·54	....	− 43·90	− 4·13
	7561	ε Pegasi	....	80 43	59·1	7·5	16·1	24·4	38 33·0	21 38 16·02	− 0·54	− 43·84	− 43·90	− 4·20
	7590	....	7·0	73 24	5·1	13·9	22·6	31·0	41 40·0	21 41 22·52	− 0·54	....	− 43·90	− 4·17

(a) Larger of two stars.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1863.
1863.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Sept. 2	7795	γ Aquarii	6·0	92 2	7·0	15·1	23·7	31·8	15 40·4	22 15 23·60	− 0·56	....	−43·91	− 4·32
	8233	ι Piscium	....	85 4	26·4	34·6	43·0	51·2	33 59·9	23 33 43·02	− 0·54	−43·94	−43·93	− 4·30
Sept. 3	7773	θ Aquarii	....	98 25	9·1	17·5	26·0	34·3	10 42·9	22 10 25·96	− 0·57	−44·91	−44·91	− 4·38
	7868	η Aquarii	....	90 47	52·2	0·3	8·8	17·0	29 25·4	22 29 8·74	− 0·55	−44·97	−44·92	− 4·32
	7908	ζ Pegasi	....	79 50	10·8	19·0	27·7	36·0	35 44·6	22 35 27·62	− 0·55	−45·01	−44·92	− 4·29
	8034	α Pegasi	....	75 29	29·0	37·3	46·0	54·6	59 3·4	22 58 46·06	− 0·55	−44·91	−44·93	− 4·32
	8105	γ Piscium	....	87 25	36·9	45·1	53·5	1·7	11 10·2	23 10 53·48	− 0·55	−44·91	−44·93	− 4·33
	8169	κ Piscium	....	89 27	27·8	35·9	44·5	52·6	21 1·0	23 20 44·36	− 0·56	−44·96	−44·94	− 4·30
	8233	ι Piscium	....	85 4	27·4	35·7	44·1	52·3	34 0·8	23 33 44·06	− 0·54	−44·97	−44·95	− 4·31
Sept. 4	7256	32 Vulpeculæ	....	62 26	14·6	23·9	33·4	42·6	49 52·2	20 49 33·34	− 0·53	−45·61	−45·60	− 3·88
	7290	....	6·0	46 2	52·2	3·6	15·3	26·8	54 38·5	20 54 15·28	− 0·54	....	−45·60	− 3·85
	7336	61¹ Cygni	....	51 53	14·7	25·0	35·9	46·3	1 57·2	21 1 35·82	− 0·54	....	−45·61	− 4·14
	7356	....	8·0	68 5	54·0	2·9	12·0	20·9	5 29·9	21 5 11·94	− 0·52	....	−45·61	− 4·00
	7368	ζ Cygni	....	60 18	37·5	46·9	56·4	6·0	8 15·8	21 7 56·52	− 0·54	−45·62	−45·61	− 3·97
	7380	α Equulei	....	85 18	32·0	40·2	48·9	57·0	10 5·5	21 9 48·72	− 0·54	....	−45·61	− 4·16
	7410	....	6·5	66 41	24·9	33·9	43·1	52·0	16 1·3	21 15 43·04	− 0·53	....	−45·61	− 4·04
	7430	....	7·0	29 47	19·4	36·0	53·0	9·6	18 26·5	21 17 52·90	− 0·60	....	−45·62	− 4·25
	7478	β Aquarii	....	96 8	54·5	2·8	11·1	19·3	25 27·9	21 25 11·12	− 0·56	−45·59	−45·62	− 4·33
	7497	....	7·5	88 45	18·2	26·4	35·0	43·2	28 51·7	21 28 34·90	− 0·55	....	−45·62	− 4·24
	7566	....	6·0	52 19	15·4	25·7	36·2	46·6	38 57·1	21 38 36·20	− 0·54	....	−45·62	− 4·15
	7627	16 Pegasi	....	64 41	21·8	30·9	40·1	49·2	47 58·6	21 47 40·12	− 0·53	−45·61	−45·62	− 4·17
	7644	....	....	18 8	17·5	43·9	11·0	37·5	52 4·6	21 51 10·90	− 0·71	....	−45·62	− 5·48
	7706	ι Pegasi	4·0	65 17	10·1	19·3	28·5	37·4	1 47·0	22 1 29·46	− 0·53	....	−45·63	− 4·22
	7750	....	6·0	29 53	48·1	4·5	21·6	38·2	8 55·2	22 8 21·52	− 0·61	....	−45·63	− 4·86
	7795	γ Aquarii	4·0	92 2	8·5	16·7	25·1	33·4	15 41·9	22 15 25·12	− 0·55	....	−45·63	− 4·33
	7908	ζ Pegasi	....	79 50	11·5	19·8	28·3	36·4	35 45·2	22 35 28·24	− 0·54	....	−45·63	− 4·29
	7958	μ Pegasi	4·0	66 5	56·0	5·0	14·3	23·0	41 32·4	22 41 14·14	− 0·53	−45·64	−45·63	− 4·35
	7970	λ Aquarii	4·0	98 16	1·0	10·0	18·4	26·8	46 35·5	22 46 18·34	− 0·56	....	−45·63	− 4·36
	7977	....	8·0	88 51	26·3	34·5	43·0	51·1	47 59·6	22 47 42·90	− 0·55	....	−45·64	− 4·32
	7996	....	8·0	86 53	8·0	16·4	24·9	33·0	51 41·4	22 51 24·74	− 0·54	....	−45·64	− 4·31
	8024	....	7·0	33 35	5·0	20·0	35·2	50·0	57 5·5	22 56 35·14	− 0·57	....	−45·64	− 5·14
	8034	α Pegasi	....	75 29	29·7	38·0	46·8	55·2	59 4·0	22 58 46·74	− 0·54	−45·59	−45·64	− 4·33
	8065	....	8·0	88 34	56·6	4·6	13·0	21·4	3 30·0	23 3 13·12	− 0·55	....	−45·64	− 4·31
	8083	....	6·0	83 33	3·7	18·2	33·8	48·7	8 4·0	23 7 33·68	− 0·57	....	−45·65	− 5·24
	8135	....	6·0	46 35	43·5	55·0	6·7	18·0	15 29·7	23 15 6·58	− 0·55	....	−45·65	− 4·76
	8147	....	7·0	70 9	29·4	38·0	47·1	55·8	17 5·0	23 16 47·06	− 0·53	....	−45·65	− 4·38
	8169	κ Piscium	....	89 27	28·4	36·6	45·1	53·4	21 1·9	23 20 45·08	− 0·55	−45·69	−45·66	− 4·30
	8204	....	7·0	18 43	43·6	9·0	35·8	1·0	28 27·5	23 27 35·38	− 0·69	....	−45·67	− 7·07
	8233	ι Piscium	....	85 4	28·0	36·3	44·9	53·1	34 1·6	23 33 44·78	− 0·54	−45·68	−45·67	− 4·32
Sept. 5	7478	β Aquarii	....	96 8	55·1	3·3	11·9	20·1	25 28·6	21 25 11·80	− 0·56	−46·27	−46·25	− 4·33
	7561	ε Pegasi	....	80 43	1·5	10·0	18·4	26·6	38 35·4	21 38 18·36	− 0·54	−46·21	−46·26	− 4·19
	7627	16 Pegasi	....	64 41	22·5	31·5	41·0	50·0	47 59·1	21 47 40·82	− 0·53	−46·31	−46·27	− 4·17
	7688	α Aquarii	....	90 57	19·2	27·4	36·0	44·1	59 52·6	21 59 35·86	− 0·55	−46·27	−46·27	− 4·30
	7908	ζ Pegasi	....	79 50	12·0	20·4	29·0	37·2	35 46·0	22 35 26·92	− 0·54	−46·31	−46·29	− 4·29
Sept. 7	7256	32 Vulpeculæ	....	62 26	17·2	26·4	36·0	45·3	49 54·9	20 49 35·96	− 0·53	−48·25	−48·23	− 3·86
	7368	ζ Cygni	....	60 18	40·0	49·4	59·3	8·5	8 18·3	21 7 59·10	− 0·54	−48·22	−48·24	− 3·95
	7561	ε Pegasi	....	80 43	3·7	11·8	20·4	28·7	38 37·4	21 38 20·40	− 0·54	−48·23	−48·25	− 4·19

Digitized

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1863					° ′	s.	s.	s.	s.	m s.	h m s.	s.	s.	s.	s.
Sept. 7	7627		16 Pegasi	....	64 41	24·3	33·5	42·9	52·0	48 1·2	21 47 42·76	− 0·53	−48·28	−48·25	− 4·16
	7708		....	6·0	28 21	11·4	31·9	49·6	6·9	2 24·7	22 1 49·54	− 0·61	....	−48·26	− 4·83
	7908		ζ Pegasi	....	79 50	14·0	22·2	31·0	39·2	35 48·0	22 35 30·88	− 0·54	−48·26	−48·26	− 4·31
	7958		μ Pegasi	4·0	66 5	58·7	7·6	17·0	25·8	44 35·0	22 44 16·82	− 0·53	....	−48·27	− 4·37
	7970		λ Aquarii	5·0	98 16	4·1	12·6	21·2	29·1	46 38·0	22 46 21·06	− 0·56	....	−48·27	− 4·38
	7996		....	7·0	86 53	10·8	19·0	27·4	35·6	51 44·1	22 51 27·38	− 0·54	....	−48·28	− 4·33
	8024		....	6·0	33 35	7·8	22·7	37·8	52·8	57 7·9	22 56 37·80	− 0·57	....	−48·28	− 5·16
	8034		α Pegasi	....	75 29	32·2	40·7	49·5	57·8	59 6·8	22 58 49·40	− 0·54	−48·24	−48·29	− 4·34
	8135		....	6·0	16 35	16·1	57·7	9·3	20·6	15 32·1	23 15 9·22	− 0·55	....	−48·29	− 4·78
	8147	(a)	....	6·0	70 9	32·0	40·9	49·8	58·5	17 7·6	23 16 49·76	− 0·53	....	−48·29	− 4·41
	8169		κ Piscium	....	89 27	31·2	39·4	47·8	56·0	21 4·4	23 20 47·76	− 0·55	−48·34	−48·30	− 4·33
	8233		ι Piscium	....	85 4	30·6	39·0	47·5	55·5	34 4·2	23 33 47·40	− 0·54	−48·27	−48·30	− 4·35
	8269	(b)	....	8·5	86 29	21·6	29·8	38·0	46·2	41 54·7	23 41 38·02	− 0·55	....	−48·31	− 4·32
	8315		....	7·5	82 30	14·0	22·2	30·8	39·0	49 47·4	23 49 30·68	− 0·53	....	−48·31	− 4·34
	8331		ω Piscium	....	83 51	53·0	1·2	10·0	18·1	53 26·8	23 53 9·82	− 0·54	−48·33	−48·32	− 4·33
Sept. 8	7220		η Cephei	....	28 40	49·1	6·0	23·8	41·0	43 59·9	20 43 23·06	− 0·57	....	−49·29	− 3·70
	7268		....	....	13 5	41·6	53·6	6·0	18·0	52 30·3	20 52 5·90	− 0·53	....	−49·29	− 3·77
	7290		....	6·0	46 2	6·0	7·2	19·0	30·3	54 42·0	20 54 18·90	− 0·53	....	−49·30	− 3·80
	7354		....	8·5	68 4	56·5	5·2	14·5	23·4	5 32·5	21 5 14·42	− 0·52	....	−49·30	− 3·97
	7368		ζ Cygni	....	60 18	11·1	50·4	0·1	9·5	8 19·3	21 8 0·08	− 0·52	−49·23	−49·31	− 3·94
	7417		....	5·5	31 54	50·7	6·3	22·4	38·0	16 53·9	21 16 22·26	− 0·57	....	−49·32	− 4·11
	7450		....	7·0	71 11	41·1	49·9	58·9	7·1	21 16·4	21 20 58·74	− 0·52	....	−49·32	− 4·08
	7501		....	6·0	44 43	10·2	52·0	4·1	15·8	29 27·9	21 29 4·00	− 0·53	....	−49·33	− 4·10
	7566		....	6·0	52 19	18·9	29·1	40·0	50·3	39 1·0	21 38 39·86	− 0·53	....	−49·33	− 4·13
	7627		16 Pegasi	....	64 41	25·4	34·3	44·0	53·0	48 2·4	21 47 43·82	− 0·61	−49·34	−49·31	− 4·16
	7644		....	7·0	18 8	21·3	47·6	14·7	41·0	52 8·5	21 51 14·62	− 0·68	....	−49·31	− 5·40
	7908	(c)	ζ Pegasi	....	79 50	15·0	23·1	32·2	40·5	35 49·0	22 35 32·02	− 0·52	−49·42	−49·35	− 4·31
	7970		λ Aquarii	5·0	98 16	5·5	13·7	22·2	30·4	46 39·0	22 46 22·16	− 0·55	....	−49·36	− 4·38
	7977		....	7·0	88 51	30·0	38·1	46·8	55·0	48 3·3	22 47 46·64	− 0·54	....	−49·36	− 4·34
	8024		....	6·0	33 35	8·8	23·7	39·0	53·8	57 9·1	22 56 38·88	− 0·55	....	−49·37	− 5·16
	8105		γ Piscium	....	87 25	11·5	49·7	58·0	6·2	11 14·9	23 10 58·06	− 0·53	−49·37	−49·38	− 4·37
	8233		ι Piscium	....	85 4	31·9	40·1	48·6	56·9	34 5·2	23 33 48·51	− 0·53	−49·41	−49·39	− 4·36
	8269		....	....	86 29	22·5	30·7	39·1	47·2	41 55·5	23 41 39·00	− 0·53	....	−49·39	− 4·33
Sept. 9	7561		ε Pegasi	....	80 43	5·5	13·8	22·4	30·7	38 39·2	21 38 22·32	− 0·52	−50·17	−50·23	− 4·19
	7627		16 Pegasi	....	64 41	26·4	35·1	44·8	53·9	48 3·2	21 47 44·74	− 0·51	−50·27	−50·24	− 4·15
	7688		α Aquarii	....	90 57	23·2	31·4	39·9	48·0	59 56·5	21 59 39·80	− 0·53	−50·23	−50·25	− 4·30
	8105		γ Piscium	....	87 25	42·5	50·6	59·0	7·2	11 15·6	23 10 58·98	− 0·53	−50·29	−50·28	− 4·37
	8233		ι Piscium	....	85 4	32·6	40·9	49·7	57·9	34 6·3	23 33 49·48	− 0·53	−50·31	−50·30	− 4·37
Sept. 10	7627		16 Pegasi	....	64 41	27·2	36·4	45·7	54·9	48 4·1	21 47 45·66	− 0·51	−51·19	−51·16	− 4·15
	7644		....	7·0	18 8	23·0	49·5	16·8	43·0	52 10·2	21 51 16·50	− 0·68	....	−51·16	− 5·35
	7688		α Aquarii	....	90 57	21·0	32·3	40·9	49·0	59 57·5	21 59 40·74	− 0·53	−51·18	−51·17	− 4·29
	7708		....	5·5	28 21	17·4	34·9	52·6	9·8	2 27·7	22 1 52·48	− 0·59	....	−51·17	− 4·80
	7868		η Aquarii	....	90 47	58·3	6·4	15·0	23·1	29 31·6	22 29 14·88	− 0·53	−51·11	−51·17	− 4·34
	7908		ζ Pegasi	....	79 50	16·9	25·1	33·8	42·0	35 50·7	22 35 33·70	− 0·52	−51·10	−51·18	− 4·31
	7958		μ Pegasi	4·0	66 5	1·6	10·4	19·9	28·9	44 38·0	22 44 19·76	− 0·52	....	−51·18	− 4·37
	7977		....	8·0	88 51	31·8	39·9	48·4	56·6	48 5·0	22 47 48·34	− 0·54	....	−51·18	− 4·34
	7996		....	7·0	86 53	13·7	21·9	30·4	38·6	51 47·0	22 51 30·32	− 0·53	....	−51·18	− 4·34
	8024		....	6·5	33 35	10·9	25·6	40·9	55·8	57 11·0	22 56 40·84	− 0·57		−51·19	− 5·16

(a) Double. (b) Two small stars of 9th magnitude, observed preceding. (c) Very faint.

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1863.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Sept. 10	8034	α Pegasi	....	75 29	35·1	43·6	52·5	0·9	59 9·8	22 58 52·38	− 0·52	− 51·22	− 51·19	− 4·36
	8065	....	8·0	88 31	2·0	10·2	18·5	27·0	3 35·4	23 3 18·62	− 0·54	....	− 51·19	− 4·35
	8135	....	6·0	46 35	49·4	0·6	12·2	23·5	15 35·2	23 15 12·18	− 0·52	....	− 51·20	− 5·66
	8147	....	7·0	70 9	35·0	43·6	52·9	1·2	17 10·5	23 16 52·64	− 0·52	....	− 51·20	− 4·42
	8169	κ Piscium	....	89 27	34·1	42·3	50·7	59·0	21 7·3	23 20 50·68	− 0·53	− 51·26	− 51·21	− 4·35
	8204	....	7·0	18 43	49·2	15·0	41·3	6·6	28 32·8	23 27 40·98	− 0·68	....	− 51·21	− 7·14
	8233	ι Piscium	....	85 4	33·8	41·8	50·4	58·5	34 7·1	23 33 50·52	− 0·51	− 51·20	− 51·[illegible]	− 4·37
	8247	....	7·5	72 3	14·4	23·0	32·0	40·6	36 49·5	23 36 31·90	− 0·52	....	− 51·22	− 4·44
	8269	....	8·0	86 29	24·3	32·5	41·0	49·1	41 57·6	23 41 40·90	− 0·53	....	− 51·22	− 4·35
	8298	....	6·0	13 7	14·3	30·6	27·8	3·5	47 40·2	23 46 27·28	− 0·80	....	− 51·22	− 9·22
	8315	....	7·5	82 30	16·9	25·0	33·6	42·0	49 50·4	23 49 33·58	− 0·53	....	− 51·23	− 4·36
	8331	ω Piscium	....	83 51	56·0	4·2	12·8	21·0	53 29·6	23 53 12·72	− 0·53	− 51·21	− 51·23	− 4·36
Sept. 15	7220	η Cephei	....	28 40	55·4	12·2	30·0	46·9	44 4·5	20 43 29·50	− 0·55	....	− 55·39	− 3·50
	7256	32 Vulpeculæ	....	62 26	24·1	33·6	43·0	52·2	50 1·9	20 49 42·96	− 0·50	− 55·37	− 55·39	− 3·77
	7268	....	6·0	43 5	47·8	59·8	12·0	24·0	52 36·5	20 52 12·02	− 0·51	....	− 55·40	− 3·65
	7354	....	8·0	68 4	2·8	11·4	20·9	29·4	5 38·5	21 5 20·60	− 0·51	....	− 55·40	− 3·91
	7368	ζ Cygni	....	60 16	47·0	56·4	6·3	15·9	8 25·4	21 8 6·20	− 0·50	− 55·44	− 55·40	− 3·87
	7417	....	6·5	31 54	56·5	12·3	28·1	43·8	16 59·9	21 16 28·12	− 0·55	....	− 55·41	− 3·98
	7478	β Aquarii	....	96 8	4·1	12·3	21·0	29·1	25 37·8	21 25 20·86	− 0·54	− 55·40	− 55·41	− 4·28
	7501	....	7·0	44 43	46·4	58·2	10·0	21·9	29 34·0	21 29 10·10	− 0·52	....	− 55·42	− 4·02
	7566	....	7·0	52 19	25·0	35·4	46·0	56·5	39 7·0	21 38 45·98	− 0·52	....	− 55·42	− 4·07
	7868	η Aquarii	....	90 47	2·6	10·6	19·3	27·4	29 36·0	22 29 19·18	− 0·53	− 55·42	− 55·44	− 4·33
	7908	ζ Pegasi	....	79 50	21·2	29·5	38·0	46·4	35 55·0	22 35 38·02	− 0·52	− 55·42	− 55·46	− 4·31
	8233	ι Piscium	....	85 4	36·0	46·3	54·7	3·0	34 11·6	23 33 54·72	− 0·53	− 55·54	− 55·48	− 4·41
	8298	....	6·0	13 7	18·5	54·6	31·6	7·8	47 45·0	23 46 31·50	− 0·76	....	− 55·49	− 9·29
Sept. 16	7478	β Aquarii	....	96 8	5·0	13·1	21·8	30·0	25 38·4	21 25 21·66	− 0·54	− 56·21	− 56·26	− 4·27
	7501	....	7·0	44 43	47·1	58·9	10·9	22·6	29 34·6	21 29 10·82	− 0·51	....	− 56·26	− 4·01
	7569	(a)	7·0	61 50	43·0	52·2	2·0	11·3	39 21·0	21 39 1·90	− 0·50	....	− 56·27	− 4·06
	7627	16 Pegasi	....	64 41	32·2	41·4	50·8	59·9	48 9·3	21 47 50·72	− 0·50	− 56·30	− 56·27	− 4·11
	7908	ζ Pegasi	....	79 50	22·0	30·2	39·0	47·1	35 55·8	22 35 38·82	− 0·52	− 56·22	− 56·30	− 4·31
	8024	....	7·0	33 35	15·9	30·7	46·0	0·8	57 15·9	22 56 45·86	− 0·53	....	− 56·31	− 5·16
	8034	α Pegasi	....	75 29	40·3	48·9	57·5	6·0	59 15·0	22 58 57·54	− 0·51	− 56·38	− 56·32	− 4·37
	8105	γ Piscium	....	87 25	46·4	56·6	5·0	13·1	11 21·8	23 11 4·98	− 0·52	− 56·27	− 56·32	− 4·40
	8204	....	6·0	18 43	54·4	20·1	46·4	12·0	28 38·6	23 27 46·30	− 0·66	....	− 56·33	− 7·17
	8233	ι Piscium	....	85 4	38·8	47·0	55·5	3·8	34 12·2	23 33 55·46	− 0·52	− 56·28	− 56·33	− 4·42
	8247	....	8·0	72 3	19·7	28·2	37·0	45·8	36 54·7	23 36 37·08	− 0·51	....	− 56·34	− 4·47
	8269	....	8·0	86 29	29·4	37·4	46·0	54·2	42 2·8	23 41 45·96	− 0·51	....	− 56·34	− 4·39
	8315	....	7·0	82 30	22·0	30·1	38·7	47·0	49 55·6	23 49 38·68	− 0·51	....	− 56·34	− 4·41
	8364	....	7·0	32 12	23·9	39·2	55·0	10·6	59 26·2	23 58 54·98	− 0·55	....	− 56·35	− 5·84
	8372	....	6·[illegible]	32 17	38·8	51·0	9·9	25·1	0 41·0	0 [illegible] 9·76	− 0·55	....	− 56·35	− 5·84
	4	α Andromedæ	....	61 37	1·6	10·8	20·4	29·8	2 39·3	0 2 20·38	− 0·50	− 56·50	− 56·36	− 4·68
	28	....	6·5	49 41	4·6	15·5	26·6	37·3	7 48·3	0 7 26·46	− 0·50	....	− 56·36	− 5·00
	42	(b)	....	86 28	40·1	48·3	56·8	5·0	10 13·5	0 9 56·74	− 0·51	....	− 56·36	− 4·38
Sept. 21	8105	γ Piscium	....	87 25	53·6	1·7	10·0	18·3	11 26·9	23 11 10·10	− 0·51	− 61·39	− 61·45	− 4·41
	8169	κ Piscium	....	89 27	44·3	52·4	0·9	9·1	21 17·7	23 21 0·88	− 0·50	− 61·45	− 61·46	− 4·39
	8233	ι Piscium	....	85 4	44·0	52·2	0·8	9·0	34 17·5	23 34 0·70	− 0·50	− 61·52	− 61·46	− 4·44
	4	α Andromedæ	....	61 37	6·5	15·8	25·5	34·8	2 44·4	0 2 25·40	− 0·48	− 61·50	− 61·47	− 4·72
	26	γ Pegasi	....	75 32	0·4	8·9	17·6	26·0	7 34·8	0 7 17·54	− 0·50	− 61·49	− 61·48	− 4·52

(a) Double. (b) Very faint.

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Date.	No. in British Association Catalogue.	Object observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1863.
1863				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Sept. 22	7356	....	8·0	68 5	10·9	19·9	28·9	37·8	5 46·9	21 5 28·88	− 0·48	....	− 62·60	− 3·83
	7368	ζ Cygni	....	60 18	54·1	3·6	13·1	22·8	8 32·5	21 8 13·28	− 0·49	− 62·62	− 62·72	− 3·76
	7417	....	6·0	31 54	4·0	19·5	35·4	51·6	17 6·8	21 16 35·34	− 0·51	....	− 62·71	− 3·81
	8331	ω Piscium	....	83 51	7·8	16·0	24·5	32·6	53 41·1	23 53 24·40	− 0·50	− 62·84	− 62·86	− 4·44
	4	α Andromedæ	....	61 37	8·0	17·3	26·9	36·1	2 45·9	0 2 26·84	− 0·48	− 62·94	− 62·87	− 4·72
Sept. 23	8331	ω Piscium	....	83 51	9·0	17·2	25·8	34·0	53 42·6	23 53 25·72	− 0·50	− 64·16	− 64·11	− 4·44
	4	α Andromedæ	....	61 37	9·1	18·3	28·0	37·2	2 17·0	0 2 27·92	− 0·48	− 64·01	− 64·12	− 4·73
	26	γ Pegasi	....	75 32	3·0	11·4	20·2	28·7	7 37·5	0 7 20·16	− 0·50	− 64·10	− 64·12	− 4·53
	112	12 Ceti	....	94 40	55·2	3·4	12·0	20·2	24 28·7	0 24 11·90	− 0·52	− 64·19	− 64·13	− 4·37
Sept. 24	8169	κ Piscium	....	89 27	48·4	56·5	4·9	13·0	21 21·7	23 21 4·90	− 0·49	− 65·47	− 65·41	− 4·40
	8233	(a) ι Piscium	....	85 4	47·8	56·0	4·6	12·9	34 21·3	23 34 4·52	− 0·48	− 65·36	− 65·42	− 4·44
	8270	....	....	86 33	42·7	50·9	59·4	7·5	42 16·2	23 41 59·34	− 0·49	....	− 65·43	− 4·43
	8298	....	6·0	13 7	27·9	4·1	41·0	17·6	17 51·7	23 46 41·06	− 0·66	....	− 65·43	− 9·33
Sept. 25	7478	(b) 3 Aquarii	....	96 8	15·4	23·6	32·0	40·2	25 48·9	21 25 32·02	− 0·50	− 66·69	− 66·62	− 4·19
	7561	ι Pegasi	....	80 43	21·8	30·0	38·7	47·0	38 55·6	21 38 38·62	− 0·48	− 66·62	− 66·63	− 4·08
	7627	16 Pegasi	....	64 41	42·6	51·6	1·0	10·0	48 19·4	21 48 0·92	− 0·47	− 66·60	− 66·64	− 4·04
	7708	....	....	28 21	32·3	49·9	7·5	24·9	2 42·6	22 2 7·44	− 0·50	....	− 66·64	− 4·54
	7908	ζ Pegasi	....	79 50	32·4	40·7	49·2	57·5	36 6·0	22 35 49·16	− 0·47	− 66·63	− 66·66	− 4·29
Sept. 26	7627	16 Pegasi	....	64 41	43·9	52·8	2·1	11·0	48 20·6	21 48 2·08	− 0·47	− 67·77	− 67·75	− 4·03
	7688	α Aquarii	....	90 57	40·5	48·9	57·2	5·1	0 14·0	21 59 57·20	− 0·50	− 67·74	− 67·76	− 4·22
	8105	γ Piscium	....	87 25	0·0	8·2	16·7	24·9	11 33·3	23 11 16·62	− 0·49	− 67·93	− 67·82	− 4·41
	8169	κ Piscium	....	89 27	50·4	58·7	7·4	15·6	21 24·0	23 21 7·22	− 0·49	− 67·79	− 67·83	− 4·40
	8233	ι Piscium	....	85 4	50·1	58·3	7·0	15·3	34 24·0	23 34 6·94	− 0·46	− 67·77	− 67·83	− 4·45
Sept. 28	7561	ι Pegasi	....	80 43	25·8	33·9	42·6	51·0	37 59·8	21 37 42·62	− 0·47	− 10·66	− 10·59	− 4·05
	7627	16 Pegasi	....	64 41	46·5	55·6	5·0	14·0	47 23·4	21 47 4·90	− 0·46	− 10·62	− 10·59	− 4·01
	7868	η Aquarii	....	90 47	17·8	25·9	34·3	42·5	28 51·0	22 28 34·30	− 0·49	− 10·62	− 10·63	− 4·29
	7908	ζ Pegasi	....	79 50	36·3	44·5	53·1	1·4	35 10·0	22 34 53·06	− 0·46	− 10·55	− 10·64	− 4·26
	8034	α Pegasi	....	75 29	54·8	3·1	11·8	20·1	58 29·8	22 58 11·76	− 0·47	− 10·61	− 10·65	− 4·37
	8065	....	7·5	88 34	21·5	29·6	38·0	46·3	2 54·6	23 2 38·08	− 0·48	....	− 10·66	− 4·36
	8083	....	....	33 33	28·6	43·3	58·6	13·5	7 29·0	23 6 58·60	− 0·46	....	− 10·66	− 5·22
	8137	....	6·0	28 45	58·7	15·6	33·2	50·3	15 8·0	23 14 33·16	− 0·47	....	− 10·67	− 5·03
	8233	ι Piscium	....	85 4	53·2	1·4	9·9	18·0	33 26·6	23 33 9·82	− 0·48	− 10·65	− 10·68	− 4·45
	8247	....	8·0	72 3	34·0	42·6	51·4	0·0	36 9·0	23 35 51·40	− 0·46	....	− 10·68	− 4·51
	8280	....	7·0	30 44	56·6	12·8	29·2	45·2	43 1·9	23 42 29·14	− 0·47	....	− 10·69	− 5·84
	8298	....	....	13 7	33·8	9·5	47·0	23·0	47 0·1	23 45 46·68	− 0·61	....	− 10·69	− 9·31
	8350	85 Pegasi	....	63 36	58·7	7·9	17·1	26·2	55 35·8	23 55 17·14	− 0·46	....	− 10·70	− 4·69
	8364	(c)	7·0	32 12	38·0	53·4	9·3	24·9	58 40·6	23 58 9·24	− 0·48	....	− 10·70	− 5·91
	4	α Andromedæ	....	61 37	15·9	25·1	34·8	44·0	1 53·7	0 1 34·70	− 0·45	− 10·79	− 10·71	− 4·76
	26	γ Pegasi	....	75 32	9·6	18·0	26·9	35·2	6 44·0	0 6 26·74	− 0·47	− 10·68	− 10·71	− 4·56
Sept. 29	8233	(d) ι Piscium	....	85 4	54·6	2·8	11·2	19·4	33 28·0	23 33 11·20	− 0·48	− 12·03	− 12·07	− 4·45
	8331	ω Piscium	....	83 51	16·9	25·1	33·8	42·0	52 50·6	23 52 33·68	− 0·48	− 12·12	− 12·08	− 4·46
	4	α Andromedæ	....	61 37	17·1	26·4	36·0	45·4	1 55·0	0 1 35·96	− 0·45	− 12·07	− 12·09	− 4·76
	26	γ Pegasi	....	75 32	11·0	19·5	28·2	36·8	6 45·4	0 6 28·16	− 0·47	− 12·12	− 12·10	− 4·56

(a) Foggy. (b) Very faint. (c) Double. (d) Faint.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance sel. to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1 1863.
1863.				° '	s	s	s	s	m s	h m s	s	s	s	s
Oct. 5	8169	(a) κ Piscium	....	89 27	1·5	9·7	18·3	26·6	20 35·0	23 20 18·22	− 0·47	− 18·82	− 18·78	− 4·39
	8233	ι Piscium	....	85 4	1·4	9·5	18·0	26·2	33 34·5	23 33 17·92	− 0·46	− 18·78	− 18·79	− 4·41
	8331	(b) ω Piscium	....	83 51	23·5	32·0	40·5	48·7	52 57·3	23 52 40·40	− 0·46	− 18·85	− 18·79	− 4·47
	4	α Andromedæ	....	61 37	23·9	33·1	42·6	52·1	2 1·7	0 1 42·66	− 0·43	− 18·78	− 18·80	− 4·77
	26	γ Pegasi	....	75 32	17·6	26·1	35·0	43·3	6 52·0	0 6 34·80	− 0·45	− 18·74	− 18·80	− 4·55
Oct. 6	288	ε Piscium	....	82 48	58·5	6·8	15·2	23·6	56 32·0	0 56 15·22	− 0·45	....	− 20·17	− 4·57
	360	α Ursæ Minoris	....	1 25	27·5	4·5	47·5	20·0	22 1·5	1 10 44·20	− 2·71	....	− 20·18	− 51·47
	453	η Piscium	....	75 19	17·7	26·0	34·8	43·1	24 52·0	1 24 34·72	− 0·45	− 20·18	− 20·19	− 4·72
	518	ν Piscium	....	85 10	26·8	35·0	43·4	51·8	35 0·1	1 34 43·42	− 0·45	− 20·22	− 20·19	− 4·51
	577	β Arietis	....	69 49	12·5	21·1	30·0	38·9	47 48·0	1 47 30·10	− 0·44	− 20·20	− 20·20	− 4·86
	648	α Arietis	....	67 9	35·0	43·7	53·0	1·9	0 11·0	1 59 52·92	− 0·43	− 20·16	− 20·21	− 4·96
Oct. 9	288	ε Piscium	....	82 48	2·4	10·1	19·0	27·2	56 36·0	0 56 19·00	− 0·45	− 23·84	− 23·95	− 4·20
	453	η Piscium	....	75 19	21·2	29·7	38·6	47·0	24 55·9	1 24 38·48	− 0·44	− 23·92	− 23·97	− 4·75
	518	ν Piscium	....	85 10	30·6	38·9	47·3	55·5	35 4·0	1 34 47·26	− 0·44	− 24·04	− 23·99	− 4·57
	577	β Arietis	....	69 49	16·2	25·0	34·2	42·9	47 51·9	1 47 31·04	− 0·43	− 24·11	− 24·01	− 4·90
	648	α Arietis	....	67 9	38·6	47·8	56·9	5·8	0 15·0	1 59 56·86	− 0·43	− 24·06	− 24·03	− 5·09
Oct. 11	8034	α Pegasi	....	75 29	9·6	18·1	26·8	35·2	58 44·0	22 58 26·78	− 0·43	− 25·77	− 25·72	− 4·30
	8105	γ Piscium	....	87 25	17·7	26·0	34·4	42·6	10 51·0	23 10 34·34	− 0·44	− 25·75	− 25·74	− 4·16
	8169	κ Piscium	....	89 27	8·3	16·5	25·1	33·3	20 41·9	23 20 25·02	− 0·44	− 25·68	− 25·76	− 4·36
	8233	ι Piscium	....	85 4	8·0	16·4	25·0	33·3	33 41·8	23 33 24·90	− 0·44	− 25·79	− 25·77	− 4·43
Oct. 14	288	ε Piscium	....	82 48	6·5	14·8	23·3	31·6	56 40·1	0 56 23·26	− 0·42	− 28·11	− 28·20	− 4·61
	360	α Ursæ Minoris	....	1 25	38·5	12·0	56·5	29·0	22 12·0	1 10 53·60	− 2·87	....	− 28·21	− 52·32
	420	θ Ceti	....	98 51	27·0	35·3	43·9	52·0	18 0·6	1 17 43·76	− 0·46	....	− 28·22	− 4·44
	453	η Piscium	....	75 19	25·8	34·1	43·0	51·3	25 0·0	1 24 42·81	− 0·42	− 28·26	− 28·22	− 4·79
	518	ν Piscium	....	85 10	34·9	43·1	51·6	59·9	35 8·2	1 34 51·54	− 0·43	− 28·29	− 28·23	− 4·61
	577	β Arietis	....	69 49	20·5	29·1	38·3	47·0	47 56·0	1 47 38·18	− 0·41	− 28·22	− 28·24	− 4·95
Oct. 20	288	ε Piscium	....	82 48	11·0	19·3	27·9	36·1	56 44·7	0 56 27·80	− 0·42	− 32·63	− 32·64	− 4·63
	360	α Ursæ Minoris	....	1 24	41·0	17·5	58·0	33·0	22 16·0	1 10 57·10	− 1·97	....	− 32·65	− 62·10
	420	θ¹ Ceti	....	98 51	31·4	39·7	48·2	56·5	18 5·0	1 17 48·16	− 0·46	....	− 32·66	− 4·47
	453	η Piscium	....	75 19	30·2	38·6	47·3	55·9	25 4·6	1 24 47·32	− 0·41	− 32·71	− 32·67	− 4·83
	518	ν Piscium	....	85 10	39·4	47·5	56·1	4·2	35 12·8	1 34 56·00	− 0·43	− 32·71	− 32·68	− 4·61
	577	β Arietis	....	69 49	25·0	33·8	42·0	51·5	48 0·5	1 47 42·74	− 0·39	− 32·75	− 32·69	− 5·01
	648	α Arietis	....	67 9	47·4	56·5	5·6	14·4	0 23·6	2 0 5·50	− 0·40	− 32·61	− 32·71	− 5·12
Oct. 21	288	ε Piscium	....	82 48	12·3	20·6	29·2	37·4	56 46·0	0 56 29·10	− 0·41	− 33·94	− 34·12	− 4·43
	453	η Piscium	....	75 19	31·6	40·0	48·8	57·1	25 6·0	1 24 48·70	− 0·39	− 34·11	− 34·15	− 4·83
	518	ν Piscium	....	85 10	40·8	49·1	57·5	5·7	35 14·3	1 34 57·48	− 0·41	− 34·21	− 34·16	− 4·65
	577	β Arietis	....	69 49	26·5	35·4	44·4	53·1	48 2·2	1 47 44·32	− 0·38	− 34·33	− 34·18	− 5·01
	648	α Arietis	....	67 9	49·2	58·0	7·1	16·0	0 25·2	2 0 7·10	− 0·39	− 34·21	− 34·20	− 5·13
Oct. 22	7868	ι Aquarii	....	90 47	41·9	50·1	58·4	6·5	29 15·0	22 28 58·36	− 0·41	− 34·98	− 35·04	− 4·09
	8034	α Pegasi	....	75 29	19·1	27·4	36·1	44·5	58 53·2	22 58 36·06	− 0·39	− 35·19	− 35·07	− 4·20
	8331	ω Piscium	....	83 51	39·9	48·0	56·6	5·0	53 13·4	23 52 56·58	− 0·40	− 35·13	− 35·12	− 4·43
	4	α Andromedæ	....	61 37	40·0	49·4	58·9	8·2	2 18·0	0 1 58·90	− 0·37	− 35·09	− 35·13	− 4·71
	26	γ Pegasi	....	75 32	34·0	42·2	51·1	59·6	7 8·2	0 6 51·02	− 0·39	− 35·04	− 35·14	− 4·56

(a) Faint. Cloudy. (b) Extremely faint.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude estimated.	North Polar Distance 1863.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1863.
1863.				° ′	s.	s.	s.	s.	m s	h m s	s	s	s.	s.
Oct. 23	518	(a) ν Piscium	....	85 10	42·9	51·1	59·5	7·7	35 16·2	1 34 59·48	− 0·39	− 36·21	− 36·15	− 4·67
	577	β Arietis	....	69 49	28·5	37·1	46·1	55·0	48 4·0	1 47 46·11	− 0·36	− 36·15	− 36·15	− 5·03
	648	α Arietis	....	67 9	51·0	59 9	9·0	18·0	0 27·1	2 0 9·00	− 0·37	− 36·11	− 36·15	− 5·15
	704	67 Ceti	....	97 1	33·4	41·6	50·2	58·4	11 7·0	2 10 50·12	− 0·40	− 36·16	− 36·15	− 4·50
	837	γ Ceti	....	87 18	36·9	45·0	53·4	1·7	37 10·3	2 36 53·46	− 0·38	− 36·17	− 36·15	− 4·66
	949	α Ceti	....	86 25	31·7	40·0	48·4	56·6	56 5·1	2 55 48·36	− 0·38	− 36·10	− 36·15	− 4·67
Oct. 29	453	η Piscium	....	75 19	41·0	49·5	58·2	6·6	25 15·2	1 24 56·10	− 0·33	− 43·54	− 43·58	− 4·66
	518	ν Piscium	....	85 10	50·2	58·4	7·0	15·2	35 23·8	1 35 6·92	− 0·33	− 43·69	− 43·59	− 4·69
	837	γ Ceti	....	87 18	44·1	52·4	1·0	9·2	37 17·7	2 37 0·88	− 0·33	− 43·58	− 43·65	− 4·72
	949	α Ceti	....	86 25	39·4	47·6	56·0	4·1	56 12·9	2 55 56·00	− 0·33	− 43·72	− 43·67	− 4·74
Nov. 2	288	ε Piscium	....	82 48	28·3	36·5	45·0	53·4	57 1·9	0 56 45·02	− 0·25	....	− 50·18	− 4·63
	360	α Ursæ Minoris	....	1 25	59·0	32·0	17·0	50·5	22 34·0	1 11 14·50	− 4·75	....	− 50·19	− 60·86
	453	η Piscium	....	75 19	47·6	56·0	4·7	13·0	25 22·0	1 25 4·66	− 0·25	− 50·18	− 50·20	− 4·86
	518	ν Piscium	....	85 10	56·8	5·0	13·5	21·8	35 30·2	1 35 13·46	− 0·25	− 50·30	− 50·21	− 4·70
	577	β Arietis	....	69 49	42·3	51·0	0·1	9·0	48 17·9	1 48 0·06	− 0·24	− 50·14	− 50·22	− 5·08
	648	α Arietis	....	67 9	5·2	13·8	23·1	32·0	0 41·2	2 0 23·06	− 0·24	− 50·24	− 50·22	− 5·21
	837	γ Ceti	....	87 18	50·9	59·1	7·5	15·6	37 24·3	2 37 7·48	− 0·25	− 50·23	− 50·24	− 4·75
	949	α Ceti	....	86 25	45·8	54·1	2·5	10·8	56 19·2	2 56 2·48	− 0·25	− 50·24	− 50·25	− 4·78
Nov. 4	4	α Andromedæ	....	61 37	57·7	7·0	16·5	25·8	2 35·5	0 2 16·50	− 0·30	− 52·84	− 52·85	− 4·66
	26	γ Pegasi	....	75 32	51·7	0·0	8·9	17·2	7 26·0	0 7 8·76	− 0·32	− 52·91	− 52·86	− 4·50
	288	ε Piscium	....	82 48	31·2	39·4	48·0	56·1	57 4·9	0 56 47·92	− 0·33	....	− 52·89	− 4·63
	360	α Ursæ Minoris	....	1 25	59·5	35·5	19·0	50·0	22 34·0	1 11 15·60	− 2·28	....	− 52·90	− 80·43
	453	η Piscium	....	75 19	50·2	58·7	7·5	16·0	25 24·8	1 25 7·44	− 0·32	− 52·88	− 52·90	− 4·87
	577	β Arietis	....	69 49	45·1	54·0	3·0	11·6	48 20·6	1 48 2·86	− 0·31	− 52·66	− 52·91	− 5·09
	588	....	7·0	26 1	57·5	16·0	35·8	54·5	51 13·8	1 50 35·52	− 0·31	....	− 52·92	− 8·20
	620	....	8·0	25 31	47·2	6·6	26·0	45·3	56 5·0	1 55 26·02	− 0·32	....	− 52·93	− 8·37
	760	ξ Ceti	....	97 52	34·0	42·4	51·0	59·2	22 7·8	2 21 50·88	− 0·35	− 52·99	− 52·95	− 4·87
Nov. 6	518	ν Piscium	....	85 10	1·6	9·9	18·3	26·5	35 35·0	1 35 18·26	− 0·31	− 55·03	− 55·05	− 4·71
	539	....	7·0	73 14	52·5	1·0	9·9	18·4	40 27·3	1 40 9·82	− 0·30	....	− 55·06	− 4·97
	547	....	....	42 45	23·3	35·5	47·9	59·9	42 12·5	1 41 47·82	− 0·28	....	− 55·06	− 6·22
	562	....	....	39 10	42·1	54·9	8·2	21·4	45 34·8	1 45 8·28	− 0·28	....	− 55·07	− 6·51
	577	β Arietis	....	69 49	47·4	56·1	5·0	13·9	48 23·0	1 48 5·06	− 0·29	− 55·09	− 55·07	− 5·10
	588	....	....	26 1	0·0	18·6	37·9	56·5	51 15·8	1 50 37·76	− 0·30	....	− 55·07	− 8·21
	648	α Arietis	....	67 9	9·9	18·9	28·1	37·0	0 46·0	2 0 27·98	− 0·28	− 55·10	− 55·08	− 5·23
	837	γ Ceti	....	87 18	55·8	4·0	12·6	20·6	37 29·2	2 37 12·44	− 0·31	− 55·10	− 55·10	− 4·78
	949	α Ceti	....	86 25	50·8	59·0	7·4	15·7	56 24·1	2 56 7·10	− 0·31	− 55·06	− 55·11	− 4·82
	1166	η Tauri	....	66 17	3·4	12·4	21·8	30·6	40 40·0	3 40 21·64	− 0·28	− 55·16	− 55·14	− 5·46
Nov. 10	149	....	7·0	77 30	37·9	40·0	54·0	3·3	30 12·0	0 29 54·62	− 0·25	....	− 60·92	− 4·56
	164	ι Andromedæ	4·0	61 24	6·4	15·8	25·4	34·6	32 44·4	0 32 25·32	− 0·24	....	− 60·92	− 4·85
	177	....	6·0	81 21	56·0	4·3	13·0	21·3	35 29·9	0 35 12·90	− 0·25	....	− 60·92	− 4·53
	197	....	....	42 51	32·8	44·6	57·2	9·3	38 21·8	0 37 57·14	− 0·27	....	− 60·93	− 5·51
	224	....	....	61 59	36·4	45·8	55·2	4·7	43 14·1	0 42 55·24	− 0·24	....	− 60·94	− 4·92
	237	....	7·0	87 20	4·1	12·3	21·0	29·0	45 37·6	0 45 20·60	− 0·26	....	− 60·94	− 4·51
	259	μ Andromedæ	4·0	52 12	54·9	5·2	16·0	26·2	50 37·0	0 50 15·86	− 0·25	....	− 60·94	− 5·26
	288	ε Piscium	....	82 48	39·0	47·2	55·0	4·1	57 12·6	0 56 55·76	− 0·25	− 60·78	− 60·94	− 4·61
	360	α Ursæ Minoris	....	1 25	7·5	41·5	27·5	58·0	22 43·0	1 11 23·50	− 3·94	....	− 60·95	− 78·79

(a) An apparent inversion of the clock rate during the observations.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1863.
1863.				° ′	s	s	s	s	m. s	h. m. s	s	s	s	s
Nov. 10	453	η Piscium	....	75 19	58.0	6.6	15.4	24.0	25 32.7	1 25 15.34	− 0.25	....	− 60.98	− 4.87
	577	β Arietis	....	69 49	53.3	1.9	11.0	19.8	48 28.9	1 48 10.98	− 0.25	− 61.03	− 60.97	− 5.10
	588	....	6.0	26 1	5.6	24.1	43.8	2.3	51 21.9	1 50 43.54	− 0.32	....	− 60.97	− 8.21
	620	....	7.0	25 31	55.4	14.8	34.1	53.4	56 12.9	1 55 34.12	− 0.33	....	− 60.97	− 8.38
	645	....	7.5	64 48	45.4	54.3	3.9	12.6	0 22.0	2 0 3.61	− 0.24	....	− 60.98	− 5.31
	694	....	7.0	26 11	48.2	6.9	26.0	44.8	10 4.0	2 9 25.98	− 0.32	....	− 60.98	− 8.45
	738	....	7.5	80 19	40.1	48.4	56.9	5.1	18 13.8	2 17 56.86	− 0.25	....	− 60.98	− 4.93
	837	γ Ceti	....	87 18	1.7	9.9	18.4	26.6	37 35.1	2 37 18.34	− 0.26	− 61.03	− 60.99	− 4.81
	881	ε Arietis	6.5	75 27	45.1	53.8	2.4	11.0	45 19.5	2 45 2.36	− 0.25	....	− 61.00	− 5.12
	920	....	7.0	68 54	51.0	59.9	9.0	17.7	52 26.8	2 52 8.88	− 0.24	....	− 61.00	− 5.35
	949	α Ceti	....	86 25	56.8	4.9	13.2	21.5	56 30.1	2 56 13.30	− 0.25	− 60.99	− 61.01	− 4.85
	962	ι Persei	5.0	40 53	54.8	7.1	20.3	32.8	0 45.9	3 0 20.18	− 0.26	....	− 61.01	− 6.95
	980	....	6.5	63 36	7.5	16.7	26.3	35.4	3 45.0	3 3 26.18	− 0.25	....	− 61.01	− 5.57
	1056	....	7.5	68 25	25.9	34.9	43.8	52.6	18 1.8	3 17 43.80	− 0.24	....	− 61.02	− 5.41
	1067	f Tauri	5.0	77 31	8.1	16.4	25.2	33.6	24 12.3	3 24 25.12	− 0.25	....	− 61.02	− 5.12
	1101	....	7.0	58 45	54.7	4.3	14.2	23.9	28 33.8	3 28 14.18	− 0.25	....	− 61.03	− 5.84
	1126	....	7.0	65 6	21.1	33.4	42.7	51.5	34 1.0	3 33 42.51	− 0.24	....	− 61.03	− 5.56
	1166	ε Tauri	....	66 17	9.4	18.4	27.6	36.5	40 45.9	3 40 27.56	− 0.24	− 61.06	− 61.04	− 5.52
Nov. 11	112	12 Ceti	....	94 40	52.3	0.6	9.0	17.3	23 26.0	0 23 9.04	− 0.29	− 1.57	− 1.64	− 4.36
	133	....	....	70 17	16.7	27.3	36.4	45.0	26 54.2	0 26 36.32	− 0.25	....	− 1.64	− 4.64
	149	....	....	77 30	38.7	47.0	55.9	4.0	29 12.9	0 28 55.70	− 0.26	....	− 1.64	− 4.55
	164	ν Andromedæ	....	61 24	7.3	16.5	26.1	35.5	31 45.1	0 31 26.10	− 0.25	....	− 1.64	− 4.64
	177	....	8.0	61 21	57.0	5.1	13.9	22.2	34 30.7	0 34 13.78	− 0.26	....	− 1.64	− 4.53
	197	....	6.0	42 51	33.7	45.8	58.0	10.0	37 22.5	0 36 58.00	− 0.26	....	− 1.64	− 5.50
	224	....	7.0	61 59	37.1	46.6	56.0	5.3	42 15.0	0 41 56.00	− 0.25	....	− 1.64	− 4.91
	237	....	6.5	87 20	4.9	13.1	21.5	29.8	44 38.3	0 44 21.52	− 0.27	....	− 1.64	− 4.50
	259	....	3.0	52 12	55.8	6.0	16.8	27.1	49 38.0	0 49 16.71	− 0.25	....	− 1.64	− 5.25
	288	ε Piscium	....	82 46	39.9	48.1	56.6	5.0	56 13.4	0 55 56.60	− 0.26	− 1.62	− 1.64	− 4.60
	360	α Ursæ Minoris	....	1 24	7.0	40.0	26.0	58.5	21 43.0	1 10 22.90	− 2.02	....	− 1.64	− 78.47
	453	η Piscium	....	75 19	59.0	7.3	16.2	24.7	24 33.4	1 24 16.12	− 0.26	....	− 1.64	− 4.87
	577	β Arietis	....	69 49	54.0	2.7	11.6	20.5	47 29.4	1 47 11.64	− 0.25	− 1.69	− 1.64	− 5.10
	645	....	7.0	64 48	46.0	55.0	4.3	13.3	59 22.8	1 59 4.28	− 0.25	....	− 1.64	− 5.31
	694	....	7.5	26 11	49.4	7.8	26.9	45.5	9 4.7	2 8 26.86	− 0.29	....	− 1.64	− 8.46
	702	....	7.0	26 16	16.0	35.5	54.5	12.9	10 32.3	2 9 54.24	− 0.29	....	− 1.64	− 8.46
	725	....	7.0	33 12	58.5	13.5	28.9	43.7	13 59.5	2 13 28.82	− 0.27	....	− 1.64	− 7.43
	738	....	7.0	80 19	40.6	49.0	57.5	5.6	17 14.4	2 16 57.42	− 0.26	....	− 1.64	− 4.94
	764	....	6.5	51 1	6.6	15.0	23.6	31.9	22 40.4	2 22 23.50	− 0.26	....	− 1.64	− 4.93
	776	....	....	88 19	15.2	23.4	32.0	40.0	24 48.6	2 24 31.84	− 0.27	....	− 1.64	− 4.75
	793	....	6.0	83 45	24.4	32.6	41.2	49.6	28 58.1	2 28 41.16	− 0.27	....	− 1.64	− 4.85
	881	ε Arietis	6.0	75 27	46.0	54.1	3.2	11.6	44 20.4	2 44 3.12	− 0.26	....	− 1.64	− 5.13
	891	(a)	....	84 4	15.0	23.4	32.0	40.2	45 48.8	2 45 31.88	− 0.27	....	− 1.64	− 4.90
	920	(b)	....	68 54	51.9	0.6	9.7	18.4	51 27.5	2 51 9.62	− 0.25	....	− 1.64	− 5.36
	949	α Ceti	....	86 25	57.4	5.5	14.1	22.3	55 30.9	2 55 14.04	− 0.27	− 1.70	− 1.64	− 4.86
	1166	η Tauri	....	66 17	10.0	19.0	28.2	37.1	39 46.5	3 39 28.16	− 0.25	− 1.64	− 1.64	− 5.53
	4648	η Bootis	....	70 56	56.0	4.6	13.1	22.3	48 31.2	13 48 13.50	− 0.26	− 1.67	− 1.64	− 1.58
	4729	α Bootis	....	70 8	10.7	19.5	28.5	37.2	9 46.2	14 9 28.42	− 0.25	− 1.64	− 1.64	− 1.71
	4876	ε Bootis	....	62 22	44.8	54.0	3.6	13.0	39 22.4	14 39 3.56	− 0.25	− 1.67	− 1.64	− 1.39
Nov. 18	453	(c) η Piscium	....	75 19	49.6	58.0	6.8	15.2	24 24.1	1 24 6.74	− 0.25	+ 7.74	+ 7.68	− 4.66
	518	ν Piscium	....	85 10	59.0	7.1	15.6	23.9	34 32.2	1 34 15.56	− 0.27	+ 7.63	+ 7.67	− 4.71

(a) Fine double star, 10th mag. (b) Very faint. (c) The Pulkowa gridiron pendulum removed, and the Dent mercurial pendulum replaced.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1863.
				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
1863. Nov. 18	577	β Arietis	....	69 49	44·7	53·1	2·4	11·1	47 20·1	1 47 2·28	− 0·24	+ 7·67	+ 7·66	− 5·11
	648	(a) α Arietis	....	67 9	7·4	16·0	25·4	34·2	59 43·5	1 59 25·30	− 0·24	+ 7·58	+ 7·65	− 5·27
Nov. 19	8034	α Pegasi	....	75 29	37·0	45·2	51·0	2·6	58 11·4	22 57 54·04	− 0·25	+ 6·37	+ 6·35	− 3·88
	8105	γ Piscium	....	23 10	45·4	53·4	1·9	10·0	10 18·5	23 10 1·78	− 0·29	+ 6·31	+ 6·30	− 4·01
	837	(b) γ Ceti	....	87 18	54·8	2·9	11·3	19·4	36 28·0	2 36 11·28	− 0·27	+ 6·08	+ 6·11	− 4·84
	919	α Ceti	....	86 25	49·6	57·8	6·3	14·5	55 23·0	2 55 6·21	− 0·27	+ 6·15	+ 6·13	− 4·91
	986	δ Arietis	....	70 46	30·0	38·5	47·5	56·2	4 5·2	3 3 47·48	− 0·25	+ 6·15	+ 6·12	− 5·30
	1166	η Tauri	....	66 17	2·4	11·2	20·5	29·5	39 38·9	3 39 20·50	− 0·21	+ 6·11	+ 6·10	− 5·63
	1376	ε Tauri	....	71 6	19·5	28·0	37·0	45·6	20 54·5	4 20 36·92	− 0·25	+ 6·00	+ 6·05	− 5·48
	1420	(c) α Tauri	....	73 45	46·2	54·5	3·4	12·6	28 20·8	4 28 3·38	− 0·25	+ 5·98	+ 6·04	− 5·38
Nov. 24	6355	α Lyræ	....	51 20	47·5	58·0	6·9	19·3	32 30·2	18 32 8·78	− 0·23	+10·46	+10·49	− 1·00
	6772	γ Aquilæ	....	79 42	20·1	28·4	37·2	45·4	39 54·0	19 39 37·02	− 0·25	+10·51	+10·50	− 2·50
	6802	α Aquilæ	....	81 28	41·4	49·9	58·2	6·5	44 15·2	19 43 58·24	− 0·25	+10·52	+10·50	− 2·61
	6833	β Aquilæ	....	83 45	10·4	18·9	27·4	35·8	48 44·4	19 48 27·38	− 0·26	+10·52	+10·51	− 2·66
	7171	α Cygni	....	45 15	13·9	25·2	37·1	48·9	37 0·9	20 36 37·20	− 0·23	....	+10·53	− 1·82
	7368	ζ Cygni	....	60 18	39·4	49·0	58·9	8·2	7 16·0	21 6 58·70	− 0·24	+10·60	+10·54	− 2·67
	8233	ι Piscium	....	85 4	31·2	39·4	48·0	56·2	33 4·7	23 32 47·90	− 0·26	+10·67	+10·60	− 4·07
	4	α Andromedæ	....	61 37	54·0	3·2	12·9	22·1	1 31·8	0 1 12·60	− 0·23	+10·59	+10·60	− 4·46
	26	γ Pegasi	....	75 32	48·0	56·4	5·0	13·5	6 22·3	0 6 5·04	− 0·25	+10·57	+10·60	− 4·33
	986	δ Arietis	....	70 46	25·6	34·0	43·1	51·7	4 0·5	3 3 42·98	− 0·24	+10·67	+10·62	− 5·42
	1166	η Tauri	....	66 17	58·0	6·9	16·1	25·0	39 34·4	3 39 16·08	− 0·23	+10·57	+10·63	− 5·68
	1420	α Tauri	....	73 45	41·5	49·9	58·8	7·3	28 16·2	4 27 58·74	− 0·25	+10·69	+10·66	− 5·45
	1520	ι Aurigæ	....	57 2	40·4	50·2	0·2	10·1	48 20·1	4 48 0·20	− 0·23	+10·79	+10·68	− 6·21
Nov. 25	577	β Arietis	....	69 49	11·0	49·8	58·9	7·5	47 16·6	1 46 58·76	− 0·23	+11·16	+11·22	− 5·09
	648	α Arietis	....	67 9	4·0	12·7	21·8	30·6	59 39·8	1 59 21·78	− 0·22	+11·07	+11·23	− 5·26
	694	....	7·0	26 11	36·1	54·8	13·9	32·6	8 51·8	2 8 13·84	− 0·22	....	+11·24	− 8·41
	702	....	7·5	26 16	3·4	22·2	41·1	59·8	10 18·9	2 9 41·08	− 0·22	....	+11·24	− 8·42
	725	....	....	33 12	15·6	0·1	15·9	30·7	13 46·0	2 13 15·66	− 0·22	....	+11·24	− 7·43
	738	....	7·5	80 19	27·7	36·0	44·6	53·0	17 1·6	2 16 44·58	− 0·24	....	+11·25	− 4·96
	760	ξ² Ceti	....	97 52	29·9	36·1	46·7	55·0	21 3·6	2 20 46·66	− 0·28	....	+11·25	− 4·94
	764	....	7·0	81 1	53·8	2·0	10·6	18·9	22 27·4	2 22 10·54	− 0·24	....	+11·25	− 4·97
	776	....	6·0	88 19	2·3	10·5	19·0	27·1	24 35·6	2 24 18·90	− 0·26	....	+11·25	− 4·80
	793	....	6·0	83 45	11·6	19·9	28·3	36·5	28 45·2	2 28 28·30	− 0·25	....	+11·26	− 4·92
	822	(d)	8·0	47 52	58·8	9·8	21·2	32·2	33 43·9	2 33 21·18	− 0·22	....	+11·26	− 6·34
	837	γ Ceti	....	87 18	49·5	57·6	6·1	14·3	36 23·0	2 36 6·10	− 0·26	+11·27	+11·26	− 4·86
	881	σ Arietis	....	75 27	33·0	41·4	50·1	58·8	44 7·5	2 43 50·16	− 0·24	....	+11·26	− 5·20
	891	(e)	....	81 4	2·2	10·4	19·1	27·3	45 35·9	2 45 18·94	− 0·25	....	+11·27	− 4·97
	920	....	7·0	68 54	39·0	47·7	56·6	5·2	51 14·5	2 50 56·60	− 0·22	....	+11·27	− 5·44
	919	α Ceti	....	86 25	44·5	52·7	1·1	9·3	55 17·9	2 55 1·10	− 0·26	+11·30	+11·27	− 4·93
	962	ι Persei	4·0	40 53	42·6	55·0	8·1	20·6	59 33·6	2 59 7·98	− 0·21	....	+11·27	− 7·07
	980	....	....	63 36	55·1	4·6	14·0	23·2	2 32·6	3 2 13·96	− 0·22	....	+11·28	− 6·68
	986	δ Arietis	....	70 46	21·8	33·4	42·4	51·1	4 0·0	3 3 42·34	− 0·24	+11·31	+11·28	− 5·42
	1087	f Tauri	5·0	77 31	56·0	4·3	13·0	21·4	23 30·0	3 23 12·94	− 0·23	....	+11·29	− 5·25
	1101	....	8·0	58 45	42·7	52·2	2·0	11·4	27 21·5	3 27 1·96	− 0·22	....	+11·29	− 6·00
	1166	η Tauri	....	66 17	57·2	6·0	15·2	24·4	39 33·7	3 39 15·30	− 0·22	+11·35	+11·30	− 5·69
	1520	ι Aurigæ	....	57 2	30·9	49·6	59·4	9·2	48 19·6	4 47 59·54	− 0·22	+11·45	+11·35	− 6·22

(a) Very faint. (b) Faint. (c) Definition bad all night. Stars blurred. (d) One of several stars in field.
(e) Double. Observed middle point.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1863.
				° ′	s	s	s	s	m s	h m s	s	s	s	s
1863. Nov. 26	760	ξ² Ceti	....	97 52	29.2	37.6	46.2	54.5	21 3.1	2 20 46.12	− 0.28	+ 11.77	+ 11.76	− 4.94
	837	γ Ceti	....	87 18	49.0	57.2	5.8	13.9	36 22.4	2 36 5.66	− 0.26	+ 11.71	+ 11.76	− 4.86
	949	α Ceti	....	86 25	44.0	52.2	0.8	9.0	55 17.3	2 55 0.66	− 0.26	+ 11.75	+ 11.76	− 4.91
	986	δ Arietis	....	70 46	24.3	33.0	41.9	50.6	3 59.5	3 3 41.86	− 0.24	+ 11.79	+ 11.77	− 5.42
	1166	η Tauri	....	66 17	56.9	5.5	14.9	23.9	39 33.0	3 39 14.84	− 0.22	+ 11.82	+ 11.77	− 5.70
	1420	α Tauri	....	73 45	40.5	48.9	57.5	6.2	28 15.0	4 27 57.62	− 0.24	+ 11.83	+ 11.80	− 5.16
	1520	ι Aurigæ	....	57 2	39.5	49.3	59.3	9.0	48 19.0	4 47 59.22	− 0.22	+ 11.79	+ 11.81	− 6.21
	1623	β Orionis	....	98 21	33.7	42.0	50.6	58.9	8 7.3	5 7 50.50	− 0.28	+ 11.76	+ 11.82	− 4.71
	1681	β Tauri	....	61 30	13.5	22.7	32.4	41.6	17 51.4	5 17 32.32	− 0.22	+ 11.91	+ 11.83	− 5.03
Nov. 29	7478	(a) β Aquarii	....	96 6	58.9	7.1	15.6	24.0	24 32.4	21 24 15.60	− 0.27	+ 8.62	+ 8.72	− 3.31
	7561	ε Pegasi	....	80 43	5.3	13.5	22.1	30.3	37 39.2	21 37 22.08	− 0.24	+ 8.80	+ 8.71	− 3.20
	648	α Arietis	....	67 9	6.2	15.0	24.2	33.0	59 42.3	1 59 24.14	− 0.21	+ 8.69	+ 8.67	− 5.25
	704	67 Ceti	....	97 1	46.5	56.6	5.2	13.4	10 22.3	2 10 5.20	− 0.27	+ 8.72	+ 8.66	− 4.59
	760	ξ² Ceti	....	97 52	32.4	40.8	49.4	57.6	21 6.1	2 20 49.26	− 0.28	+ 8.63	+ 8.66	− 4.94
	837	γ Ceti	....	87 18	52.1	0.2	8.8	17.1	36 25.6	2 36 6.76	− 0.25	+ 8.60	+ 8.65	− 4.86
	949	α Ceti	....	86 25	47.1	55.4	3.8	12.0	55 20.4	2 55 3.74	− 0.25	+ 8.66	+ 8.64	− 4.91
	4729	α Bootis	....	70 8	1.0	9.7	19.0	27.6	9 36.5	14 9 18.76	− 0.22	+ 8.30	+ 8.29	− 2.03
	4808	ρ Bootis	....	59 3	29.6	39.2	49.2	58.8	26 8.8	14 25 49.12	− 0.21	+ 8.21	+ 8.28	− 1.58
	4876	ε Bootis	....	62 22	35.0	44.2	54.0	3.1	39 12.8	14 38 53.82	− 0.21	+ 8.28	+ 8.27	− 1.64
Nov. 30	837	γ Ceti	....	87 18	52.9	1.0	9.5	17.7	36 26.2	2 36 9.46	− 0.25	+ 7.90	+ 7.97	− 4.86
	949	α Ceti	....	86 25	47.8	56.0	4.5	12.6	55 21.1	2 55 4.40	− 0.25	+ 8.00	+ 7.98	− 4.91
	986	δ Arietis	....	70 46	28.0	36.7	45.6	54.4	4 3.3	3 3 45.60	− 0.23	+ 8.06	+ 7.96	− 5.44
	1520	ι Aurigæ	....	57 2	43.2	53.0	3.2	12.9	48 23.0	4 48 3.06	− 0.20	+ 8.00	+ 8.01	− 6.31
	1623	β Orionis	....	98 21	37.3	45.6	54.2	2.7	8 11.3	5 7 54.22	− 0.28	+ 8.10	+ 8.02	− 4.77
	1681	β Tauri	....	61 30	17.4	26.7	36.4	45.7	17 55.5	5 17 36.34	− 0.21	+ 7.95	+ 8.02	− 6.45
	1730	δ Orionis	....	90 23	41.1	49.3	57.7	6.0	25 14.4	5 24 57.70	− 0.25	+ 7.09	+ 8.03	− 4.45
	1765	ε Orionis	....	91 17	56.1	4.5	13.0	21.2	29 29.8	5 29 12.92	− 0.26	+ 7.99	+ 8.03	− 4.93
Dec. 1	8331	ω Piscium	....	83 51	57.0	5.1	13.8	22.0	52 30.5	23 52 13.68	− 0.25	+ 7.29	+ 7.30	− 4.10
	4	α Andromedæ	....	61 37	57.1	6.3	16.0	25.1	1 35.0	0 1 15.90	− 0.21	+ 7.39	+ 7.30	− 4.38
	577	β Arietis	....	69 49	45.0	53.6	2.9	11.5	47 20.5	1 47 2.74	− 0.22	+ 7.15	+ 7.23	− 3.07
	645	....	....	64 48	37.0	46.0	55.5	4.3	59 13.9	1 58 55.34	− 0.21	....	+ 7.22	− 3.39
	702	....		26 16	7.2	26.0	45.5	3.9	10 23.0	2 9 45.12	− 0.20	....	+ 7.22	− 6.36
	738	....		80 19	31.7	40.0	48.6	57.0	17 5.4	2 16 48.54	− 0.24	....	+ 7.21	− 4.98
	764	....	8.0	81 1	57.8	6.0	14.6	23.0	22 31.4	2 22 14.56	− 0.24	....	+ 7.21	− 4.96
	776	....	7.0	88 19	6.2	14.4	23.0	31.1	24 39.7	2 24 22.88	− 0.25	....	+ 7.21	− 4.50
	793	....	6.0	83 45	15.5	23.9	32.3	40.8	28 49.2	2 28 32.34	− 0.25	....	+ 7.20	− 4.82
	822	....	7.5	47 52	3.0	14.0	25.2	36.4	33 47.9	2 33 25.30	− 0.20	....	+ 7.19	− 6.13
	837	γ Ceti	....	87 18	53.6	1.8	10.2	18.5	36 27.0	2 36 10.22	− 0.25	+ 7.14	+ 7.19	− 4.56
	920	....	....	68 54	43.0	51.8	0.8	9.6	51 18.7	2 51 0.78	− 0.22	....	+ 7.18	− 5.45
	949	α Ceti	7.0	86 25	48.8	56.9	5.2	13.3	55 22.0	2 55 5.24	− 0.25	+ 7.18	+ 7.17	− 4.91
	962	....	....	40 53	46.9	59.1	12.0	24.8	59 37.4	2 59 12.04	− 0.19	....	+ 7.17	− 7.09
	980	....	5.0	63 36	59.4	8.8	18.1	27.2	2 36.8	3 2 18.06	− 0.21	....	+ 7.16	− 5.71
	1055	....	7.0	68 25	17.8	26.7	35.9	44.5	16 53.9	3 16 35.76	− 0.22	....	+ 7.16	− 5.57
	1087	f Tauri	8.0	77 31	0.1	8.4	17.1	25.4	23 34.2	3 23 17.04	− 0.23	....	+ 7.15	− 5.28
	1101	....	5.0	58 45	46.6	56.1	6.1	15.8	27 25.7	3 27 6.06	− 0.21	....	+ 7.15	− 6.04
	1126	11 Tauri	7.5	65 6	16.1	25.1	34.6	43.6	32 53.0	3 32 34.48	− 0.21	....	+ 7.15	− 5.75
	1282	....	....	41 15	9.7	22.0	35.0	47.2	4 0.1	4 3 34.80	− 0.19	....	+ 7.14	− 7.45
	1309	ν¹ Eridani	7.0	97 53	39.0	47.2	56.0	4.1	9 12.8	4 8 55.82	− 0.28	....	+ 7.14	− 4.79

(a) Definition bad all night.

Date.	No. in British Association Catalogue.	OBJECT OBSERVED.	Magnitude observed.	North Polar Distance set to.	Wires observed.					Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock		Correction to Mean R.A., Jan. 1, 1863.
					I.	II.	III.	IV.	V.			observed.	interpolated.	
1863				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Dec. 1	1328	γ Tauri	3·0	74 41	41·2	49·9	58·5	7·0	12 15·9	4 11 58·50	− 0·23	....	+ 7·13	− 5·48
	1347	....	8·0	65 54	54·7	3·7	13·0	22·0	15 31·2	4 15 12·92	− 0·21	....	+ 7·13	− 5·84
	1361	....	7·0	71 16	39·5	48·1	57·1	5·8	17 14·9	4 16 57·08	− 0·23	....	+ 7·13	− 5·61
	1376	ε Tauri	....	71 6	18·3	27·0	36·0	44·8	20 53·6	4 20 35·94	− 0·23	+ 7·10	+ 7·13	− 5·62
	1420	α Tauri	....	73 45	45·0	53·5	2·4	11·1	28 19·8	4 28 2·36	− 0·23	+ 7·13	+ 7·13	− 5·53
	1459	....	7·0	34 38	26·0	40·5	55·1	9·8	37 24·4	4 36 55·16	− 0·19	....	+ 7·12	− 8·37
	1491	....	6·0	81 19	50·4	58·7	7·2	15·7	43 24·1	4 43 7·22	− 0·24	....	+ 7·12	− 5·27
	1501	....	7 0	34 23	4·1	18·8	33·8	48·3	46 3·0	4 45 33·60	− 0·20	....	+ 7·11	− 8·42
	1520	ι Aurigæ	....	57 2	44·1	54·0	4·0	13·7	48 23·9	4 48 3·94	− 0·20	+ 7·13	+ 7·11	− 6·32
	1626	....	7·0	49 41	44·0	55·6	6·9	17·4	9 28·6	5 9 6·68	− 0·19	....	+ 7·10	− 6·80
	1656	....	7·0	81 42	57·6	5·9	14·6	23·0	14 31·4	5 14 14·50	− 0·24	....	+ 7·10	− 5·25
	1681	β Tauri	....	61 30	18·2	27·6	37·2	46·5	17 56·1	5 17 37·12	− 0·21	+ 7·19	+ 7·09	− 6·07
	1730	δ Orionis	....	90 23	42·1	50·2	58·8	6·9	25 15·3	5 24 58·66	− 0·25	+ 7·05	+ 7·08	− 4·97
	1765	ε Orionis	....	91 17	57·2	5·4	13·9	22·0	29 30·5	5 29 13·60	− 0·26	+ 7·12	+ 7·08	− 4·94
Dec. 2	8331	ω Piscium	....	83 51	58·0	6·2	14·8	23·0	52 31·4	23 52 14·68	− 0·24	+ 6·26	+ 6·29	− 4·08
	4	α Andromedæ	....	61 37	58·1	7·3	17·0	26·2	1 36·0	0 1 16·92	− 0·20	+ 6·34	+ 6·29	− 4·36
	26	γ Pegasi	....	75 32	52·1	0·5	9·2	17·8	6 26·4	0 6 9·20	− 0·21	+ 6·28	+ 6·29	− 4·24
	725	....	8·0	33 12	50·2	5·3	20·6	35·9	13 51·2	2 13 20·64	− 0·18	....	+ 6·18	− 7·38
	822	....	....	47 52	4·0	15·0	26·4	37·4	33 16·3	2 33 26·34	− 0·19	....	+ 6·17	− 6·33
	837	γ Ceti	....	87 18	54·7	2·8	11·3	19·4	36 27·9	2 36 11·22	− 0·24	+ 6·13	+ 6·17	− 4·86
	949	α Ceti	....	86 25	49·8	57·9	6·2	14·5	55 23·0	2 55 6·28	− 0·24	+ 6·12	+ 6·16	− 4·95
	1055	....	8·0	68 25	18·9	27·6	36·9	45·8	16 54·9	3 16 36·82	− 0·21	....	+ 6·14	− 5·58
	1126	11 Tauri	7·0	65 6	17·0	26·2	35·4	44·4	32 53·9	3 32 35·38	− 0·20	....	+ 6·13	− 5·77
	1166	η Tauri	....	66 17	2·4	11·2	20·4	29·6	39 38·9	3 39 20·50	− 0·20	+ 6·18	+ 6·13	− 5·74
	1262	....	....	41 15	10·6	22·8	35·9	48·3	4 1·0	4 3 35·72	− 0·18	....	+ 6·12	− 7·46
	1309	ο² Eridani	....	97 53	40·0	48·2	56·9	5·1	9 13·6	4 8 56·76	− 0·27	....	+ 6·12	− 4·79
	1328	γ Tauri	....	74 41	42·3	51·0	59·6	8·0	12 16·9	4 11 59·56	− 0·22	....	+ 6·11	− 5·49
	1347	....	7·5	65 54	55·6	4·7	13·9	23·0	15 32·2	4 15 13·88	− 0·20	....	+ 6·11	− 5·84
	1376	ε Tauri	....	71 6	19·2	28·0	37·0	45·7	20 54·8	4 20 36·94	− 0·22	+ 6·10	+ 6·10	− 5·63
	1420	α Tauri	....	73 45	46·1	54·7	3·3	12·0	28 20·9	4 28 3·40	− 0·22	+ 6·09	+ 6·10	− 5·54
	1434	....	....	77 45	12·6	21·0	29·7	38·0	30 46·9	4 30 29·64	− 0·23	....	+ 6·09	− 5·40
	1459	....	7·0	34 38	27·0	41·4	56·4	10·9	37 25·8	4 36 56·30	− 0·18	....	+ 6·09	− 8·38
	1491	....	....	81 19	51·4	59·8	8·2	16·6	43 25·1	4 43 8·22	− 0·23	....	+ 6·08	− 5·28
	1501	....	....	34 23	5·0	19·9	34·9	49·2	46 4·5	4 45 34·70	− 0·18	....	+ 6·08	− 8·44
	1626	....	7·0	49 41	45·9	56·6	7·6	18·4	9 29·6	5 9 7·62	− 0·19	....	+ 6·07	− 6·82
	1656	....	6·0	81 42	58·9	7·0	15·6	24·0	14 32·4	5 14 15·58	− 0·25	....	+ 6·07	− 5·26
	1683	....	....	55 43	25·0	34·8	45·0	55·0	18 5·2	5 17 45·00	− 0·19	....	+ 6·07	− 6·40
	1730	δ Orionis	....	90 23	43·1	51·2	59·6	7·9	25 16·3	5 24 59·62	− 0·25	+ 6·11	+ 6·06	− 4·99
Dec. 3	8034	α Pegasi	....	75 20	37·9	46·2	55·0	3·4	58 12·0	22 57 54·90	− 0·22	+ 5·30	+ 5·32	− 3·69
	4	α Andromedæ	....	61 37	59·0	8·3	18·0	27·2	1 37·0	0 1 17·90	− 0·20	+ 5·35	+ 5·32	− 4·35
	26	γ Pegasi	....	75 32	53·0	1·4	10·2	18·9	6 27·3	0 6 10·16	− 0·21	+ 5·31	+ 5·32	− 4·23
	1376	(a) ε Tauri	....	71 6	20·1	28·9	38·0	46·5	20 55·8	4 20 37·86	− 0·22	+ 5·19	+ 5·20	− 5·64
	1420	α Tauri	....	73 45	47·1	55·6	4·4	13·0	28 21·7	4 28 4·36	− 0·22	+ 5·14	+ 5·20	− 5·55
	1623	β Orionis	....	98 21	40·4	48·7	57·2	5·4	8 14·1	5 7 57·16	− 0·27	+ 5·18	+ 5·20	− 4·60
	1681	β Tauri	....	61 30	20·1	29·6	39·2	48·5	17 58·2	5 17 39·12	− 0·20	+ 5·21	+ 5·20	− 6·10
	1730	δ Orionis	....	90 23	44·0	52·1	0·5	8·9	25 17·2	5 25 0·54	− 0·25	+ 5·20	+ 5·20	− 5·00
	1765	ε Orionis	....	91 17	59·0	7·2	15·9	24·0	29 32·4	5 29 15·70	− 0·26	+ 5·25	+ 5·20	− 4·97

(a) An apparent inversion of clock rate between 4ʰ and 6ʰ.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1863.
1863.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Dec. 6	648	α Arietis	....	67 9	11·8	20·8	29·8	38·7	59 48·0	1 59 29·82	– 0·21	+ 2·98	+ 2·97	– 5·22
	704	67 Ceti	....	97 1	54·1	2·5	11·0	19·2	10 27·7	2 10 10·90	– 0·26	+ 2·98	+ 2·96	– 4·56
	760	ξ^1 Ceti	....	97 52	38·0	46·4	55·0	3·2	21 11·8	2 20 54·88	– 0·27	+ 2·96	+ 2·96	– 4·92
	837	γ Ceti	....	87 18	57·9	6·0	14·4	22·7	36 31·1	2 36 14·42	– 0·24	+ 2·92	+ 2·95	– 4·85
Dec. 8	1376	ε Tauri	....	71 6	24·4	33·0	42·0	50·6	20 59·6	4 20 41·92	– 0·20	+ 1·16	+ 1·18	– 5·69
	1420	α Tauri	....	73 45	51·1	59·4	8·2	17·0	28 25·9	4 28 8·32	– 0·20	+ 1·21	+ 1·17	– 5·60
	1459	....	6·0	34 38	31·9	46·3	1·5	15·8	37 30·8	4 37 1·26	– 0·14	....	+ 1·17	– 8·47
	1491	....	6·0	81 19	56·4	4·5	13·1	21·3	43 30·1	4 43 13·08	– 0·21	....	+ 1·16	– 5·35
	1501	....	7·0	34 23	10·2	24·9	39·9	54·0	46 9·1	4 45 39·62	– 0·14	....	+ 1·16	– 8·53
	1520	ι Aurigæ	....	57 2	50·0	0·0	10·0	19·8	48 30·0	4 48 9·96	– 0·17	+ 1·18	+ 1·15	– 6·42
	1681	β Tauri	....	61 30	24·3	33·7	43·4	52·8	18 2·3	5 17 43·30	– 0·18	+ 1·09	+ 1·12	– 6·18
Dec. 9	1520	ι Aurigæ	....	57 2	50·9	0·6	10·9	20·6	48 30·7	4 48 10·74	– 0·17	+ 0·41	+ 0·42	– 6·43
	1681	β Tauri	....	61 30	25·1	34·4	44·0	53·4	18 3·0	5 17 43·98	– 0·18	+ 0·43	+ 0·41	– 6·20
	1730	δ Orionis	....	90 23	48·8	57·[illegible]	5·3	13·6	25 22·1	5 25 5·36	– 0·23	+ 0·44	+ 0·41	– 5·06
	1765	ε Orionis	....	91 17	4·0	12·1	20·7	29·0	29 37·4	5 29 20·64	– 0·24	+ 0·37	+ 0·40	– 5·05
	1883	α Orionis	....	82 37	33·7	42·0	50·5	58·8	48 7·3	5 47 50·46	– 0·21	+ 0·40	+ 0·39	– 6·32
Dec. 10	949	α Ceti	....	86 25	56·0	4·2	12·9	21·0	55 29·4	2 55 12·70	– 0·23	– 0·32	– 0·32	– 4·91
	985	....	7·0	15 14	38·8	10·0	42·0	13·0	5 45·0	3 4 41·76	– 0·13	....	– 0·32	– 13·24
	1057	ο Tauri	4·0	81 26	15·6	23·9	32·3	40·8	17 49·2	3 17 32·36	– 0·21	....	– 0·33	– 5·16
	1166	η Tauri	....	66 17	8·9	17·9	27·2	36·0	39 45·3	3 39 27·06	– 0·18	– 0·36	– 0·34	– 5·78
	1282	....	8·0	41 15	17·0	29·6	42·6	55·0	4 7·9	4 3 42·42	– 0·15	....	– 0·36	– 7·53
	1309	e^3 Eridani	....	97 53	46·5	54·9	3·5	11·6	9 20·0	4 9 3·30	– 0·26	....	– 0·36	– 4·88
	1328	γ Tauri	4·5	74 41	49·0	57·4	6·2	14·9	12 23·6	4 12 6·22	– 0·19	....	– 0·37	– 5·54
	1361	....	6·0	71 16	47·0	55·9	4·7	13·3	17 22·2	4 17 4·62	– 0·20	....	– 0·37	– 5·69
	1376	ε Tauri	....	71 6	26·0	34·7	43·4	52·2	21 1·2	4 20 43·50	– 0·20	– 0·41	– 0·37	– 5·70
	1420	α Tauri	....	73 45	52·8	1·2	10·0	18·4	28 27·2	4 28 9·92	– 0·20	– 0·38	– 0·37	– 5·61
	1434	....	6·0	77 45	19·1	27·6	36·1	44·8	30 53·3	4 30 36·18	– 0·21	....	– 0·37	– 5·47
	1463	....	7·0	66 37	15·0	23·9	33·0	42·0	37 51·1	4 37 33·00	– 0·19	....	– 0·37	– 5·92
	1520	ι Aurigæ	....	57 2	51·6	1·4	11·8	21·2	48 31·5	4 48 11·50	– 0·17	– 0·34	– 0·38	– 6·44
	1626	....	7·0	49 41	52·4	3·2	14·1	25·2	9 36·1	5 9 14·20	– 0·16	....	– 0·39	– 6·95
	1656	....	7·0	81 42	5·4	13·7	22·2	30·4	14 39·0	5 14 22·14	– 0·21	....	– 0·39	– 5·37
	1683	....	6·0	55 43	31·4	41·4	51·8	1·6	18 11·9	5 17 51·62	– 0·17	....	– 0·40	– 6·54
	1703	....	8·0	73 40	4·5	13·1	21·9	30·4	20 39·4	5 20 21·86	– 0·20	....	– 0·40	– 5·66
	1730	δ Orionis	....	90 23	49·8	57·8	6·2	14·4	25 23·0	5 25 6·24	– 0·23	– 0·43	– 0·40	– 5·09
	1766	....	6·0	80 47	12·0	20·4	29·0	37·3	29 45·9	5 29 28·92	– 0·21	....	– 0·41	– 5·40
	1826	....	7·0	80 31	10·0	18·4	27·0	35·2	39 44·0	5 39 26·92	– 0·21	....	– 0·42	– 5·40
	1883	α Orionis	....	82 37	34·7	42·8	51·2	59·4	48 8·0	5 47 51·22	– 0·21	– 0·35	– 0·42	– 5·33
Dec. 12	986	δ Arietis	....	70 46	38·1	46·7	55·6	4·4	4 13·4	3 3 55·64	– 0·19	– 2·02	– 2·05	– 5·44
	1166	η Tauri	....	66 17	10·7	19·5	28·7	37·9	39 47·0	3 39 28·76	– 0·18	– 2·06	– 2·05	– 5·78
	1376	ε Tauri	....	71 6	27·8	36·4	45·3	54·[illegible]	21 2·9	4 20 45·28	– 0·19	– 2·18	– 2·05	– 5·72
	1420	α Tauri	....	73 45	54·2	3·0	11·6	20·2	28 29·0	4 28 11·60	– 0·20	– 2·05	– 2·05	– 5·63
	1520	ι Aurigæ	....	57 2	53·3	3·1	13·2	23·0	48 33·0	4 48 13·12	– 0·16	– 1·95	– 2·05	– 6·46
Dec. 17	1166	η Tauri	....	66 17	13·3	22·4	31·5	40·7	39 49·9	3 39 31·56	– 0·17	– 4·86	– 4·86	– 5·79
	1376	ε Tauri	....	71 6	30·3	39·0	48·1	56·8	21 5·8	4 20 48·00	– 0·18	– 4·88	– 4·86	– 5·75
	1420	α Tauri	....	73 45	57·2	5·5	14·4	23·2	28 31·9	4 28 14·44	– 0·20	– 4·85	– 4·86	– 5·66
	1765	ε Orionis	....	91 17	9·3	17·6	26·0	34·2	29 42·8	5 29 25·98	– 0·23	– 4·88	– 4·87	– 5·15

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1. 1863.
1863.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Dec. 17	1883	α Orionis	....	82 37	39·0	47·2	55·9	4·1	48 12·7	5 47 55·78	− 0·21	− 4·81	− 4·87	− 5·43
Dec. 18	1681	β Tauri	....	61 30	30·7	39·9	49·4	58·8	18 8·6	5 17 49·48	− 0·17	− 4·97	− 5·00	− 6·31
	1730	δ Orionis	....	90 23	54·2	2·4	11·0	19·2	25 27·5	5 25 10·81	− 0·24	− 4·90	− 5·00	− 5·18
	2047	μ Geminorum	....	67 25	33·8	42·4	51·7	0·5	15 9·8	6 14 51·64	− 0·18	− 5·15	− 5·00	− 5·98
	2163	γ Geminorum	....	73 29	41·5	49·9	58·8	7·2	30 16·1	6 29 58·70	− 0·20	− 4·98	− 5·00	− 5·71
Dec. 20	1166	η Tauri	....	66 17	13·7	22·5	31·8	40·9	39 50·2	3 39 31·82	− 0·20	− 5·09	− 5·06	− 5·79
	1376	ε Tauri	....	71 6	30·5	39·3	48·4	57·0	21 5·9	4 20 48·22	− 0·21	− 5·06	− 5·06	− 5·76
	1420	α Tauri	....	73 45	57·4	5·9	14·6	23·3	28 32·2	4 28 14·72	− 0·22	− 5·10	− 5·06	− 5·67
	1520	ι Aurigæ	....	57 2	56·5	6·2	16·4	26·0	48 36·1	4 48 16·24	− 0·17	− 4·99	− 5·06	− 6·53
Dec. 21	1520	ι Aurigæ	....	57 2	56·8	6·2	16·4	26·4	48 36·5	4 48 16·46	− 0·17	− 5·21	− 5·21	− 6·53
	1623	β Orionis	....	98 21	51·0	59·2	7·8	16·1	8 24·5	5 8 7·72	− 0·30	− 5·19	− 5·21	− 4·96
	1681	β Tauri	....	61 30	31·0	40·1	49·9	59·1	18 8·9	5 17 49·80	− 0·18	− 5·26	− 5·21	− 6·33
	1883	α Orionis	....	82 37	30·4	47·6	56·3	4·6	48 13·2	5 47 56·22	− 0·24	− 5·18	− 5·21	− 5·47
	6281	δ Ursæ Minoris S. P.	....	3 24	8·5	32·0	50·5	13·5	20 32·5	6 15 51·40	− 0·96	....	− 5·22	+ 46·90
	2163	γ Geminorum	....	73 29	11·8	50·3	59·1	7·6	30 16·3	6 29 59·02	− 0·22	....	− 5·22	− 5·76
Dec. 23	453	η Piscium	....	75 19	2·9	11·2	20·0	28·4	24 37·1	1 24 19·92	− 0·12	− 5·82	− 5·84	− 4·61
	518	ν Piscium	....	85 10	12·0	20·2	28·9	37·0	34 45·6	1 34 28·74	− 0·15	− 5·90	− 5·83	− 4·48
	577	β Arietis	....	69 49	58·0	6·5	15·5	24·1	47 33·3	1 47 15·48	− 0·12	− 5·84	− 5·83	− 4·92
	1681	β Tauri	....	61 30	31·4	40·8	50·4	59·6	18 9·4	5 17 50·32	− 0·11	− 5·83	− 5·83	− 6·35
	1730	δ Orionis	....	90 23	55·0	3·2	11·9	19·9	25 28·4	5 25 11·68	− 0·16	− 5·82	− 5·83	− 5·21
	1765	ε Orionis	....	91 17	10·4	18·5	26·9	35·1	29 43·6	5 29 26·90	− 0·16	− 5·83	− 5·83	− 5·19
	1883	α Orionis	....	82 37	40·0	48·3	56·9	5·0	48 13·7	5 47 56·78	− 0·14	− 5·83	− 5·83	− 5·48
	6281	δ Ursæ Minoris S. P.	....	3 24	7·5	31·5	49·0	12·5	20 32·0	6 15 50·50	+ 0·38	....	− 5·83	+ 47·08
	2163	γ Geminorum	....	73 29	42·2	50·8	59·6	8·0	30 16·9	6 29 59·50	− 0·13	....	− 5·83	− 5·78
Dec. 24	7368	(a) ζ Cygni	....	60 18	55·5	5·0	14·7	24·2	7 ...	21 7 14·67	− 0·11	− 5·89	− 5·86	− 2·25
	1376	ε Tauri	....	71 6	31·5	40·1	49·1	57·8	20 ...	4 20 49·04	− 0·13	− 5·96	− 5·86	− 5·76
	1420	α Tauri	....	73 45	58·0	6·4	15·4	23·8	28 ...	4 28 15·26	− 0·13	− 5·72	− 5·86	− 5·68
	1520	ι Aurigæ	....	57 2	57·2	7·0	17·1	27·0	48 ...	4 48 17·07	− 0·11	− 5·86	− 5·86	− 6·55
	1681	β Tauri	....	61 30	31·4	40·8	50·4	59·8	17 ...	5 17 50·36	− 0·11	− 5·86	− 5·86	− 6·36
Dec. 26	1520	ι Aurigæ	....	57 2	57·9	7·5	17·8	27·4	48 ...	4 48 17·61	− 0·09	− 6·45	− 6·45	− 6·55
	1623	β Orionis	....	98 21	52·2	0·4	9·0	17·2	8 ...	5 8 8·94	− 0·15	− 6·54	− 6·46	− 4·98
	1681	β Tauri	....	61 30	32·1	41·2	51·0	0·3	18 ...	5 17 50·91	− 0·09	− 6·42	− 6·46	− 6·37
	1730	δ Orionis	....	90 23	55·9	3·9	12·3	20·4	25 ...	5 25 12·30	− 0·14	− 6·44	− 6·47	− 5·23
	1765	ε Orionis	....	91 17	11·0	19·1	27·5	35·7	29 ...	5 29 27·51	− 0·14	− 6·44	− 6·48	− 5·21
	1883	(b) α Orionis	....	82 37	40·8	49·0	57·5	5·8	48 ...	5 47 57·50	− 0·13	− 6·53	− 6·49	− 5·51
Dec. 29	577	β Arietis	....	69 49	58·4	7·8	16·8	25·2	47 ...	1 47 16·51	− 0·09	− 6·96	− 7·04	− 4·86
	648	α Arietis	....	67 9	21·4	30·4	39·8	48·5	59 ...	1 59 39·56	− 0·08	− 7·07	− 7·04	− 5·04
	1420	α Tauri	....	73 45	59·3	7·8	16·6	25·2	28 ...	4 28 16·56	− 0·09	− 7·07	− 7·04	− 5·69
	1681	β Tauri	....	61 30	32·9	42·1	51·6	1·0	18 ...	5 17 51·66	− 0·08	− 7·16	− 7·04	− 6·39
	1730	δ Orionis	....	90 23	56·2	4·4	13·0	21·1	25 ...	5 25 12·86	− 0·12	− 7·00	− 7·04	− 5·25
	1765	ε Orionis	....	91 17	11·4	19·6	28·0	36·4	29 ...	5 29 28·04	− 0·12	− 6·97	− 7·04	− 5·23
	1883	α Orionis	....	82 37	41·1	49·5	58·2	6·3	48 ...	5 47 58·00	− 0·11	− 7·03	− 7·04	− 5·53

(a) Transit instrument reversed, and shortly after it was found that Wire V. was broken.

(b) Definition bad all night.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1868.
1863.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Dec. 31	1765	ι Orionis	....	91 17	12·0	20·2	28·6	36·9	29 ...	5 29 28·61	− 0·11	− 7·56	− 7·56	− 5·23
	1883	α Orionis	....	82 37	41·6	50·0	56·6	6·8	48 ...	5 47 58·47	− 0·09	− 7·51	− 7·56	− 5·54
	1958	ν Orionis	....	75 13	41·2	49·9	58·4	7·0	0 ...	5 59 58·45	− 0·08	− 7·56	− 7·56	− 5·82
	2047	μ Geminorum	....	67 25	36·0	45·0	54·3	3·1	15 ...	6 14 54·13	− 0·07	− 7·58	− 7·56	− 6·15
	2163	γ Geminorum	....	73 29	44·1	52·5	1·5	10·0	30 ...	6 30 1·38	− 0·08	− 7·61	− 7·56	− 5·88

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ROYAL OBSERVATORY, EDINBURGH.

INDIVIDUAL OBSERVATIONS OF MEAN RIGHT ASCENSIONS OF THE STARS OBSERVED AT THE ROYAL OBSERVATORY, EDINBURGH, IN THE YEAR 1863, REDUCED TO JANUARY 1, 1863.

B.A.C. 4, α Andromedæ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
			° ′	h. m. s.
Jan. 27	0·07	(1·0) (a)	61 40	0 1 18·72
Sept. 16	0·71			18·84
21	0·72			18·73
22	0·72			18·77
23	0·73			18·59
28	0·74			18·78
29	0·74			18·68
Oct. 5	0·76			18·68
22	0·80			18·66
Nov. 4	0·84			18·69
24	0·90			18·71
Dec. 1	0·91			18·61
2	0·92			18·65
3	0·92			18·67

B.A.C. 26, γ Pegasi.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Jan. 27	0·07	(2·0)	75 35	0 6 11·03
Sept. 21	0·72			11·04
23	0·73			11·01
28	0·74			11·00
29	0·74			11·05
Oct. 5	0·76			10·97
22	0·80			10·93
Nov. 4	0·84			11·08
24	0·90			11·06
Dec. 2	0·92			11·04
3	0·92			11·04

B.A.C. 28.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Sept. 16	0·71	6·5	49 43	0 6 24·60

B.A.C. 42.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Sept. 16	0·71	z	86 31	0 8 55·49

B.A.C. 112, 12 Ceti.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
			° ′	h. m. s.
Sept. 23	0·73	(6·0)	94 43	0 23 2·88
Nov. 11	0·86			2·75

B.A.C. 133.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Nov. 11	0·86	(8·0)	70 19	0 26 29·79

B.A.C. 149.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Nov. 10	0·86	7·0	77 32	0 28 48·89
11	0·86			49·25

B.A.C. 164, ε Andromedæ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Nov. 10	0·86	4·0	61 26	0 31 19·31
11	0·86			19·37

B.A.C. 177.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Nov. 10	0·86	6·0	81 23	0 34 7·20
11	0·86	8·0		7·35

B.A.C. 197.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Nov. 10	0·86		42 53	0 36 50·43
11	0·86	6·0		50·60

B.A.C. 224.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Nov. 10	0·86		62 2	0 41 49·14
11	0·86	7·0		49·20

B.A.C. 237.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Nov. 10	0·86	7·0	87 21	0 44 15·17
11	0·86	6·5		15·11

B.A.C. 259, μ Andromedæ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
			° ′	h. m. s.
Nov. 10	0·86	4·0	52 15	0 49 9·41
11	0·86	3·0		9·60

B.A.C. 288, ε Piscium.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Oct. 6	0·76	(4·0)	82 51	0 55 50·03
9	0·77			50·01
14	0·78			50·03
20	0·80			50·11
21	0·80			49·94
Nov. 2	0·84			49·96
4	0·84			50·07
10	0·86			49·96
11	0·86			50·10

B.A.C. 420, θ Ceti.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Oct. 14	0·78	(3·0)	98 53	1 17 10·64
20	0·80			10·57

B.A.C. 453, η Piscium.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Oct. 6	0·76	(4·0)	75 22	1 24 9·36
9	0·77			9·32
14	0·78			9·41
20	0·80			9·41
21	0·80			9·33
29	0·82			9·33
Nov. 2	0·84			9·35
4	0·84			9·35
10	0·86			9·26
11	0·86			9·35
18	0·88			9·31
Dec. 23	0·97			9·35

(a) Magnitudes in parenthesis, are the tabular ones of the British Association Catalogue.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
B.A.C. 518, ν Piscium.				
			° ′	h. m. s.
Oct. 6	0·76	(5·0)	85 12	1 34 18·24
9	0·77			18·26
14	0·78			18·27
20	0·80			18·24
21	0·80			18·26
23	0·81			18·27
29	0·82			18·31
Nov. 2	0·84			18·30
6	0·85			18·19
18	0·88			18·25
Dec. 23	0·97			18·28
B.A.C. 538.				
Nov. 6	0·85	7·0	73 16	1 39 9·49
B.A.C. 547. (a)				
Nov. 6	0·85	(6·0)	42 47	1 40 46·26
B.A.C. 562.				
Nov. 6	0·85	(6·5)	39 12	1 44 6·42
B.A.C. 577, β Arietis.				
Oct. 6	0·76	(3·0)	69 52	1 47 4·60
9	0·77			4·70
14	0·78			4·58
20	0·80			4·66
21	0·80			4·75
23	0·81			4·60
Nov. 2	0·84			4·52
4	0·84			4·55
6	0·85			4·62
10	0·86			4·66
11	0·86			4·65
18	0·88			4·59
25	0·90			4·66
Dec. 1	0·91			4·68
23	0·97			4·61
29	0·99			4·52

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
B.A.C. 588.				
			° ′	h. m. s.
Nov. 4	0·84	7·0	26 3	1 49 34·09
6	0·85	6·0		34·18
10	0·86	6·0		34·04
B.A.C. 620.				
Nov. 4	0·84	8·0	25 33	1 54 24·40
10	0·86	7·0		24·44
B.A.C. 645.				
Nov. 10	0·86	7·5	64 49	1 58 57·11
11	0·86	7·0		57·08
Dec. 1	0·91			57·06
B.A.C. 648, α Arietis.				
Oct. 6	0·76	(2·0)	67 11	59 27·32
9	0·77			27·40
20	0·80			27·27
21	0·80			27·38
23	0·81			27·33
Nov. 2	0·84			27·39
6	0·85			27·39
18	0·88			27·44
25	0·90			27·53
29	0·91			27·35
Dec. 6	0·93			27·36
29	0·99			27·40
B.A.C. 694.				
Nov. 10	0·86	7·0	26 13	2 8 16·23
11	0·86	7·5		16·47
25	0·90	7·0		16·45
B.A.C. 702.				
Nov. 11	0·86	7·0	26 18	2 9 43·85
25	0·90	7·5		43·68
Dec. 1	0·91			43·78
B.A.C. 704, 67 Ceti.				
Oct. 23	0·81	(6·0)	97 3	2 10 9·07
Nov. 29	0·91			9·00
Dec. 6	0·93			9·04

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
B.A.C. 725. (b)				
			° ′	h. m. s.
Nov. 11	0·86	7·0	33 15	2 13 19·18
25	0·90			19·25
Dec. 2	0·92	8·0		19·26
B.A.C. 738.				
Nov. 10	0·86	7·5	80 21	2 16 50·70
11	0·86	7·0		50·58
25	0·90	7·5		50·63
Dec. 1	0·91	8·0		50·55
B.A.C. 760, ξ² Ceti.				
Nov. 4	0·84	(4·0)	82 9	2 20 52·75
25	0·90			52·72
26	0·90			52·68
29	0·91			52·73
Dec. 6	0·93			52·70
B.A.C. 764.				
Nov. 11	0·86	6·5	81 3	2 22 16·67
25	0·90	7·0		16·58
Dec. 1	0·91	7·0		16·57
B.A.C. 776.				
Nov. 11	0·86		88 20	2 24 25·15
25	0·90	6·0		25·09
Dec. 1	0·91	6·0		25·04
B.A.C. 793.				
Nov. 11	0·86	6·0	83 46	2 28 34·39
25	0·90	6·0		34·39
Dec. 1	0·91	7·5		34·37
B.A.C. 822. (c)				
Nov. 25	0·90	8·0	47 53	2 33 25·88
Dec. 1	0·91			25·96
2	0·92			25·99
B.A.C. 837, γ Ceti.				
Oct. 23	0·81	(3·0)	87 20	2 36 12·27
29	0·82			12·18
Nov. 2	0·84			12·24

(a) Large discrepancy from Tab. R. A.

(b) Large difference from Tab. R. A.

(c) Called a Nebula in Brit. Assoc. Cat.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
B.A.C. 837, γ Ceti.				
			° ′	h. m. s.
Nov. 6	0·85	(3·0)	87 20	2 36 12·25
10	0·86			12·26
19	0·88			12·31
25	0·90			12·24
26	0·90			12·30
29	0·91			12·30
30	0·91			12·32
Dec. 1	0·91			12·30
2	0·[illegible]			12·29
6	0·93			12·28
B.A.C. 881, ν Arietis.				
Nov. 10	0·86	6·5	75 29	2 43 55·99
11	0·86	6·0		56·09
25	0·90			55·98
B.A.C. 891.				
Nov. 11	0·86	(8·0)	84 5	2 45 25·07
25	0·90			25·03
B.A.C. 920.				
Nov. 10	0·86	7·0	68 56	2 51 2·29
11	[illegible]·86			2·37
25	0·90	7·0		2·21
Dec. 1	0·91	7·0		2·29
B.A.C. 949, α Ceti.				
Oct. 2[illegible]	0·81	(2·5)	86 27	2 55 7·16
29	0·82			7·26
Nov. 2	0·84			7·20
6	0·85			7·16
10	0·86			7·19
11	0·86			7·27
19	0·88			7·19
25	0·90			7·18
26	0·90			7·22
29	0·91			7·19
30	0·91			7·19
Dec. 1	0·91			7·22
2	0·92			7·25
10	0·94			7·21
B.A.C. 962, ι Persei.				
Nov. 10	0·86	5·0	40 55	2 59 11·96
25	0·90	4·0		11·97
Dec. 1	0·91	5·0		11·93
B.A.C. 980.				
Nov. 10	0·86	6·5	63 38	3 2 19·35
25	0·90			19·34
Dec. 1	0·91	7·0		19·30
B.A.C. 986, δ Arietis.				
Nov. 19	0·88	(4·0)	70 48	3 3 47·96
24	0·90			47·94
25	0·90			47·96
26	0·90			47·97
30	0·91			47·91
Dec. 12	0·94			47·96
B.A.C. 985.				
Dec. 10	0·94	7·0	15 16	3 4 28·07
B.A.C. 1055.				
Nov. 10	0·86	7·5	68 27	3 16 37·13
Dec. 1	0·91	8·0		37·13
2	0·92	8·0		37·17
B.A.C. 1057, ο Tauri.				
Dec. 10	0·94	4·0	81 27	3 17 26·66
B.A.C. 1087, f Tauri.				
Nov. 10	0·86	5·0	77 31	3 23 18·73
25	0·90	5·0		18·75
Dec. 1	0·91	5·0		18·68
B.A.C. 1101.				
Nov. 10	0·86	7·0	58 47	3 27 7·06
25	0·90	8·0		7·03
Dec. 1	0·91	7·5		6·96
B.A.C. 1126.				
			° ′	h. m. s.
Nov. 10	0·86	7·0	65 7	3 32 35·71
Dec. 1	0·91			35·66
2	0·92	7·0		35·54
B.A.C. 1166, η Tauri.				
Nov. 6	0·85	(3·0)	66 19	3 39 20·76
10	0·86			20·76
11	0·86			20·74
19	0·88			20·73
24	0·90			20·80
25	0·90			20·69
26	0·90			20·69
Dec. 2	0·92			20·69
10	0·94			20·76
12	0·94			20·75
17	0·96			20·74
20	0·97			20·77
B.A.C. 1252.				
Dec. 1	0·91	7·0	41 16	4 3 34·29
2	0·92			34·20
10	[illegible]·94	8·0		34·38
B.A.C. 1309, ο² Eridani.				
Dec. 1	0·91	(4·5)	97 51	4 8 57·89
2	0·92			57·82
10	0·94			57·80
B.A.C. 1326, γ Tauri.				
Dec. 1	0·91	3·0	74 42	4 11 59·92
2	0·92			59·96
10	0·94	4·5		60·12
B.A.C. 1347.				
Dec. 1	0·91	8·0	65 55	4 15 14·00
2	0·92	7·5		13·95
B.A.C. 1361.				
Dec. 1	0·91	7·0	71 16	4 16 58·37
10	0·94	6·0		58·36

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
B.A.C. 1376, ι Tauri.				
			° ′	h. m. s.
Nov. 19	0·88	(3·5)	71 8	4 20 37·24
Dec. 1	0·91			37·22
2	0·92			37·19
3	0·92			37·20
8	0·93			37·21
10	0·94			37·23
[illegible]	0·94			37·32
17	0·96			37·21
20	0·97			37·19
24	0·98			37·29
B.A.C. 1420, α Tauri.				
Nov. 19	0·88	(1·0)	73 46	4 28 3·79
24	0·90			3·70
26	0·90			3·70
Dec. 1	0·91			3·73
2	0·92			3·74
3	0·92			3·79
8	0·93			3·69
10	0·94			3·74
12	0·94			3·72
17	0·96			3·72
20	0·97			3·77
24	0·98			3·59
29	0·99			3·76
B.A.C. 1434.				
Dec. 2	0·92		77 46	4 30 30·10
10	0·94	6·0		30·13
B.A.C. 1459.				
Dec. 1	0·91	7·0	34 39	4 36 53·72
2	0·92	7·0		53·83
8	0·93	6·0		53·82
B.A.C. 1463.				
Dec. 10	0·94	7·0	66 38	4 37 26·52
B.A.C. 1491.				
Dec. 1	0·91	6·0	81 20	4 43 8·83
2	0·92			8·79
8	0·93	6·0		8·68

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
B.A.C. 1501.				
			° ′	h. m. s.
Dec. 1	0·91	7·0	34 24	4 45 32·09
2	0·92			32·16
8	0·93	7·0		32·11
B.A.C. 1520, ι Aurigæ.				
Nov. 24	0·90	(4·0)	57 3	4 48 4·44
25	0·90			4·45
26	0·90			4·57
30	0·91			4·56
Dec. 1	0·91			4·53
8	0·93			4·52
9	0·94			4·56
10	0·94			4·51
12	0·94			4·45
20	0·97			4·48
21	0·97			4·55
24	0·98			4·55
26	0·98			4·55
B.A.C. 1623, β Orionis.				
Nov. 26	0·90	(1·0)	98 22	5 7 57·33
30	0·91			57·19
Dec. 3	0·92			57·29
21	0·97			57·25
26	0·98			57·35
B.A.C. 1626.				
Dec. 1	0·91	7·0	49 41	5 9 6·79
2	0·92	7·0		6·68
10	0·94	7·0		6·70
B.A.C. 1656.				
Dec. 1	0·91	7·0	81 42	5 14 16·11
2	0·92	6·0		16·16
10	0·94	7·0		16·17
B.A.C. 1681, β Tauri.				
Nov. 26	0·90	(2·0)	61 30	5 17 37·95
30	0·91			38·10
Dec. 1	0·91			37·93
3	0·92			38·02
8	0·93			38·06

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
B.A.C. 1681, β Tauri.				
			° ′	h. m. s.
Dec. 9	0·94	(2·0)	61 30	5 17 38·01
18	0·96			38·00
21	0·97			38·08
23	0·98			38·03
24	0·98			38·03
26	0·98			37·99
29	0·99			38·15
B.A.C. 1683.				
Dec. 2	0·92		55 44	5 17 44·48
10	0·94	6·0		44·51
B.A.C. 1703.				
Dec. 10	0·94	8·0	73 41	5 20 15·60
B.A.C. 1730, δ Orionis.				
Nov. 30	0·91	(2·0)	90 24	5 25 0·53
Dec. 1	0·91			0·52
2	0·92			0·44
3	0·92			0·49
9	0·94			0·46
10	0·94			0·52
18	0·96			0·39
23	0·97			0·48
26	0·98			0·46
29	0·99			0·45
B.A.C. 1765, ι Orionis.				
Nov. 30	0·91	(2·5)	91 18	5 29 15·76
Dec. 1	0·91			15·68
3	0·92			15·67
9	0·94			15·75
17	0·96			15·73
23	0·97			15·72
26	0·98			15·68
29	0·99			15·65
31	0·99			15·71
B.A.C. 1766.				
Dec. 10	0·94	6·0	80 47	5 29 22·90

B.A.C. 1826.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Dec. 10	0·94	7·0	80° 31′	5h 39m 20s·89

B.A.C. 1883, α Orionis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Jan. 14	0·04	(1·0)	82 37	5 47 45·26
Dec. 9	0·94			45·32
10	0·94			45·26
17	0·96			45·27
21	0·97			45·30
23	0·97			45·33
26	0·98			45·37
29	0·99			45·32
31	0·99			45·28

B.A.C. 1958, ν Orionis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Jan. 7	0·02	(4·5)	75 13	5 59 45·06
14	0·04			45·09
Dec. 31	0·99			44·99

B.A.C. 2047, μ Geminorum.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Dec. 18	0·96	(3·0)	67 25	6 14 40·48
31	0·99			40·35

B.A.C. 2163, γ Geminorum.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Jan. 5	0·01	(2·5)	73 29	6 29 47·82
7	0·02			47·87
14	0·04			47·83
Dec. 18	0·96			47·79
21	0·97			47·82
23	0·97			47·76
31	0·99			47·86

B.A.C. 2410, δ Geminorum.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Jan. 2	0·00	(3·0)	67 46	7 11 56·31
7	0·02			56·38
12	0·03			56·36
13	0·03			56·36
14	0·04			56·30
20	0·05			56·32
23	0·06			56·29
27	0·07			56·37
Feb. 2	0·09			56·35
8	0·10			56·44
15	0·12			56·33

B.A.C. 2485, α² Geminorum.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Jan. 5	0·01	(1·5)	57° 49′	7h 25m 51s·26
7	0·02			51·26
12	0·03			51·31
13	0·03			51·33
14	0·04			51·19
20	0·05			51·25
22	0·06			51·35
23	0·06			51·32
27	0·07			51·33
Feb. 2	0·09			51·37
8	0·10			51·27
15	0·12			51·27

B.A.C. 2522, α Canis Minoris.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Jan. 2	0·00	(1·0)	84 26	7 32 7·81
5	0·01			7·76
7	0·02			7·63
12	0·03			7·75
13	0·03			7·63
14	0·04			7·72
22	0·06			7·63
23	0·06			7·70
27	0·07			7·69
30	0·08			7·72
Feb. 2	0·09			7·61
6	0·10			7·69
8	0·10			7·74
15	0·12			7·74

B.A.C. 2555, β Geminorum.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Jan. 2	0·00	(2·0)	61 39	7 36 55·62
5	0·01			55·78
7	0·02			55·72
12	0·03			55·71
13	0·03			55·66
14	0·04			55·73
20	0·05			55·74
22	0·06			55·77
23	0·06			55·80
27	0·07			55·76
30	0·08			55·79
Feb. 2	0·09			55·73
4	0·09			55·69
6	0·10			55·79
8	0·10			55·64
15	0·12			55·76

B.A.C. 2672.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Jan. 2	0·00	(5·5)	61° 49′	7h 55m 6s·05
5	0·01			5·90
12	0·03			6·00
13	0·03			6·05
20	0·05			5·96
22	0·06			5·96
23	0·06			5·93
Feb. 6	0·10			5·87

B.A.C. 2862, η Cancri.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Feb. 3	0·09	(6·0)	69 6	8 24 46·98
4	0·09			47·01
6	0·10			47·02
16	0·13			47·01
28	0·16			47·01
Mar. 1	0·16			47·01

B.A.C. 2971, ι Hydræ.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Jan. 7	0·02	(4·0)	83 5	8 39 31·16
12	0·03			31·06
13	0·03			31·19
14	0·04			31·27
20	0·05			31·11
22	0·06			31·12
27	0·07			31·17
30	0·08			31·11
Feb. 3	0·09			31·07
4	0·09			31·04
10	0·11			31·11
12	0·12			31·11
13	0·12			31·13
16	0·13			31·03
28	0·16			30·96
Mar. 1	0·16			31·09

B.A.C. 3171.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Jan. 30	0·08	(6·0)	71 43	9 11 19·96
Feb. 2	0·09			19·99
3	0·09			19·92
4	0·09			19·88
9	0·11			19·88
10	0·11			19·92
12	0·12			19·95
13	0·12			19·95

B.A.C. 3171.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
			° ′	h. m. s.
Feb. 16	0·13	(6·0)	71 43	9 11 19·87
21	0·14			19·96
28	0·16			19·90
Mar. 1	0·16			19·81

B.A.C. 3331, ε Leonis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Jan. 23	0·06	(3·0)	65 36	9 38 4·26
30	0·08			4·06
Feb. 2	0·09			4·17
3	0·09			4·17
9	0·11			4·20
10	0·11			4·21
12	0·12			4·12
13	0·12			4·25
16	0·13			4·18
21	0·14			4·12
23	0·15			4·25
27	0·16			4·23
Mar. 1	0·16			4·08
6	0·18			4·19

B.A.C. 3415, π Leonis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Feb. 2	0·09	(4·5)	81 18	9 52 58·31
9	0·11			58·31
10	0·11			58·26
12	0·12			58·31
16	0·13			58·25
21	0·14			58·27
23	0·15			58·33
27	0·16			58·26
28	0·16			58·31
Mar. 1	0·16			58·36
6	0·18			58·30
11	0·19			58·31
17	0·21			58·37

B.A.C. 3459, α Leonis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Feb. 2	0·09	(1·0)	77 22	10 1 4·42
9	0·11			4·27
10	0·11			4·37
12	0·12			4·36
13	0·12			4·37
16	0·13			4·32
21	0·14			4·34
23	0·15			4·38

B.A.C. 3459, α Leonis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
			° ′	h. m. s.
Feb. 27	0·16	(1·0)	77 22	10 1 4·41
Mar. 4	0·17			4·51
6	0·18			4·50
11	0·19			4·39
17	0·21			4·30

B.A.C. 3484.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Mar. 11	0·19	8·0	57 54	10 6 17·91
17	0·21	7·0		17·96

B.A.C. 3523, γ^1 Leonis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Feb. 3	0·09	(2·0)	69 28	10 12 24·83
13	0·12			24·88
23	0·15			24·92
27	0·16			24·85

B.A.C. 3529.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Mar. 11	0·19	7·0	82 53	10 13 22·05
17	0·21	6·0		21·86

B.A.C. 3592.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Mar. 11	0·19	6·0	87 48	10 22 40·29
17	0·21	6·0		40·30

B.A.C. 3609, ρ Leonis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Feb. 9	0·11	(4·0)	79 59	10 25 35·77
23	0·15			35·55
Mar. 11	0·19			35·60
17	0·21			35·77

B.A.C. 3662.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Mar. 11	0·19	7·0	78 33	10 34 27·97
17	0·21	8·0		27·87

B.A.C. 3708.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Feb. 9	0·11	(6·0)	78 44	10 42 3·20
23	0·15			3·25
Mar. 11	0·19			3·19
16	0·20			3·23
April 4	0·25			3·17

B.A.C. 3726.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
			° ′	h. m. s.
Mar. 11	0·19	6·0	88 15	10 45 11·31
17	0·21	6·0		11·31

B.A.C. 3768.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Mar. 11	0·19	5·0	85 39	10 53 29·05
17	0·21	5·0		29·08

B.A.C. 3780.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Mar. 17	0·21	7·0	81 41	10 56 33·88

B.A.C. 3788, χ Leonis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Mar. 4	0·17	(4·5)	81 55	10 57 56·88
16	0·20			56·81
April 4	0·25			56·98
6	0·26			56·91

B.A.C. 3821.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Mar. 11	0·19	5·0	20 58	11 3 23·85
16	0·20	6·0		23·65
17	0·21	6·0		23·53

B.A.C. 3834, δ Leonis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Mar. 4	0·17	(2·5)	68 43	11 6 49·01
16	0·20			49·10
17	0·21			49·04
18	0·21			49·11
25	0·23			49·14
April 4	0·25			49·05
6	0·26			48·95
June 4	0·42			49·11

B.A.C. 3836.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Mar. 11	0·19	6·5	87 0	11 6 51·10

B.A.C. 3869.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Mar. 11	0·19	6·0	71 49	11 15 18·67
16	0·20	6·0		18·65
17	0·21	7·0		18·56

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
B.A.C. 3900, τ Leonis.				
			° ′	h. m. s.
Mar. 11	0·19	4·0	86 23	11 20 53·47
16	0·20	4·0		53·38
17	0·21	5·0		53·54
B.A.C. 3946, υ Leonis.				
Feb. 27	0·16	(4·5)	90 4	11 29 56·14
Mar. 4	0·17			56·03
6	0·18			56·04
11	0·19			56·12
17	0·21			56·07
18	0·21			56·15
25	0·23			56·09
April 4	0·25			56·04
6	0·26			56·07
B.A.C. 3995, β Leonis.				
Feb. 27	0·16	(2·5)	74 40	11 42 4·16
Mar. 18	0·21			4·16
25	0·23			4·17
April 4	0·25			4·18
6	0·26			4·15
15	0·28			4·19
June 4	0·42			4·15
B.A.C. 3996.				
Mar. 17	0·21	7·0	84 3	11 42 5·61
B.A.C. 4005.				
Mar. 17	0·21	6·0	76 57	11 43 53·47
18	0·21	6·0		53·43
25	0·23			53·45
B.A.C. 4052, π Virginis.				
Mar. 11	0·19	5·5	82 37	11 53 50·97
17	0·21			51·06
18	0·21			51·14
B.A.C. 4145, η Virginis.				
Mar. 4	0·17	(3·5)	89 54	12 12 53·86
6	0·18			53·83
11	0·19			53·86
18	0·21			53·78
B.A.C. 4145, η Virginis.				
			° ′	h. m. s.
Mar. 26	0·23	(3·5)	69 54	12 12 53·85
April 7	0·26			53·82
17	0·29			53·93
B.A.C. 4199.				
April 7	0·26	7·0	63 20	12 20 47·11
17	0·29			47·20
B.A.C. 4205.				
April 7	0·26	6·0	63 1	12 21 47·41
B.A.C. 4231.				
April 7	0·26	7·5	64 48	12 26 42·12
15	0·29	7·0		42·52
17	0·29	7·0		42·51
B.A.C. 4244.				
April 7	0·26	7·0	52 51	12 28 29·21
15	0·29			29·16
B.A.C. 4268 γ¹ Virginis.				
Mar. 4	0·17	(4·0)	90 42	12 34 43·03
B.A.C. 4340, δ Virginis.				
April 15	0·29	3·0	85 51	12 48 42·21
B.A.C. 4364.				
April 15	0·29	6·0	67 59	12 54 52·67
May 5	0·34			52·97
B.A.C. 4421, β Comæ.				
April 9	0·27	4·0	61 26	13 5 28·71
15	0·29			28·66
17	0·29			28·60
B.A.C. 4457.				
April 9	0·27	6·0	54 0	13 12 46·04
15	0·29			46·08
16	0·29	6·0		46·13
B.A.C. 4462.				
			° ′	h. m. s.
April 17	0·29	7·0	84 27	13 13 38·58
May 5	0·34	7·0		38·81
B.A.C. 4468.				
April 9	0·27	7·5	75 8	13 14 37·18
15	0·29			37·23
16	0·29	7·0		37·20
B.A.C. 4470.				
April 17	0·29	6·0	87 11	13 14 43·68
May 5	0·34	6·0		43·89
B.A.C. 4460, α Virginis				
Mar. 26	0·23	(1·0)	100 27	13 17 58·60
B.A.C. 4503.				
April 9	0·27	7·0	85 25	13 22 17·76
16	0·29			17·78
17	0·29	7·0		17·49
B.A.C. 4513.				
April 9	0·27	6·0	65 3	13 24 22·48
15	0·29			22·47
16	0·29			22·57
17	0·29			22·56
B.A.C. 4526.				
April 9	0·27	6·0	64 56	13 26 18·68
16	0·29	5·0		18·71
17	0·29			18·64
B.A.C. 4532, ζ Virginis.				
Mar. 11	0·19	(4·0)	89 53	13 27 42·68
17	0·21			42·79
25	0·23			42·85
26	0·23			42·86
April 1	0·25			42·98
6	0·26			42·80
7	0·26			42·74
9	0·27			42·83
13	0·28			42·90
16	0·29			42·81

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
B.A.C. 4532. ζ Virginis.				
			° ′	h. m. s.
April 17	0·29	(4·0)	89 53	13 27 42·52
22	0·30			42·93
May 2	0·33			42·90
5	0·34			42·88
8	0·35			42·85
10	0·35			42·83
June 3	0·42			42·75
B.A.C. 4550.				
April 7	0·26	7·0	36 37	13 31 9·52
9	0·27			9·60
16	0·29			9·43
17	0·29	6·5		9·49
B.A.C. 4552. (a)				
May 8	0·35	6·0	53 0	13 31 22·45
B.A.C. 4559.				
April 17	0·29	6·0	78 33	13 32 49·41
May 8	0·35	6·0		49·45
B.A.C. 4575.				
April 9	0·27	6·0	66 36	13 37 16·80
16	0·29	7·0		16·83
17	0·29	6·0		16·80
B.A.C. 4597, τ Bootis.				
April 16	0·29	5·5	71 51	13 40 45·12
17	0·29	6·0		45·06
B.A.C. 4610.				
April 17	0·29	6·0	58 7	13 42 27·85
May 5	0·34	6·0		27·74
8	0·35	6·0		27·95
B.A.C. 4621.				
April 16	0·29	7·0	70 41	13 43 34·08
B.A.C. 4627.				
			° ′	h. m. s.
April 17	0·29	7·0	54 33	13 45 1·66
May 8	0·35	6·5		1·91
B.A.C. 4632.				
April 16	0·29	6·0	54 52	13 45 44·85
May 5	0·34	6·0		44·83
B.A.C. 4648, η Bootis.				
Mar. 25	0·23	(3·0)	70 55	13 48 9·64
26	0·23			9·60
April 1	0·25			9·67
9	0·27			9·67
13	0·28			9·66
16	0·29			9·70
17	0·29			9·68
21	0·30			9·62
22	0·30			9·76
May 2	0·33			9·65
5	0·34			9·62
8	0·35			9·78
10	0·35			9·69
June 3	0·42			9·66
25	0·48			9·70
Nov. 11	0·86			9·72
B.A.C. 4672. τ Virginis.				
Mar. 25	0·23	(4·5)	87 47	13 54 40·60
26	0·23			40·61
April 9	0·27			40·60
13	0·28			40·55
16	0·29			40·48
20	0·30			40·61
21	0·30			40·53
22	0·30			40·50
May 2	0·33			40·53
10	0·35			40·61
B.A.C. 4676.				
May 5	0·34	7·0	57 46	13 55 17·79
8	0·35	7·0		17·92
B.A.C. 4678.				
			° ′	h. m. s.
April 16	0·29	7·0	57 41	13 56 28·64
21	0·30			28·64
May 5	0·34	7·0		28·67
B.A.C. 4694.				
April 16	0·29		58 30	14 0 21·76
21	0·30	7·0		21·67
May 5	0·34	7·0		21·78
B.A.C. 4716, ι Virginis.				
April 9	0·27	4·0	99 38	14 5 35·67
16	0·29	3·0		35·44
21	0·30	3·0		35·45
B.A.C. 4723.				
April 9	0·27		60 15	14 7 49·20
16	0·29	6·5		49·19
21	0·30			49·19
B.A.C. 4729, α Bootis.				
April 1	0·25	(1·0)	70 6	14 9 24·81
7	0·26			24·86
9	0·27			24·78
13	0·28			24·76
20	0·30			24·90
21	0·30			24·91
22	0·30			24·85
29	0·32			24·58
May 2	0·33			24·76
7	0·34			24·77
8	0·35			24·90
June 25	0·48			24·75
Nov. 11	0·86			24·82
29	0·91			24·81
B.A.C. 4737.				
April 16	0·29	6·0	74 6	14 10 55·66
May 8	0·35	6·5		55·66

(a) Large tabular difference in R. A.

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
B.A.C. 4756.				
			° ′	h. m. s.
April 9	0·27	7·0	37 20	14 13 43·23
16	0·29	6·5		43·28
May 8	0·35	7·0		43·43
B.A.C. 4797.				
April 9	0·27	6·0	53 11	14 22 36·03
16	0·29			36·19
May 8	0·35	6·0		36·24
B.A.C. 4808, ρ Bootis.				
April 1	0·25	(4·0)	59 1	14 25 55·57
6	0·26			55·61
7	0·26			55·57
9	0·27			55·61
16	0·29			55·63
27	0·32			55·65
29	0·32			55·50
May 2	0·33			55·63
7	0·34			55·57
26	0·40			55·51
Nov. 29	0·91			55·61
B.A.C. 4809.				
May 8	0·35	6·0	62 43	14 26 16·59
B.A.C. 4820.				
April 9	0·27	6·0	56 52	14 28 22·08
16	0·29	6·0		22·23
May 7	0·34	6·0		22·15
B.A.C. 4863.				
April 9	0·27	7·5	52 39	14 37 7·07
16	0·29	7·0		7·10
May 7	0·34	7·0		7·13
8	0·35	7·0		7·12
B.A.C. 4876, ι Bootis.				
April 6	0·26	(3·0)	62 21	14 39 0·17
7	0·26			0·20
9	0·27			0·23
13	0·28			0·42
B.A.C. 4876, ι Bootis.				
			° ′	h. m. s.
April 16	0·29	(3·0)	62 21	14 39 0·27
20	0·30			0·20
21	0·30			0·36
27	0·32			0·30
May 1	0·33			0·23
7	0·34			0·23
8	0·35			0·26
26	0·40			0·23
July 10	0·52			0·24
Aug. 6	0·59			0·34
Nov. 11	0·86			0·28
29	0·91			0·24
B.A.C. 4934.				
May 7	0·34	7·0	48 19	14 50 49·87
8	0·35	7·0		49·95
26	0·40	7·0		49·92
B.A.C. 4942.				
May 7	0·34	6·5	49 49	14 54 10·94
8	0·35	6·0		11·03
26	0·40	7·0		11·05
B.A.C. 4965.				
May 7	0·34	6·0	44 49	14 58 16·32
26	0·40	6·0		16·38
B.A.C. 4969, ψ Bootis.				
April 16	0·29	(5·0)	62 31	14 58 34·53
20	0·30			34·54
27	0·32			34·56
B.A.C. 4992.				
April 16	0·29	5·0	34 55	15 2 22·26
May 5	0·34	5·0		22·00
7	0·34	5·0		22·05
B.A.C. 5000.				
April 16	0·29		56 24	15 5 5·97
May 5	0·34	6·0		6·03
7	0·34	7·0		6·04
B.A.C. 5001.				
			° ′	h. m. s.
May 8	0·35	7·0	60 15	15 5 8·39
26	0·40	6·0		8·36
B.A.C. 5034, β Libræ.				
April 20	0·30	(2·5)	98 53	15 9 38·25
29	0·32			38·25
May 7	0·34			38·27
8	0·35			38·26
23	0·39			38·25
Aug. 6	0·59			38·24
B.A.C. 5071.				
April 16	0·29	5·5	37 35	15 16 3·57
May 7	0·34	6·0		3·78
8	0·35	5·5		3·74
B.A.C. 5091.				
May 7	0·34	5·5	26 10	15 20 22·04
8	0·35	5·5		22·00
26	0·40	5·0		22·15
B.A.C. 5143, α Coronæ Borealis				
April 20	0·30	(2·5)	62 49	15 28 53·23
21	0·30			53·23
27	0·32			53·27
29	0·32			53·36
May 1	0·33			53·36
5	0·34			53·36
7	0·34			53·34
8	0·35			53·32
23	0·39			53·30
26	0·40			53·32
Aug. 6	0·59			53·30
B.A.C. 5196, α Serpentis.				
April 17	0·29	(2·5)	83 5	15 37 31·30
20	0·30			31·28
21	0·30			31·29
27	0·32			31·21
29	0·32			31·29
May 1	0·33			31·22
5	0·34			31·27
7	0·34			31·36
8	0·35			31·33
23	0·39			31·31

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
B.A.C. 5196, α Serpentis.				
			° ′	h. m. s.
May 26	0·40	(2·5)	63 8	15 37 31·28
June 3	0·42			31·30
Aug. 8	0·59			31·23
B.A.C. 5245, ε Serpentis.				
May 7	0·34	4·0	85 7	15 43 59·29
8	0·35			59·41
26	0·40			59·45
B.A.C. 5284, γ Serpentis.				
May 7	0·34	5·0	73 53	15 50 7·53
8	0·35			7·67
B.A.C. 5415. (a)				
May 7	0·34	5·5	31 49	16 6 22·16
8	0·35	6·0		22·09
26	0·40			22·40
B.A.C. 5414, δ Ophiuchi.				
April 27	0·32	(3·0)	93 20	16 7 10·08
May 1	0·33			10·11
5	0·34			10·11
June 3	0·42			10·03
27	0·48			9·99
Aug. 6	0·59			10·09
B.A.C. 5452.				
May 7	0·34	6·0	68 32	16 14 7·90
8	0·35	6·0		8·00
26	0·40	7·0		7·90
B.A.C. 5466, γ Herculis.				
May 7	0·34	3·5	70 31	16 15 52·62
8	0·35	4·0		52·73
26	0·40	6·0		52·77
B.A.C. 5493.				
May 7	0·34	6·0	87 20	16 19 56·11
8	0·35	6·5		56·21
26	0·40			56·23
B.A.C. 5504.				
			° ′	h. m. s.
May 7	0·34	7·0	74 20	16 21 50·85
8	0·35	7·0		50·97
June 3	0·42			50·91
B.A.C. 5507.				
June 4	0·42	7·0	74 15	16 22 9·93
B.A.C. 5527.				
May 7	0·34	6·0	69 13	16 24 36·84
8	0·35	6·0		36·95
June 3	0·42			36·78
B.A.C. 5529.				
June 4	0·42	8·0	78 17	16 25 20·80
B.A.C. 5537.				
May 7	0·34	6·5	79 20	16 27 4·17
8	0·35	7·0		4·30
June 3	0·42			4·33
B.A.C. 5597.				
May 7	0·34	6·0	54 52	16 35 19·90
8	0·35	6·0		19·98
June 3	0·42			20·04
B.A.C. 5604, ζ Herculis.				
June 4	0·42	(3·0)	58 9	16 36 7·36
11	0·44			7·43
27	0·48			7·42
July 5	0·51			7·37
B.A.C. 5615.				
May 7	0·34	6·0	53 14	16 38 11·35
8	0·35	6·0		11·42
June 3	0·42			11·41
B.A.C. 5625.				
May 7	0·34	7·0	87 31	16 39 59·43
8	0·35	7·0		59·61
June 4	0·42	8·0		59·42
B.A.C. 5634.				
			° ′	h. m. s.
June 3	0·42		78 37	16 41 39·79
4	0·42	7·0		39·69
B.A.C. 5647.				
May 8	0·35	7·0	76 30	16 43 15·41
B.A.C. 5686.				
May 7	0·34	7·5	74 22	16 47 8·55
8	0·35	7·5		8·71
June 3	0·42			8·64
4	0·42	8·0		8·60
B.A.C. 5708, χ Ophiuchi.				
May 7	0·34	(4·0)	80 25	16 51 10·96
8	0·35			11·01
June 3	0·42			11·12
4	0·42			10·97
11	0·44			11·05
27	0·48			11·12
July 5	0·51			11·49
B.A.C. 5726.				
June 4	0·42	6·0	83 12	16 53 48·51
B.A.C. 5776.				
June 3	0·42		41 0	17 1 11·93
4	0·42	5·5		11·87
B.A.C. 5787.				
June 3	0·42	(6·0)	79 47	17 3 12·52
B.A.C. 5821, α Herculis.				
June 3	0·42	(3·5)	75 27	17 8 24·02
4	0·42			24·05
11	0·44			24·03
25	0·48			24·10
27	0·48			24·07
July 4	0·50			24·08
5	0·51			24·05
21	0·55			24·04

(a) Tabular R. A. differs by 25 secs.

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Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
B.A.C. 5863, ω Herculis.				
			° ′	h. m. s.
June 4	0·42	(6·0)	57 21	17 15 32·07
B.A.C. 5894.				
July 7	0·51	6·0	82 17	17 19 42·29
B.A.C. 5893, ε Ophiuchi.				
June 4	0·42	4·0	63 44	17 19 42·92
B.A.C. 5917.				
June 4	0·42	5·5	29 51	17 23 55·66
July 7	0·43	6·0		55·55
B.A.C. 5941, α Ophiuchi.				
June 3	0·42	(2·0)	77 20	17 28 34·64
4	0·42			34·57
11	0·44			34·55
July 4	0·50			34·52
5	0·51			34·53
7	0·51			31·47
18	0·54			34·55
Aug. 24	0·64			34·49
B.A.C. 5996, β Ophiuchi.				
July 7	0·51	(3·0)	85 22	17 36 42·23
B.A.C. 6021, μ Herculis.				
June 4	0·42	(4·0)	62 12	17 41 5·85
25	0·48			5·96
July 4	0·50			6·01
6	0·51			5·90
7	0·51			5·77
18	0·54			6·01
Aug. 24	0·64			5·91
B.A.C. 6035.				
July 7	0·51	7·0	80 7	17 43 40·35
B.A.C. 6123, 70 Ophiuchi.				
July 7	0·51	4·0	87 28	17 58 31·75
B.A.C. 6137.				
			° ′	h. m. s.
July 7	0·51	7·0	87 32	18 0 27·87
B.A.C. 6355, α Lyræ.				
July 3	0·50	(1·0)	51 21	18 32 18·06
4	0·50			18·08
6	0·51			17·91
7	0·51			18·00
10	0·52			18·00
14	0·53			17·99
18	0·54			17·91
21	0·55			18·02
Nov. 24	0·90			18·04
B.A.C. 6429, β Lyræ.				
July 3	0·50	(3·0)	56 48	18 45 1·41
4	0·50			1·33
6	0·51			1·35
7	0·51			1·32
10	0·52			1·33
14	0·53			1·45
18	0·54			1·34
21	0·55			1·32
Aug. 18	0·63			1·38
B.A.C. 6468.				
July 7	0·51	6·0	56 12	18 49 51·30
21	0·55	6·0		51·31
B.A.C. 6480.				
July 7	0·51	6·0	57 16	18 51 53·48
21	0·55	5·0		53·46
B.A.C. 6487, ι Aquilæ.				
July 7	0·51	4·0	75 7	18 53 24·23
21	0·55	3·0		24·39
B.A.C. 6527.				
July 7	0·51	7·5	71 4	18 58 52·46
21	0·55	8·0		52·53
B.A.C. 6528, ζ Aquilæ.				
			° ′	h. m. s.
July 3	0·50	(3·0)	76 20	18 59 6·76
6	0·51			6·73
14	0·53			6·77
18	0·54			6·94
Aug. 18	0·63			6·70
B.A.C. 6574.				
July 10	0·52	6·0	68 40	19 6 44·16
B.A.C. 6602.				
July 10	0·52	6·0	67 13	19 11 55·81
21	0·55	6·5		55·92
B.A.C. 6617.				
July 10	0·52	6·5	78 43	19 13 26·16
21	0·55	7·0		26·64
B.A.C. 6644.				
July 10	0·52	6·0	78 21	19 18 26·19
21	0·55			26·31
B.A.C. 6646, δ Aquilæ.				
July 3	0·50	(3·5)	87 9	19 18 35·42
6	0·51			35·41
Aug. 29	0·66			35·48
B.A.C. 6674, α Vulpeculæ.				
July 10	0·52	(4·0)	65 37	19 23 0·32
21	0·55			0·42
B.A.C. 6701, μ Aquilæ.				
July 10	0·52	6·0	82 55	19 27 23·66
21	0·55	4·5		23·81
B.A.C. 6729.				
July 10	0·52	8·0	84 55	19 32 25·94
21	0·55	5·5		25·95

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
B.A.C. 6762.				
July 7	0·51	7·5	° ′ 63 11	h. m. s. 19 38 19·24
10	0·52			19·27
21	0·55	6·0		19·25
B.A.C. 6772, γ Aquilæ.				
July 3	0·50	(3·0)	79 43	19 39 44·73
10	0·52			44·76
13	0·53			44·80
14	0·53			44·78
17	0·54			44·78
21	0·55			44·74
Aug. 18	0·63			44·71
20	0·63			44·70
29	0·66			44·77
Nov. 24	0·90			44·77
B.A.C. 6791.				
July 7	0·51	8·0	74 39	19 42 25·63
21	0·55	8·0		25·65
B.A.C. 6802, α Aquilæ.				
July 3	0·50	(1·5)	81 30	19 44 5·85
10	0·52			5·97
13	0·53			5·90
14	0·53			5·84
17	0·54			5·91
Aug. 29	0·66			5·84
Nov. 24	0·90			5·88
B.A.C. 6833, β Aquilæ.				
July 3	0·50	(3·5)	83 56	19 48 34·95
6	0·51			35·02
7	0·51			35·01
13	0·53			34·96
14	0·53			34·96
17	0·54			35·01
21	0·55			35·00
Aug. 18	0·63			34·93
20	0·63			34·90
29	0·66			34·97
Sept. 2	0·67			34·99
Nov. 24	0·90			34·97
B.A.C. 6852.				
Aug. 20	0·63	5·5	° ′ 30 39	h. m. s. 19 51 8·38
B.A.C. 6855.				
July 7	0·51	8·0	73 52	19 52 0·26
21	0·55	8·0		0·22
Aug. 18	0·63	7·0		0·27
B.A.C. 6934, θ Aquilæ.				
July 7	0·51	4·0	91 13	20 4 14·08
Aug. 20	0·63	4·0		14·02
Sept. 2	0·67	6·0		14·07
B.A.C. 6966.				
July 7	0·51	5·5	64 49	20 9 27·51
Aug. 20	0·63			27·65
24	0·64	5·0		27·57
B.A.C. 7000.				
Aug. 20	0·63	6·0	12 35	20 12 40·53
Sept. 2	0·67	6·0		40·20
B.A.C. 7006.				
July 7	0·51	7·5	83 18	20 14 40·87
Aug. 24	0·64			40·86
B.A.C. 7014.				
Aug. 20	0·63	6·0	85 6	20 16 23·33
24	0·64	6·0		23·40
Sept. 2	0·67	6·0		23·36
B.A.C. 7086.				
Aug. 20	0·63	5·0	34 23	20 26 1·94
24	0·64	6·0		1·88
Sept. 2	0·67	6·0		1·81
B.A.C. 7088, ε Delphini.				
July 7	0·51		79 10	20 26 40·09
13	0·53	4·0		40·07
B.A.C. 7149, α Delphini.				
July 7	0·51	5·5	° ′ 74 34	h. m. s. 20 33 16·53
13	0·53			16·43
Aug. 20	0·63			16·54
24	0·64			16·46
B.A.C. 7171, α Cygni.				
Aug. 19	0·63	(1·0)	45 12	20 36 45·76
Nov. 24	0·90			45·66
B.A.C. 7220, η Cephei.				
July 13	0·53	(3·5)	28 42	20 42 30·09
Sept. 8	0·68			30·40
15	0·70			30·36
B.A.C. 7256, 32 Vulpeculæ.				
July 7	0·51	(4·5)	62 27	20 48 43·33
17	0·54			43·31
Aug. 19	0·63			43·33
20	0·63			43·27
24	0·64			43·35
Sept. 2	0·67			43·35
4	0·67			43·31
7	0·68			43·31
15	0·70			43·30
B.A.C. 7269. (a)				
Sept. 2	0·67	6·0	43 6	20 51 12·43
8	0·68			12·31
15	0·70	6·0		12·46
B.A.C. 7288.				
Aug. 19	0·63	7·0	83 1	20 53 19·22
20	0·63	6·5		19·14
24	0·64	6·0		19·25
B.A.C. 7290.				
Sept. 2	0·67		46 4	20 53 25·42
4	0·67	6·0		25·29
8	0·68	6·0		25·27

(a) Tab. R. A. differs by 42 secs.

B.A.C. 7336, 61[1] Cygni.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Aug. 20	0·63	(5·5)	° ′ 51 55	h. m. s. 21 0 45·61
Sept. 2	0·67			45·58
4	0·67			45·53

B.A.C. 7354.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Aug. 20	0·63	8·5	68 6	21 4 20·90
Sept. 8	0·68	8·5		20·63
15	0·70	8·0		20·78

B.A.C. 7356.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Sept. 2	0·67	8·0	68 6	21 4 21·83
4	0·67	8·0		21·81
22	0·72	8·0		21·88

B.A.C. 7368, ζ Cygni.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
July 13	0·53	(3·0)	60 20	21 7 6·39
17	0·54			6·38
Aug. 20	0·63			6·49
29	0·66			6·42
Sept. 2	0·67			6·36
4	0·67			6·40
7	0·68			6·37
8	0·68			6·31
15	0·70			6·43
22	0·72			6·29
Nov. 24	0·90			6·33
Dec. 24	0·98			6·42

B.A.C. 7380, α Equulei.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Aug. 20	0·63	4·0	85 19	21 8 58·53
Sept. 2	0·67			58·46
4	0·67			58·41

B.A.C. 7410.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Aug. 20	0·63	6·0	66 43	21 14 52·94
Sept. 2	0·67			52·88
4	0·67	6·5		52·86

B.A.C. 7417.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Sept. 8	0·68	5·5	31 57	21 15 28·26
15	0·70	5·5		28·18
22	0·72	6·0		28·28

B.A.C. 7430.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Sept. 2	0·67	6·5	° ′ 29 48	h. m. s. 21 17 2·39
4	0·67	7·0		2·43

B.A.C. 7450.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Aug. 20	0·63	7·0	71 13	21 20 4·96
Sept. 2	0·67	6·0		4·93
8	0·68	7·0		4·84

B.A.C. 7478, β Aquarii.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Aug. 18	0·63	(3·0)	96 10	21 24 20·74
19	0·63			20·57
20	0·63			20·64
21	0·64			20·67
Sept. 4	0·67			20·61
5	0·68			20·66
15	0·70			20·63
16	0·71			20·59
25	0·73			20·71
Nov. 29	0·91			20·74

B.A.C. 7497.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Aug. 19	0·63	8·0	88 47	21 27 44·49
24	0·64	7·0		44·50
Sept. 2	0·67	7·0		44·65
4	0·67	7·5		44·49

B.A.C. 7501.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Sept. 8	0·68	6·0	44 45	21 28 10·04
15	0·70	7·0		10·14
16	0·71	7·0		10·04

B.A.C. 7514, ξ Aquarii.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Aug. 19	0·63		98 28	21 30 27·36
24	0·64			27·37
Sept. 2	0·67	5·0		27·26

B.A.C. 7528.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Aug. 19	0·63	6·0	70 21	21 32 38·02
24	0·64	6·0		38·13
Sept. 2	0·67	7·0		38·17

B.A.C. 7561, ι Pegasi.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Jan. 2	0·00	(2·5)	° ′ 80 45	h. m. s. 21 37 27·42
Aug. 19	0·63			27·40
20	0·63			27·45
24	0·64			27·30
29	0·66			27·42
Sept. 2	0·67			27·38
5	0·68			27·39
7	0·68			27·42
9	0·69			27·38
25	0·73			27·43
28	0·74			27·51
Nov. 29	0·91			27·35

B.A.C. 7566.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Sept. 4	0·67	6·0	52 21	21 37 45·89
8	0·68	6·0		45·87
15	0·70	7·0		45·97

B.A.C. 7569.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Sept. 16	0·71	7·0	61 52	21 38 1·07

B.A.C. 7590.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Aug. 19	0·63	7·0	73 26	21 40 33·85
24	0·64	7·0		33·97
Sept. 2	0·67	7·0		33·91

B.A.C. 7627, 16 Pegasi.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1863.
Aug. 19	0·63	(5·5)	64 43	21 46 49·86
24	0·64			49·75
Sept. 4	0·67			49·80
5	0·68			49·85
7	0·68			49·84
8	0·68			49·81
9	0·69			49·[illegible]
10	0·69			49·84
16	0·71			49·84
25	0·73			49·77
26	0·73			49·63
28	0·74			49·84

B.A.C. 7644.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Sept. 4	0·67		18° 9′	21h 50m 19s·09
8	0·68	7·0		19·20
10	0·69	7·0		19·31

B.A.C. 7668, α Aquarii.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Jan. 2	0·00	(3·0)	90 59	21 58 44·76
Sept. 5	0·68			44·74
9	0·69			44·72
10	0·69			44·75
26	0·73			44·72

B.A.C. 7706, ι Pegasi.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Aug. 19	0·63	4·0	65 19	22 0 38·09
24	0·64	5·0		38·14
Sept. 4	0·67	4·0		38·08

B.A.C. 7708.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Sept. 7	0·68	6·0	28 23	22 0 55·84
10	0·69	5·5		55·92
25	0·73			55·76

B.A.C. 7759.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Aug. 19	0·63	5·0	29 55	22 7 30·36
24	0·64	5·0		30·41
Sept. 4	0·67	6·0		30·42

B.A.C. 7773, θ Aquarii.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Sept. 3	0·67	(4·5)	98 28	22 9 36·10

B.A.C. 7795, γ Aquarii.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Aug. 19	0·63		92 5	22 14 34·78
24	0·64			34·72
Sept. 2	0·67	6·0		34·81
4	0·67	4·0		34·61

B.A.C. 7868, η Aquarii.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Aug. 18	0·63	(4·0)	90 49	22 28 18·90
19	0·63			18·88
24	0·64			18·91
Sept. 3	0·67			18·95
10	0·69			18·84
15	0·70			18·88
28	0·74			18·89
Oct. 22	0·80			18·84

B.A.C. 7908, ζ Pegasi.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Aug. 18	0·63	(3·0)	79° 53′	22h 34m 37s·88
19	0·63			37·88
20	0·63			37·79
24	0·64			37·85
Sept. 3	0·67			37·86
4	0·67			37·78
5	0·68			37·80
7	0·68			37·77
8	0·68			37·84
10	0·69			37·69
15	0·70			37·74
16	0·71			37·69
25	0·73			37·74
28	0·74			37·68

B.A.C. 7958, μ Pegasi.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Sept. 4	0·67	4·0	66 7	22 43 23·63
7	0·68	4·0		23·65
10	0·69	4·0		23·69

B.A.C. 7970, λ Aquarii.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Sept. 4	0·67	4·0	98 18	22 45 27·79
7	0·68	5·0		27·85
8	0·68	5·0		27·87

B.A.C. 7977.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Sept. 4	0·67	8·0	88 53	22 46 52·39
8	0·68	7·0		52·40
10	0·69	8·0		52·28

B.A.C. 7996.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Sept. 4	0·67	8·0	86 55	22 50 34·25
7	0·68	7·0		34·23
10	0·69	7·0		34·27

B.A.C. 8024.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Sept. 4	0·67	7·0	33 38	22 55 43·79
7	0·68	6·0		43·79
8	0·68	6·0		43·80
10	0·69	6·5		43·92
16	0·71	7·0		43·86

B.A.C. 8034, α Pegasi.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Aug. 18	0·63	(2·0)	75° 32′	22h 57m 56s·23
19	0·63			56·19
20	0·63			56·30
24	0·64			56·28
Sept. 3	0·67			56·26
4	0·67			56·23
7	0·68			56·23
10	0·69			56·31
16	0·71			56·34
28	0·74			56·27
Oct. 11	0·77			56·33
22	0·80			56·40
Nov. 19	0·88			56·26
Dec. 3	0·92			56·31

B.A.C. 8065.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Sept. 4	0·67	8·0	88 36	23 2 22·62
10	0·69	8·0		22·54
28	0·74	7·5		22·58

B.A.C. 8083.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Sept. 4	0·67	6·0	33 35	23 6 42·22
28	0·74			42·26

B.A.C. 8105, γ Piscium.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Sept. 3	0·67	(4·5)	87 28	23 10 3·67
8	0·68			3·78
9	0·69			3·60
16	0·71			3·74
21	0·72			3·73
26	0·73			3·90
Oct. 11	0·77			3·80
Nov. 19	0·88			3·78

B.A.C. 8135.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Sept. 4	0·67	6·0	46 38	23 14 15·62
7	0·68	6·0		15·60
10	0·69	6·0		15·66

B.A.C. 8137.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Sept. 28	0·74	6·0	28 47	23 14 16·39

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B.A.C. 8147.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
			° '	h. m. s.
Sept. 4	0·67	7·0	70 11	23 15 56·50
7	0·68	6·0		56·53
10	0·69	7·0		56·50

B.A.C. 8169, κ Piscium.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Sept. 3	0·67	(5·5)	89 30	23 19 54·56
4	0·67			54·57
7	0·68			54·58
10	0·69			54·59
21	0·72			54·53
24	0·73			54·60
26	0·73			54·50
Oct. 5	0·76			54·58
11	0·77			54·46

B.A.C. 8204.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Sept. 4	0·67	7·0	18 46	23 26 41·95
10	0·69	7·0		41·95
16	0·71	6·0		42·14

B.A.C. 8233, ι Piscium.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Sept. 2	0·67	(4·5)	85 7	23 32 54·25
3	0·67			54·26
4	0·67			54·25
7	0·68			54·21
8	0·68			54·26
9	0·69			54·28
10	0·69			54·22
15	0·70			54·30
16	0·71			54·19
21	0·72			54·30

B.A.C. 8233, ι Piscium.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
			° '	h. m. s.
Sept. 24	0·73	(4·5)	85 7	23 32 54·18
26	0·73			54·18
28	0·74			54·21
29	0·74			54·20
Oct. 5	0·76			54·23
11	0·77			54·26
Nov. 24	0·90			54·17

B.A.C. 8247.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Sept. 10	0·69	7·5	72 5	23 35 35·72
16	0·71			35·76
28	0·74	8·0		35·75

B.A.C. 8269, preceding.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Sept. 7	0·68	8·5	86 32	23 40 44·84
8	0·68			44·75
10	0·69	8·0		44·80
16	0·71	8·0		44·72

B.A.C. 8270.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Sept. 24	0·73		86 35	23 40 48·09

B.A.C. 8280.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Sept. 28	0·74	7·0	30 47	23 42 12·14

B.A.C. 8298.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
			° '	h. m. s.
Sept. 10	0·69	6·0	13 10	23 45 26·03
15	0·70	6·0		25·96
24	0·73	6·0		25·64
28	0·74			26·07

B.A.C. 8315.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Sept. 7	0·68	7·5	82 32	23 48 37·50
10	0·69	7·5		37·46
16	0·71	7·0		37·42

B.A.C. 8331, ω Piscium.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Sept. 7	0·68	(4·5)	83 54	23 52 16·63
10	0·69			16·60
22	0·72			16·60
23	0·73			16·67
29	0·74			16·66
Oct. 5	0·76			16·68
22	0·80			16·63
Dec. 1	0·91			16·63
2	0·92			16·65

B.A.C. 8350.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Sept. 28	0·74	(6·0)	63 38	23 55 1·29

B.A.C. 8364.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Sept. 16	0·71	7·0	32 14	[illegible] 57 52·24
28	0·74	7·0		52·15

B.A.C. 8372. (a)

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1863
Sept. 16	0·71	6·0	32 20	23 59 7·02

(a) Tab. R. A. differs by 2 secs.

EXPLANATION OF THE EDINBURGH TRANSIT OBSERVATIONS FOR 1863; AND THE METHODS OF THEIR REDUCTION.

Pages 228 to 256 contain the Transit Observations of stars for 1863, similarly with those for 1849, where the methods of reduction are more fully described; the variable data for the present year being as below.

The star observations were taken almost wholly by Mr Alexander Wallace, M.A., the First Assistant Astronomer. They were actually more numerous than here recorded, because, with a view chiefly to economy in printing, all days of observation with less than four standard stars have been struck out; also parts of a day far removed from the chief observing hours of the night; also those periods of the year when either the Instrumental corrections were uncertain, or the Clock going badly. The said observations, however, had been already computed in our MS. books, and have often served useful temporary purposes, as for approximate clock-corrections and instrumental errors.

The Micrometer observations for instrumental corrections have, on the other hand, always been taken by the Astronomer, and he has also decided on the quantities for computation to be adopted for each day of star observation.

Intervals of the Wires.

From 18 observations of α Ursæ Minoris, above and below the Pole, in the year 1863, the intervals of the wires and their Equatorial distances from their mean or middle point were found to be, the star being above the Pole, and the period from Dec. 24, 1863, to the end of the year being excluded, Wire V. being then broken,—

		s	
Wire	I.	+ 16·660	Equatorial
...	II.	+ 8·408	
...	III.	− 0·072	
...	IV.	− 8·256	
...	V.	− 16·740	

These values, immaterially different from those of 1862, have been employed in the reductions throughout the year; using for Polaris (whose Declination varied between 88° 34′ 39″ and 88° 35′ 28″) the following quantities or those adapted to a declination of 88° 34′, with the amount of alteration due to each additional second of Declination added under the term n'',—

		m	s	s	s	
Wire	I.	+ 11	6·30	+ n ×	·131	Declination 88° 34′
...	II.	+ 5	36·17	+ n ×	·066	
...	III.	− 0	2·88			
...	IV.	− 5	30·10	− n ×	·065	
...	V.	− 11	9·50	− n ×	·131	

and for δ Ursæ Minoris (whose Declination varied between 86° 35′ 56″ and

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86° 36′ 36″) the following quantities, or those adapted to a declination of 86° 36′, with the amount of alteration due to each additional second of Declination added under the term n'', –

			m.	s.		"		s.	
Wire	I.	+	4	40·93	+	n	×	·023	Declination 86° 36′
...	II.	+	2	21·76	+	n	×	·012	
...	III.	–	0	1·20					
...	IV.	–	2	19·22	–	n	×	·012	
...	V.	–	4	42·27	–	n	×	·023	

The correction generally for the imperfect transit of a star, whose North Polar Distance is not very small, being

$$-\frac{\text{Sum of Equatorial intervals for the Wires observed}}{\text{Number of Wires}} \times \text{cosecant of Stars N.P.D.},$$

this quantity being applied to the mean of whatever wires were observed.

With close Polar stars, the *Sine* is used in place of the *Arc*.

The signs and order of the Wires are to be changed when the star is below the Pole.

In the column entitled "Reduction to the Mean of the Wires," either the simple arithmetical mean of the Wires—if 5 were observed—is entered; or, if a less number, the reduced mean according to the method already explained and the quantities above given.

CORRECTIONS FOR INSTRUMENTAL DEVIATIONS.

These deviations are three in number, and are severally termed, Collimation error, Level error, and Azimuth error.

The Collimation error is the deviation of the line joining the optical centre of the object-glass and the Mean of the Wires, from the plane perpendicular to the axis of rotation; and is *mechanically* positive, or is positive as a correction for all objects at all altitudes both above and below the horizon, when the object-glass deviates to the east of the said plane:—0^s·012, the diurnal aberration, is included, for practical convenience, in the sum representing the collimation.

The Level error is the angle of inclination of the axis of rotation to the horizon, measured in a vertical plane; and is *mechanically* positive, as a correction, for all objects above the horizon, negative for those below, when the Western end is higher than the other.

The Azimuthal error is the angle of deviation of the axis of rotation (presumed approximately horizontal) from the East and West line, measured in a horizontal plane; and is *mechanically* positive as a correction for all objects South of the Zenith, or Nadir, and negative for those North of the same, when the Western end of said axis deviates towards the South.

COLLIMATION AND LEVEL ERRORS.

These are determined, as explained in former years, by special observations made from time to time with the collimating eye-piece, and by measuring micrometrically the distance between the Middle wire and its reflected image in reversed positions of the transit-instrument's axis.

For dates between the epochs of observation, the errors have been assumed to vary as the time, except where the readings of the earth-thermometers, as noticed in the Introduction, have indicated a modification thereof to be probably desirable.

AZIMUTHAL ERROR.

Of the three usual methods for determining the azimuthal position of a transit-instrument; viz. by a Polar star combined with an Equatorial star, by two successive transits of a Polar star above and below the Pole, or by three consecutive transits of a Polar star, the first plan has alone been adopted; for although the two latter have the advantage of being independent of the Right Ascension assumed for the stars, yet they can only be employed with safety when the stability of the instrument can be depended on through the twelve or twenty-four hours during which the observations extend.

Now grave doubts had long existed on this head; and, as set forth both in the Introduction to this volume and the Report to the Board of Visitors for 1870, towards the end of the volume, see pp. R 50 to R 57, they have since been proved to be only too well founded. The following therefore is the formula which has always been adopted, enabling, for each transit of a Polar star observed, a comparatively instantaneous determination of the Azimuthal error then to be made:—

$$\text{Azimuthal error} = \frac{\text{R.A. 1st} * - \text{R.A. 2d} * - (\text{obs. tr. 1st} * - \text{obs. tr. 2d} *) - \text{clock's loss in the interval}}{\left(\frac{\sin \text{Z.D. South}}{\sin \text{N.P.D.}}\ \text{1st} *\right) - \left(\frac{\sin \text{Z.D. South}}{\sin \text{N.P.D.}}\ \text{2d} *\right)}$$

In the course of the year 35 combinations of either α, or δ, Ursæ Minoris and a Clock star were obtained, from which the Azimuth error at these epochs was computed, and for dates between them the error was made to vary nearly as the time, modified in some cases by the temperature and the annual curve shown in Plate III.

TABLE I.

Adopted Instrumental Corrections, expressed in Seconds of Time for convenience of application to Time Observations.

Date.	Collimation.	Level.	Azimuth.	Date.	Collimation.	Level.	Azimuth.	Date.	Collimation.	Level.	Azimuth.
1863.	s.	s.	s.	1863.	s.	s.	s.	1863.	s.	s.	s.
Jan. 2	- 0·19	+ 0·07	- 0·40	April 6	- 0·20	- 0·01	- 0·62	June 28	- 0·20	- 0·11	- 0·64
4	- 0·19	+ 0·08	- 0·40	7	- 0·20	- 0·01	- 0·57	30	- 0·20	- 0·11	- 0·63
5	- 0·19	+ 0·08	- 0·40	8	- 0·20	- 0·01	- 0·50				
7	- 0·19	+ 0·08	- 0·30	9	- 0·20	- 0·01	- 0·43	July 3	- 0·19	- 0·11	- 0·60
12	- 0·19	+ 0·08	- 0·30	13	- 0·20	- 0·02	- 0·67	4	- 0·19	- 0·11	- 0·57
13	- 0·19	+ 0·08	- 0·30	15	- 0·20	- 0·02	- 0·63	5	- 0·19	- 0·11	- 0·54
14	0·19	+ 0·08	- 0·30	16	- 0·20	- 0·02	- 0·59	6	- 0·19	- 0·11	- 0·51
20	- 0·19	+ 0·08	- 0·30	17	- 0·20	- 0·02	- 0·56	7	- 0·19	- 0·12	- 0·49
22	- 0·19	+ 0·08	- 0·30	20	- 0·20	- 0·02	- 0·60	8	- 0·19	- 0·12	- 0·48
23	- 0·19	+ 0·08	- 0·30	21	- 0·20	- 0·02	- 0·62	9	- 0·19	- 0·12	- 0·47
27	- 0·19	+ 0·08	- 0·30	22	- 0·20	- 0·03	- 0·59	10	- 0·19	- 0·12	- 0·46
30	- 0·19	+ 0·08	- 0·30	23	- 0·20	- 0·03	- 0·62	11	- 0·19	- 0·12	- 0·45
				25	- 0·20	- 0·03	- 0·61	13	- 0·19	- 0·13	- 0·44
Feb. 2	- 0·19	+ 0·07	- 0·32	26	- 0·20	- 0·03	- 0·64	14	- 0·19	- 0·13	- 0·43
3	- 0·19	+ 0·07	- 0·32	27	- 0·20	- 0·03	- 0·63	16	- 0·19	- 0·13	- 0·42
4	- 0·19	+ 0·07	- 0·32	28	- 0·20	- 0·03	- 0·62	17	- 0·19	- 0·13	- 0·41
6	- 0·19	+ 0·07	- 0·32	29	- 0·20	- 0·03	- 0·61	18	- 0·19	- 0·13	- 0·39
7	- 0·19	+ 0·07	- 0·32					21	- 0·19	- 0·14	- 0·39
8	- 0·19	+ 0·07	- 0·33	May 1	- 0·20	- 0·04	- 0·60	28	- 0·18	- 0·15	- 0·39
9	- 0·19	+ 0·07	- 0·33	2	- 0·20	- 0·04	- 0·59				
10	- 0·19	+ 0·07	- 0·33	3	- 0·20	- 0·04	- 0·57	Aug. 1	- 0·18	- 0·15	- 0·38
12	- 0·19	+ 0·06	- 0·33	5	- 0·20	- 0·04	- 0·53	4	- 0·18	- 0·16	- 0·38
13	- 0·19	+ 0·06	- 0·33	7	- 0·20	- 0·04	- 0·57	6	- 0·18	- 0·16	- 0·38
14	- 0·19	+ 0·06	- 0·34	8	- 0·20	- 0·04	- 0·61	7	- 0·18	- 0·16	- 0·38
15	- 0·19	+ 0·06	- 0·34	10	- 0·20	- 0·04	- 0·65	11	- 0·18	- 0·16	- 0·38
16	- 0·19	+ 0·06	- 0·34	13	- 0·20	- 0·04	- 0·65	12	- 0·18	- 0·16	- 0·37
21	- 0·19	+ 0·05	- 0·34	14	- 0·20	- 0·04	- 0·65	13	- 0·18	- 0·16	- 0·37
23	- 0·19	+ 0·05	- 0·35	15	- 0·20	- 0·04	- 0·65	18	- 0·18	- 0·15	- 0·37
27	- 0·19	+ 0·05	- 0·36	16	- 0·20	- 0·04	- 0·64	19	- 0·18	- 0·15	- 0·37
28	- 0·19	+ 0·04	- 0·37	18	- 0·20	- 0·04	- 0·64	20	- 0·18	- 0·15	- 0·36
				19	- 0·20	- 0·04	- 0·64	23	- 0·18	- 0·16	- 0·36
March 1	- 0·19	+ 0·04	- 0·38	20	- 0·20	- 0·04	- 0·64	24	- 0·18	- 0·16	- 0·36
3	- 0·19	+ 0·04	- 0·40	21	- 0·20	- 0·04	- 0·64	29	- 0·18	- 0·15	- 0·36
4	- 0·19	+ 0·04	- 0·50	22	- 0·20	- 0·04	- 0·64				
6	- 0·19	+ 0·01	- 0·51	23	- 0·20	- 0·04	- 0·63	Sept. 1	- 0·18	- 0·15	- 0·36
9	- 0·19	+ 0·03	- 0·58	24	- 0·20	- 0·04	- 0·63	2	- 0·18	- 0·15	- 0·35
11	- 0·19	+ 0·03	- 0·62	26	- 0·20	- 0·04	- 0·63	3	- 0·18	- 0·15	- 0·35
13	- 0·20	+ 0·03	- 0·56	29	- 0·20	- 0·05	- 0·63	4	- 0·18	- 0·15	- 0·35
16	- 0·20	+ 0·03	- 0·51					5	- 0·18	- 0·14	- 0·35
17	- 0·20	+ 0·03	- 0·38	June 3	- 0·20	- 0·05	- 0·63	7	- 0·18	- 0·14	- 0·35
18	- 0·20	+ 0·03	- 0·40	4	- 0·20	- 0·06	- 0·65	8	- 0·18	- 0·13	- 0·34
20	- 0·20	+ 0·02	- 0·46	8	- 0·20	- 0·07	- 0·66	9	- 0·18	- 0·13	- 0·34
25	- 0·20	+ 0·02	- 0·53	9	- 0·20	- 0·07	- 0·68	10	- 0·18	- 0·13	- 0·34
26	- 0·20	+ 0·02	- 0·52	11	- 0·20	- 0·08	- 0·68	12	- 0·18	- 0·13	- 0·34
28	- 0·20	+ 0·01	- 0·56	24	- 0·20	- 0·10	- 0·68	15	- 0·18	- 0·12	- 0·34
				25	- 0·20	- 0·10	- 0·68	16	- 0·18	- 0·12	- 0·33
April 1	- 0·20	0·00	- 0·59	26	- 0·20	- 0·10	- 0·66	19	- 0·17	- 0·11	- 0·33
4	- 0·20	0·00	- 0·60	27	- 0·20	- 0·10	- 0·65	21	- 0·17	- 0·11	- 0·33

Date.	Collimation.	Level.	Azimuth.
1863	s.	s.	s.
Sept. 22	−0·17	−0·11	−0·33
23	−0·17	−0·11	−0·33
24	−0·17	−0·10	−0·32
25	−0·17	−0·10	−0·32
26	−0·17	−0·10	−0·32
27	−0·17	−0·10	−0·32
28	−0·17	−0·09	−0·32
29	−0·17	−0·09	−0·32
Oct. 2	−0·17	−0·08	−0·31
4	−0·17	−0·08	−0·31
5	−0·17	−0·08	−0·31
6	−0·17	−0·07	−0·31
9	−0·17	−0·07	−0·30
11	−0·17	−0·06	−0·29
14	−0·17	−0·06	−0·28
15	−0·17	−0·05	−0·29
20	−0·17	−0·04	−0·29
21	−0·17	−0·04	−0·27
22	−0·17	−0·04	−0·26
23	−0·17	−0·04	−0·24
24	−0·17	−0·03	−0·22
28	−0·16	−0·02	−0·21
29	−0·16	−0·02	−0·20
30	−0·16	−0·02	−0·17

Date.	Collimation.	Level.	Azimuth.
1863.	s.	s.	s.
Oct. 31	−0·16	−0·02	−0·15
Nov. 1	−0·16	−0·01	−0·13
2	−0·16	−0·01	−0·10
4	−0·16	−0·01	−0·21
5	−0·16	0·00	−0·20
6	−0·16	0·00	−0·19
8	−0·16	0·00	−0·16
10	−0·16	0·00	−0·12
11	−0·16	+0·01	−0·15
12	−0·16	+0·01	−0·15
13	−0·16	+0·01	−0·15
17	−0·16	+0·02	−0·15
18	−0·16	+0·02	−0·15
19	−0·16	+0·02	−0·15
20	−0·16	+0·02	−0·15
22	−0·16	+0·03	−0·15
24	−0·16	+0·03	−0·15
25	−0·16	+0·04	−0·15
26	−0·16	+0·04	−0·15
29	−0·16	+0·05	−0·15
30	−0·16	+0·05	−0·15
Dec. 1	−0·16	+0·05	−0·15
2	−0·16	+0·06	−0·15

Date.	Collimation.	Level.	Azimuth.
1863.	s.	s.	s.
Dec. 3	−0·16	+0·06	−0·15
5	−0·16	+0·06	−0·15
6	−0·16	+0·06	−0·15
8	−0·15	+0·07	−0·15
9	−0·15	+0·07	−0·15
10	−0·15	+0·07	−0·15
12	−0·15	+0·08	−0·15
13	−0·15	+0·08	−0·15
15	−0·15	+0·08	−0·15
16	−0·15	+0·08	−0·15
17	−0·15	+0·09	−0·16
18	−0·15	+0·09	−0·17
19	−0·15	+0·09	−0·18
20	−0·15	+0·09	−0·20
21	−0·15	+0·10	−0·21
22	−0·15	+0·10	−0·15
23	−0·15	+0·10	−0·08
24	−0·15	+0·10	−0·08
25	−0·15	+0·11	−0·07
26	−0·15	+0·11	−0·06
27	−0·15	+0·11	−0·06
29	−0·15	+0·12	−0·05
30	−0·15	+0·12	−0·04
31	−0·15	+0·12	−0·03

The correction to the star observations of times of Transit, for each of the above three instrumental deviations successively, is,

$$\text{Collimation correction} \times \frac{1}{\text{sin Star's North Polar Distance}},$$

the sign being positive for a star above the Pole, and negative when it crosses the Meridian below the Pole.

$$\text{Level correction} \times \frac{\text{cos Star's Zenith Distance South}}{\text{sin Star's North Polar Distance}},$$

the sign being positive for a star above the Pole, and negative when it crosses the Meridian below the Pole. And

$$\text{Azimuthal correction} = \frac{\text{sin Star's Zenith Distance South}}{\text{sin Star's North Polar Distance}},$$

the sign being positive for a star above the Pole *and* to the South of the Zenith, also for a star below the Pole and North of the Zenith; but negative when above the Pole and to the North of the Zenith.

CORRECTION OF THE CLOCK.

For computing the errors of the Clock and the Azimuthal errors of the Transit Instrument, the following Table of the Mean Right Ascensions of the principal stars for January 1, 1863, has been employed, and was kindly communicated at the time by G. B. Airy, Esq., Astronomer Royal, as being the same employed by him for reducing the Greenwich Observations of 1863.

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TABLE II.

MEAN RIGHT ASCENSIONS ADOPTED OF STANDARD STARS.

Star's Name.	Assumed Mean Right Ascension, January 1, 1863.	Correction to Nautical Almanac.	Star's Name.	Assumed Mean Right Ascension, January 1, 1863.	Correction to Nautical Almanac.
	h. m. s.	s.		h. m. s.	s.
α Andromedæ	0 1 18·70	+0·06	η Geminorum	6 6 36·51	....
γ Pegasi	0 6 11·03	+0·05	μ Geminorum	6 14 40·33	+0·01
ι Ceti	0 12 26·77	....	β Canis Majoris	6 16 40·06	....
12 Ceti	0 23 2·82	−0·03	ν Geminorum	6	....
ε Andromedæ	0 31 19·31	....	γ Geminorum	6 29 47·81	−0·03
β Ceti	0 36 42·63	+0·06	Cephei 51	6 35 10·89	+2·38
μ Andromedæ	0 49 9·52	....	Sirius	6 39 6·60	−0·17
ε Piscium	0 55 50·12	−0·02	θ Canis Majoris	6 47 49·49	....
β Andromedæ	1 2 4·21	....	ε Canis Majoris	6 53 14·52	0·00
Polaris	1 8 59·82	+0·30	γ Canis Majoris	6 57 33·62	−0·03
θ Ceti	1 17 10·52	+0·03	51 Geminorum	7 5 30·16	....
η Piscium	1 24 9·37	+0·05	δ Geminorum	7 11 56·34	0·00
ν Piscium	1 34 18·21	0·00	β Canis Minoris	7 19 43·18	....
β Arietis	1 47 4·60	+0·01	Castor	7 25 51·26	0·00
α Arietis	1 59 27·37	+0·02	Procyon	7 32 7·77	+0·09
67 Ceti	2 10 9·06	+0·04	Pollux	7 36 55·72	+0·03
ξ² Ceti	2 20 52·67	0·00	ξ Navis	7 43 31·91	....
δ Ceti	2 32 27·79	....	6 Cancri	7 55 5·95	−0·08
γ Ceti	2 36 12·25	+0·05	15 Argûs	8 1 42·60	0·00
σ Arietis	2 43 55·96	....	β Cancri	8 9 5·03	....
α Ceti	2 55 7·21	+0·06	d² Cancri	8 15 30·95	....
δ Arietis	3 3 47·99	+0·01	η Cancri	8 24 46·92	+0·03
ε Arietis	3 13 19·33	....	γ Cancri	8 35 21·20	....
ο Tauri	3 17 26·63	....	ε Hydræ	8 39 31·12	−0·02
f Tauri	3 23 18·80	....	α Cancri	8 50 59·48	....
ε Eridani	3 26 28·64	....	κ Cancri	9 0 19·45	....
11 Tauri	3 32 35·67	....	83 Cancri	9 11 19·84	+0·10
δ Eridani	3 36 41·20	....	α Hydræ	9 20 51·28	+0·03
η Tauri	3 39 20·74	+0·06	ξ Leonis	9 24 33·48	....
γ¹ Eridani	3 51 38·28	+0·05	ο Leonis	9 33 50·16	....
ω² Tauri	4 1 11·32	....	ε Leonis	9 38 4·18	+0·04
ο² Eridani	4 5 10·73	−0·02	μ Leonis	9 44 57·99	....
γ Tauri	4 12 0·01	....	π Leonis	9 52 58·28	0·00
ε Tauri	4 20 37·19	+0·01	Regulus	10 1 4·39	+0·03
Aldebaran	4 28 3·73	−0·01	γ¹ Leonis	10 12 24·90	0·00
μ Eridani	4 38 39·25	....	μ Hydræ	10	....
ι Aurigæ	4 48 4·55	0·00	ρ Leonis	10 25 35·72	0·00
ε Leporis	4 59 39·71	+0·05	34 Sextantis	10 35 32·93	....
Rigel	5 7 57·27	+0·02	l Leonis	10 42 3·21	+0·02
β Tauri	5 17 38·03	+0·05	d Leonis	10 53 29·05	....
δ Orionis	5 25 0·49	−0·04	χ Leonis	10 57 56·90	−0·01
α Leporis	5 26 41·30	−0·04	δ Leonis	11 6 49·11	+0·02
ε Orionis	5 29 15·72	−0·01	δ Crateris	11 12 29·59	+0·05
α Columbæ	5 34 41·32	−0·16	τ Leonis	11 20 53·46	....
κ Orionis	5 41 15·53	....	υ Leonis	11 29 56·05	−0·03
α Orionis	5 47 45·33	+0·03	β Leonis	11 42 4·18	+0·05
1 Geminorum	5 55 47·60	....	π Virginis	11 53 51·12	....
ν Orionis	5 59 44·99	−0·01	ο Corvi	12 3 5·01	+0·03

MEAN RIGHT ASCENSIONS ADOPTED OF STANDARD STARS.

Star's Name.	Assumed Mean Right Ascension, January 1, 1863.	Correction to Nautical Almanac.	Star's Name.	Assumed Mean Right Ascension, January 1, 1863.	Correction to Nautical Almanac.
	h. m. s.	s.		h. m. s.	s.
η Virginis	12 12 53·84	+0·05	α Lyræ	18 32 18·01	+0·07
δ Corvi	12 22 46·82	....	2 Aquilæ	18	....
β Corvi	12 27 11·73	+0·14	β Lyræ	18 45 1·35	+0·12
35 Virginis	12 40 52·87	....	ε Aquilæ	18 53 24·26	....
δ Virginis	12 48 42·23	....	ζ Aquilæ	18 59 6·78	+0·13
ε Virginis	12 55 21·42	....	ψ Sagittarii	19 7 8·23	....
θ Virginis	13 2 51·52	+0·02	ω Aquilæ	19 11 23·13	+0·03
Spica	13 17 58·72	+0·03	δ Aquilæ	19 18 35·38	+0·03
ζ Virginis	13 27 42·86	−0·01	α Vulpeculæ	19 23 [illegible]·31	....
m Virginis	13 34 25·44	....	μ Aquilæ	19 27 23·78	....
τ Bootis	13 40 45·12	....	h² Sagittarii	19 28 21·98	+0·11
η Bootis	13 48 9·70	+0·03	γ Aquilæ	19 39 44·78	+0·08
τ Virginis	13 54 40·56	+0·05	α Aquilæ	19 44 5·90	+0·05
κ Virginis	14 5 35·18	....	β Aquilæ	19 48 34·98	+0·06
Arcturus	14 9 24·82	+0·06	c Sagittarii	19 54 13·74	....
f Bootis	14 20 5·05	....	λ Ursæ Minoris	20 1 4·26	−0·36
ρ Bootis	14 25 55·54	0·00	θ Aquilæ	20 4 14·07	....
ε Bootis	14 39 0·25	+0·08	α² Capricorni	20 10 27·03	+0·06
α Libræ	14 43 18·23	+0·03	β Capricorni	20 13 18·65	....
ξ² Libræ	14 49 20·29	....	ρ Capricorni	20 21 2·54	+0·14
ψ Bootis	14 58 34·56	−0·02	ε Delphini	20 26 40·02	....
β Libræ	15 9 38·27	+0·04	α Delphini	20 33 16·49	....
ι¹ Libræ	15 15 23·55	....	ε Aquarii	20 40 15·40	....
ζ¹ Libræ	15 20 32·09	....	32 Vulpeculæ	20 48 43·32	+0·04
α Coronæ	15 28 53·30	+0·07	θ Capricorni	20 58 14·49	....
α Serpentis	15 37 31·29	+0·07	ζ Cygni	21 7 6·39	+0·07
ε Serpentis	15 43 59·31	....	α Equulei	21 8 58·43	....
γ Serpentis	15 50 7·62	....	ι Capricorni	21 14 36·83	....
β¹ Scorpii	15 57 28·51	+0·05	β Aquarii	21 24 20·64	+0·04
δ Ophiuchi	16 7 10·09	+0·08	ξ Aquarii	21 30 27·35	....
γ Herculis	16 15 52·68	....	ε Pegasi	21 37 27·44	+0·03
Antares	16 21 0·70	+0·03	δ Capricorni	21 39 28·48	....
λ Ophiuchi	16 24 0·34	....	16 Pegasi	21 46 49·81	+0·02
ζ Ophiuchi	16 29 37·03	....	α Aquarii	21 58 44·74	+0·04
ζ Herculis	16 36 7·35	+0·02	ι Pegasi	22 0 38·07	....
κ Ophiuchi	16 51 11·06	−0·04	θ Aquarii	22 9 36·10	−0·01
ε Herculis	16 55 2·97	....	γ Aquarii	22 14 34·74	....
η Ophiuchi	17 2 31·38	....	π Aquarii	22 23 23·64	....
α Herculis	17 8 24·11	+0·10	η Aquarii	22 28 18·90	+0·01
θ Ophiuchi	17 13 35·89	+0·07	ζ Pegasi	22 34 37·77	+0·08
ν Ophiuchi	17 19 43·07	....	μ Pegasi	22 43 23·60	....
α Ophiuchi	17 28 34·55	+0·07	λ Aquarii	22 45 27·87	....
β Ophiuchi	17 36 42·30	....	Fomalhaut	22 50 4·37	+0·03
μ Herculis	17 41 5·89	+0·07	α Pegasi	22 57 56·28	+0·02
89 Herculis	17 49 53·64	....	γ Piscium	23 10 3·79	+0·01
72 Ophiuchi	18 [illegible] 51·28	....	κ Piscium	23 19 54·54	−0·02
μ Sagittarii	18 5 34·19	+0·05	ι Piscium	23 32 54·24	−0·03
θ Serpentis	18 14 13·26	....	δ Sculptoris	23 41 47·02	−0·06
δ Ursæ Minoris	18 16 32·17	−0·18	ω Piscium	23 52 16·62	−0·04
λ Sagittarii	18 19 30·95	....	2 Ceti	23 56 43·11	....

The Mean Right Ascensions are converted into Apparent for any day of observation, by the application of the reductions of mean to apparent places taken from the Nautical Almanac. The Correction of the Clock is determined

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from the observed transits of the stars in the foregoing Table (excepting the close Polar stars), the corrections of the instrument being previously applied, compared with the Apparent Right Ascensions computed.

The Corrections of the Clock thus determined are contained in the column entitled "Correction of Clock observed."

The sign + prefixed to the Correction of the Clock denotes that the clock is slow; the sign − that it is fast.

On account partly of the variability at times of the Clock-rate, and still more frequently of swerving in the azimuthal position of the Transit Instrument as produced by changes of temperature acting on its supporting stone piers during the observations, the "Adopted Clock Corrections" have been generally obtained by graphical projection, and the stars of each night have been used much more by themselves than with reference to those of preceding and following nights.

At the same time, to afford a tabular view, in the usual manner, of the march of the Clock, its daily errors at 0^h Sidereal Time, as given more or less approximately by the curves, are contained in the following Table.

TABLE III.

CORRECTION FOR TRANSIT CLOCK AT 0^h SIDEREAL TIME.

Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.
1863.	s	1863.	s	1863.	s	1863.	s	1863.	s
Jan. 2	+ 5·90	Feb. 16	+ 9·10	April 15	+ 28·90	June 27	− 8·65	Sept. 5	− 46·32
5	+ 3·27	21	+ 14·92	16	+ 30·47			7	− 48·33
7	+ 1·16	23	+ 17·45	17	+ 32·22	July 3	− 13·83	8	− 49·40
12	− 3·02	27	+ 23·17	20	+ 37·20	4	− 14·58	9	− 50·32
13	− 3·92	28	+ 24·36	21	+ 38·45	5	− 15·28	10	− 51·24
14	− 4·63			22	+ 40·00	6	− 16·04	15	− 55·50
20	− 9·34	Mar. 1	+ 25·60	27	+ 47·68	7	− 16·54	16	− 56·35
22	− 11·37	4	+ 30·42	29	+ 60·68	10	− 17·21	21	− 61·47
23	− 12·37	6	+ 33·50			13	− 17·36	22	− 62·87
(a)		11	+ 40·24	May 1	+ 53·65	17	− 19·35	23	− 64·12
27	+ 1·13	16	+ 44·87	2	+ 55·50	18	− 20·18	24	− 65·44
30	− 2·31	17	+ 45·85	5	+ 60·11	21	− 22·88	25	− 66·73
		18	+ 46·88	7	+ 63·25			26	− 67·85
Feb. 2	− 5·40			8	+ 65·20	Aug. 6	− 28·50	28	− 10·71
3	− 4·57	25	+ 58·34	10	+ 69·00	18	− 32·14	29	− 12·09
4	− 3·86	26	+ 60·16			19	− 32·77		
6	− 2·10			23	− 4·44	20	− 33·55	Oct. 5	− 18·80
8	+ 0·71	April 1	+ 9·33	26	− 3·96	24	− 36·15	6	− 20·13
9	+ 1·52	4	+ 13·49			29	− 40·77	9	− 23·91
10	+ 2·50	6	+ 16·01	June 3	− 0·74			11	− 25·79
12	+ 5·46	7	+ 16·96	4	− 0·80	Sept. 2	− 43·94	14	− 28·16
13	+ 6·00	9	+ 19·20	11	− 1·20	3	− 44·96	20	− 32·60
15	+ 8·15	13	+ 25·59	25	− 6·62	4	− 45·68	21	− 34·08

(a) Pendulum removed temporarily to [illegible] being made, so as to obtain more [illegible] between the zinc and steel.

CORRECTION FOR TRANSIT CLOCK AT 0^h SIDEREAL TIME.

Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.
1863.	s	1863.	s	1863.	s	1863.	s	1863.	s
Oct. 22	− 35·13			Nov. 26	+ 11·71	Dec. 6	+ 2·93	Dec. 21	− 5·16
23	− 36·07	Nov. 11	− 1·64			8	+ 1·01	23	− 5·83
29	− 43·51	(a)		29	+ 8·70	9	+ 0·57	24	− 5·86
		18	+ 7·73	30	+ 8·08	10	− 0·23	26	− 6·33
Nov. 2	− 50·14	19	+ 6·27			12	− 2·00	29	− 7·00
4	− 52·85			Dec. 1	+ 7·30	17	− 4·80	31	− 7·50
6	− 54·99	24	+ 10·60	2	+ 6·29	18	− 4·92		
10	− 60·90	25	+ 11·15	3	+ 5·32	20	− 5·04		

(a) On Nov. 18, removed the Pulkova gridiron pendulum from the Brisbane Sidereal Clock, and replaced the Dent pendulum of steel and mercury. Examined escapement scape wheel, and the contact-making wheel, and found all their teeth in good condition.

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OBSERVATIONS

MADE WITH

THE MURAL CIRCLE,

AND

CALCULATION

OF

APPARENT NORTH POLAR DISTANCES.

1863.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscope A.	Microscope B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1863.
1863.				h. m. s.	° ′	° ′	″	revols.	inches.	°	°				° ′ ″	″
Jan. 2	......	Nadir	......	5 12 0	54 0	2 52·0	54·4	0·500	28·95	41·0	37·0	....	......	......	....	......
	......	Nadir	......	....	54 0	2 64·3	66·1	0·500	......	......	......	....	......	......	....	......
	1883	(a) Orionis	2·0	....	282 35	1 27·4	36·6	0·613	28·95	......	37·0	40, W.	5	5	+48 33 36·2	−3·4
	2184	....	......	6 33 22	273 25	3 14·9	23·7	0·570	28·94	......	37·0	....	......	6	+39 25 24·3	−5·2
	2329	....	......	7 0 6	274 10	4 43·0	32·0	0·609	28·94	......	37·0	....	......	6	+40 11 54·2	−6·6
	2683	(b)	......	....	270 45	1 2·8	12·0	0·724	28·94	......	37·0	....	......	5	+36 43 16·0	−9·6
	......	Nadir	......	8 12 0	54 0	2 54·9	55·3	0·500	28·94	36·0	37·0	....	......	......	....	......
	......	Nadir	......	....	54 0	2 64·2	66·2	0·500	......	......	......	....	......	......	....	......
Jan. 5	......	Nadir	......	6 16 0	54 0	2 51·4	53·3	0·500	28·67	40·0	36·2	....	......	......		
	......	Nadir	......	....	54 0	2 66·4	68·2	0·500	......	......	......	....	......	......	....	......
	2101	(c)	......	6 22 3	267 20	1 46·4	55·4	0·600	28·67	......	36·2	....	......	3	+33 18 56·1	−4·3
	2463	....	......	....	262 10	0 16·4	26·2	0·568	28·67	......	36·0	....	......	4	+28 7 24·9	−5·4
	2522	α Canis Minoris	......	7 32 6	284 20	4 40·4	58·4	0·600	28·70	......	35·5	3, N.W.	6	5	+50 22 0·9	−7·4
	......	Nadir	......	8 30 0	54 0	2 53·0	55·0	0·500	28·70	37·2	35·0	....	......	......	....	......
	......	Nadir	......	....	54 0	2 63·3	65·6	0·500	......	......	......	....	......	......	....	......
Jan. 7	......	Nadir	......	5 12 0	54 0	2 51·6	53·2	0·500	29·06	38·9	36·0	....	......	......	....	......
	......	Nadir	......	....	54 0	2 62·4	63·8	0·500	......	......	......	....	......	......	....	......
	1826	....	......	5 39 22	280 30	1 11·2	19·1	0·500	29·06	......	36·0	5, E.	......	6	+46 28 18·9	−3·3
	1907	....	......	5 51 12	277 10	1 56·1	64·2	0·500	29·06	......	36·0	....	......	6	+43 9 3·7	−3·5
	1962	....	......	6 0 52	265 45	3 2·7	11·2	0·500	29·06	......	36·0	....	......	5	+31 45 10·6	−3·5
	2101	....	......	6 22 6	267 20	1 47·1	56·4	0·500	29·06	......	36·0	....	......	7	+33 18 55·1	−4·3
	2238	....	......	6 43 41	266 10	4 5·4	14·0	0·627	29·06	......	34·0	....	......	5	+32 11 17·1	−5·6
	2334	....	......	7 1 27	239 55	4 38·2	48·0	0·720	29·06	......	34·0	....	......	6	+5 56 51·7	−6·3
	2410	δ Geminorum	......	7 11 59	267 45	0 54·3	62·4	0·429	29·06	......	34·0	0	0	6	+33 42 59·5	−7·4
	2488	....	......	7 26 35	243 30	1 35·5	45·1	0·500	29·06	......	34·0	....	......	7	+9 28 43·1	−8·4
	2586	....	......	7 41 28	261 25	2 35·4	43·9	0·648	29·06	......	33·9	....	......	6	+27 24 46·9	−9·4
	2683	....	......	7 56 51	270 45	1 6·8	16·2	0·500	29·06	......	33·9	....	......	7	+36 43 11·8	−9·9
	2737	....	......	8 3 17	274 55	2 38·9	47·9	0·589	29·06	......	33·8	....	......	6	+40 54 49·8	−9·5
	2867	....	......	8 25 13	279 25	2 47·7	55·6	0·500	29·06	......	33·9	....	......	6	+45 24 55·8	−10·3
	......	Nadir	......	8 33 0	54 0	2 52·6	53·4	0·500	29·06	36·0	33·8	....	......	......	....	......
	......	Nadir	......	....	54 0	2 62·6	64·8	0·500	......	......	......	....	......	......	....	......
Jan. 23	......	Nadir	......	6 24 0	54 0	2 52·7	54·0	0·500	29·08	40·5	37·5	....	......	......	....	......
	......	Nadir	......	....	54 0	2 63·4	64·8	0·500	......	......	......	....	......	......	....	......
	2238	....	......	6 43 55	266 10	4 9·1	18·3	0·473	29·08	......	37·5	20, W.	4	6	+32 11 16·8	−5·5
	2363	....	......	7 6 19	265 0	3 24·6	32·0	0·300	29·08	......	37·5	....	......	6	+31 0 26·4	−6·9
	2410	δ Geminorum	......	7 12 10	267 45	0 55·4	63·2	0·454	29·08	......	37·5	....	......	7	+33 43 0·9	−7·6
	2522	α Canis Minoris	......	7 32 21	284 20	4 50·5	58·3	0·579	29·08	......	37·5	....	......	7	+50 22 1·6	−10·1
	2586	....	......	7 41 41	261 25	2 35·1	43·3	0·611	29·08	......	37·5	....	......	8	+27 24 45·4	−9·6
	2683	....	......	7 57 3	270 45	1 3·8	14·2	0·662	29·06	......	37·5	....	......	6	+36 43 16·7	−10·4
	3133	....	......	9 5 18	285 30	3 40·7	49·9	0·490	29·08	......	38·0	....	......	6	+51 30 49·7	−15·4
	3242	θ Ursæ Majoris	......	9 23 55	237 40	2 31·8	39·4	0·537	29·08	......	38·0	....	......	7	+3 39 35·1	−16·2
	......	Nadir	......	9 31 0	54 0	2 53·0	53·4	0·500	29·08	39·5	38·0	....	......	......	....	......
	......	Nadir	......	....	54 0	2 63·0	63·5	0·500	......	......	......	....	......	......	....	......
Jan. 27	......	Nadir	......	6 26 0	54 0	2 51·8	52·6	0·500	29·95	40·0	41·2	....	......	......	....	......
	......	Nadir	......	....	54 0	2 61·0	62·0	0·500	......	......	......	....	......	......	....	......
	2292	....	6·5	6 53 25	279 10	0 32·2	39·4	0·500	29·95	......	41·1	10, W.	0	......	+45 7 39·0	−6·1
	2463	....	......	7 20 7	262 10	0 14·7	23·3	0·593	29·95	......	40·0	....	......	6	+28 7 23·3	−7·4

(a) Wind boisterous. (b) Wind increasing greatly. (c) Definition bad.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction	Clouds. (Max. = 10.)	Est. Value of Obs. (Max. = 10.)	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1. 1863.
1863.				h m s	° ′	′ ″	″	revs.	inches	°	°				° ′ ″	″
Jan. 27	2522	α Canis Minoris	......	7 32 8	284 20	4 51·7	53·9	0·500	29·95	......	40·0	....	......	7	+50 21 57·6	−10·4
	2586	....	......	7 41 27	261 25	2 30·8	37·8	0·756	29·95	......	40·0	....	......	8	+27 24 44·3	− 8·8
	2683	....	......	7 56 50	270 45	1 5·1	14·0	0·560	29·95	......	40·0	....	......	6	+36 43 14·3	−10·5
	2867	....	......	8 25 13	279 25	2 43·0	51·1	0·750	29·95	......	40·0	....	......	7	+45 24 57·8	−12·2
	......	Nadir ‖	......	9 12 0	54 0	2 52·8	54·0	0·500	29·95	40·0	40·0	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 63·0	64·8	0·500	......	......	......	....	......	......	....	......
Jan. 30	......	Nadir ‖	......	7 12 0	54 0	2 51·6	52·5	0·500	28·79	44·7	42·5	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 64·4	64·9	0·500	......	......	......	....	......	......	....	......
	2522	α Canis Minoris	......	7 32 11	284 20	4 50·0	59·0	0·764	28·80	......	42·5	18, S.W.	5	6	+50 22 6·3	−10·7
	2748	....	......	8 4 46	275 35	0 6·3	15·4	0·344	28·80	......	42·5	....	......	7	+41 32 9·1	−11·3
	2971	ε Hydræ	......	....	283 0	4 20·9	30·8	0·500	28·80	......	42·3	....	......	4	+49 1 30·1	−13·0
	3083	....	......	8 55 42	238 35	3 16·6	24·8	0·824	28·80	......	42·3	....	......	5	+ 4 35 30·9	−12·8
	3242	θ Ursæ Majoris	3·0	9 23 45	237 40	2 25·7	34·9	0·695	28·80	......	42·2	....	......	7	+ 3 39 36·7	−15·1
	3375	....	......	9 45 31	254 20	2 37·4	46·8	0·449	28·80	......	42·2	....	......	6	+20 19 42·7	−16·8
	3427	....	......	9 56 3	256 40	1 43·2	52·6	0·500	28·80	......	42·2	....	......	5	+22 38 50·0	−17·1
	......	Nadir ‖	......	10 0 0	54 0	2 52·4	53·9	0·500	28·80	42·0	42·0	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 64·8	66·6	0·500	......	......	......	....	......	......	....	......
Feb. 3	......	Nadir ‖	......	7 19 0	54 0	2 51·8	53·4	0·500	29·40	40·7	36·2	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 65·0	66·2	0·500	......	......	......	....	......	......	....	......
	2522	α Canis Minoris	......	7 32 13	284 20	4 54·4	62·0	0·500	29·40	......	36·1	....	......	5	+50 22 2·3	−11·0
	2737	....	......	8 3 23	274 55	2 44·2*	53·7	0·500	29·40	......	36·1	12, N.W.	4	6	+40 54 52·0	−11·4
	2971	ε Hydræ	......	8 39 35	283 0	4 14·2	24·6	0·500	29·40	......	36·0	....	......	7	+49 1 23·2	−13·3
	3053	....	......	....	280 0	4 44·9	53·1	0·500	29·40	......	36·0	....	......	6	+46 1 52·8	−13·7
	3133	....	......	9 5 9	285 30	3 41·4	49·2	0·500	29·40	......	36·0	....	......	5	+51 30 19·1	−14·1
	3242	θ Ursæ Majoris	......	9 23 45	237 40	2 29·4	38·6	0·612	29·40	......	36·0	....	......	6	+ 3 39 37·7	−14·5
	......	Nadir ‖	......	10 0 0	54 0	2 53·3	54·2	0·500	29·40	37·3	35·9	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 65·0	66·8	0·500	......	......	......	....	......	......	....	......
Feb. 9	......	Nadir ‖	......	9 6 0	54 0	2 52·2	53·6	0·500	29·50	41·0	41·1	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 64·4	64·7	0·500	......	......	......	....	......	......	....	......
	3331	ε Leonis	......	9 38 3	265 30	5 44·4	54·0	0·500	29·50	......	41·1	15, W.	5	7	+31 32 51·8	−15·7
	3375	....	......	9 45 27	254 20	2 34·3	43·3	0·500	29·50	......	41·1	....	......	......	+20 19 40·4	−15·8
	3418	....	......	9 53 44	280 20	2 58·3	68·1	0·500	29·50	......	41·1	....	......	6	+46 20 6·4	−16·0
	3484	....	8·0	10 6 17	257 50	3 53·9	63·7	0·500	29·50	......	41·1	....	......	6	+23 51 1·2	−17·1
	......	Nadir ‖	......	10 30 0	54 0	2 55·5	57·2	0·500	29·50	41·0	41·0	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 63·4	65·2	......	......	......	......	....	......	......	....	......
Feb. 23	......	Nadir ‖	......	9 12 0	54 0	2 51·8	54·2	0·500	29·99	45·0	45·0	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 63·6	66·4	0·500	......	......	......	....	......	......	....	......
	3331	ε Leonis	......	9 37 48	265 30	5 42·3	51·9	0·584	29·99	......	45·0	10, W.	2	6	+31 32 52·4	−15·0
	3375	....	6·0	9 45 10	254 20	2 32·2	41·0	0·500	29·99	......	45·0	....	......	7	+20 19 38·8	−14·3
Feb. 27	......	Nadir ‖	......	8 37 0	54 0	2 53·0	54·4	0·500	29·78	47·0	43·7	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 63·7	65·4	0·500	......	......	......	....	......	......	....	......
	3083	....	......	8 55 17	238 35	3 18·3	27·2	0·500	29·78	......	43·5	0	0	6	+ 4 35 24·2	− 7·5
	3133	....	6·0	9 4 41	285 30	3 42·3	51·3	0·500	29·78	......	43·5	....	......	6	+51 30 51·0	−16·0
	3331	ε Leonis	......	9 37 42	265 35	0 44·8	53·4	0·500	29·78	......	43·5	....	......	5	+31 32 51·4	−14·8
	3380	....	6·0	9 46 9	283 20	3 16·4	25·5	0·500	29·78	......	43·5	....	......	7	+49 20 25·0	−16·9
	3418	....	8·0	9 53 23	280 20	2 58·0	68·0	0·500	29·78	......	43·5	....	......	6	+46 20 6·7	−16·9

Date.	Star or other Object Observed: No. in British Assn. Catalogue	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds.	Est. Value of Obs.	Apparent Zenith Distance South.	Corr. to Mean N.P.D. Jan. 1, 1863.
1863.				h m s	° ′	′ ″	″	revs.	inches.	°	°		Max. = 10.	Max. = 10.	° ′ ″	″
Feb. 27	3481	......	......	......	257 50	3 55·7	61·5	0·500	29·78	......	43·3	......	......	4	+23 51 3·0	−15·4
	3592	......	......	10 22 18	287 45	2 20·0	38·0	0·500	29·78	......	43·1	......	......	6	+53 44 37·4	−17·4
	3662	......	......	10 34 6	276 30	2 19·5	28·2	0·500	29·78	......	43·0	......	......	6	+44 29 27·4	−17·5
	3726	......	......	......	288 10	4 4·9	13·4	0·500	29·78	......	43·0	10, W.	0	4	+54 11 13·6	−16·0
	3780	......	......	10 56 12	281 35	5 17·0	27·0	0·500	29·78	......	43·0	......	......	7	+47 37 25·9	−16·2
	3834	δ Leonis	......	11 6 26	268 40	3 26·4	35·0	0·500	29·78	......	43·0	......	......	6	+34 40 34·0	−16·4
	4010	......	......	11 44 42	251 10	3 12·7	23·0	0·500	29·78	......	43·0	......	......	5	+17 10 19·8	−20·4
	......	Nadir ‖	......	12 0 [illegible]	54 [illegible]	2 51·7	53·9	0·500	29·78	43·1	43·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 64·6	65·8	......	......	......	......	......	......	......	......	......
Mar. 6	......	Nadir ‖	......	9 4 0	54 0	2 50·8	54·4	0·500	29·70	49·0	47·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 62·0	65·0	0·500	......	......	......	......	......	......	......	......
	3242	δ Ursæ Majoris	......	9 23 7	237 40	2 21·0	31·0	0·606	28·66	......	46·3	7. S.	5	6	+ 3 39 30·6	−4·4
	3331	ε Leonis	......	......	265 30	5 42·9	53·7	0·500	28·86	......	46·3	......	......	5	+31 32 52·4	−14·0
	3375	......	6·0	9 44 54	251 20	2 27·8	36·8	0·500	28·86	......	46·2	......	......	6	+20 19 35·1	−13·0
	3420	......	......	......	257 45	3 37·6	46·4	0·500	28·86	......	46·0	......	......	5	+23 45 45·3	−13·3
	3484	......	7·0	10 5 46	257 50	3 47·3	56·3	0·758	28·86	......	46·0	......	......	6	+23 51 2·3	−14·6
	3592	......	......	10 22 8	287 45	2 32·7	42·5	0·500	28·66	......	46·0	......	......	6	+53 44 42·2	−16·9
	3836	......	......	11 6 18	286 55	3 23·1	33·5	0·500	28·86	......	45·0	......	......	7	+52 55 33·1	−15·6
	3869	......	......	11 14 46	271 45	3 33·6	43·0	0·500	28·66	......	45·0	......	......	6	+37 45 42·4	−15·3
	4153	......	......	......	262 35	2 2·2	13·2	0·500	28·86	......	44·8	......	......	4	+28 34 11·4	−20·6
	......	Nadir ‖	......	12 30 [illegible]	54 0	2 51·3	53·7	0·500	28·86	46·3	44·8	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 63·2	65·4	0·500	......	......	......	......	......	......	......	......
Mar. 11	......	Nadir ‖	......	9 47 0	54 0	2 52·4	53·0	0·500	29·34	41·6	33·2	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 63·8	66·0	0·500	......	......	......	......	......	......	......	......
	3529	......	......	10 12 43	282 50	2 16·0	26·8	0·500	29·34	......	33·0	3, N.E.	0	6	+48 49 25·4	−17·6
	3662	......	......	10 33 49	278 30	2 23·0	29·8	0·403	29·34	......	33·0	......	......	5	+44 [illegible] 27·6	−17·4
	3726	......	6·0	......	288 10	4 4·0	12·2	0·500	29·34	......	33·0	......	......	7	+54 11 12·7	−15·7
	3780	......	......	10 56 55	281 35	5 10·5	21·1	0·693	29·34	......	33·0	......	......	6	+47 37 24·6	−16·5
	3834	δ Leonis	......	11 6 10	268 40	3 20·5	28·9	0·750	29·34	......	33·0	......	......	7	+34 40 35·2	−17·5
	3869	......	......	......	271 45	3 30·9	38·7	0·197	29·34	......	33·0	......	......	4	+37 45 38·5	−15·3
	3996	......	......	11 41 29	284 0	2 23·3	33·1	0·500	29·34	......	33·0	......	......	6	+49 59 32·3	−15·9
	4153	......	......	12 12 48	262 35	2 0·8	10·2	0·500	29·34	......	32·5	......	......	6	+28 34 8·5	−19·5
	......	Nadir ‖	......	12 44 0	54 0	2 51·6	53·2	0·500	29·34	35·2	32·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 63·8	65·2	0·500	......	......	......	......	......	......	......	......
Mar. 16	......	Nadir ‖	......	9 35 0	54 0	2 53·0	55·6	0·500	29·98	41·6	39·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 63·6	65·4	0·500	......	......	......	......	......	......	......	......
	3834	δ Leonis	......	11 6 6	268 40	3 26·9	35·0	0·500	29·98	......	38·0	1, N.	5	6	+34 40 33·9	−17·5
	......	Nadir ‖	......	13 0 0	54 0	2 53·6	55·6	0·500	29·98	40·4	37·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 63·1	64·7	0·500	......	......	......	......	......	......	......	......
Mar. 17	......	Nadir ‖	......	9 56 0	54 0	2 53·0	54·9	0·500	29·88	41·6	37·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 64·2	66·8	0·500	......	......	......	......	......	......	......	......
	3520	......	......	10 12 38	282 50	2 18·7	27·8	0·500	29·88	......	37·0	1, N.	0	6	+48 49 26·3	−17·6
	3592	......	......	10 21 54	287 45	2 28·3	37·7	0·550	29·88	......	37·0	......	......	5	+53 44 37·7	−13·7
	3726	......	......	10 44 27	288 10	4 7·8	16·3	0·500	29·88	......	37·0	......	......	6	+54 11 15·6	−18·9
	3780	......	......	10 55 50	281 35	5 15·7	25·0	0·504	29·88	......	37·0	......	......	6	+47 37 24·1	−16·5
	3834	δ Leonis	......	11 6 5	268 40	3 25·6	34·4	0·584	29·88	......	37·0	......	......	7	+34 40 34·9	−17·4
	3869	......	......	11 14 34	271 45	3 25·7	34·5	0·661	29·88	......	37·0	......	......	8	+37 45 37·4	−17·4

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1863.
				h m s	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
1863. Mar. 17	3996	......	......	11 41 21	284 0	2 17·1	28·2	0·670	29·88	......	36·4	......	......	7	+49 59 30·3	−19·0
	4153	......	......	12 12 42	262 35	1 58·0	68·1	0·509	29·88	......	36·2	......	......	5	+28 34 5·0	−18·8
	4231	......	......	12 25 58	264 45	2 30·0	48·0	0·561	29·88	......	36·2	......	......	6	+30 44 47·5	−19·1
	......	Nadir ‖|	......	13 0 0	54 0	2 53·0	54·8	0·500	29·88	39·4	36·0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 63·7	67·3	0·500	......	......	......	......	......	......	......	......
Mar. 20	......	Nadir ‖|	......	12 0 0	54 0	2 53·2	55·4	0·500	29·50	44·6	44·0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 63·2	66·3	0·500	......	......	......	......	......	......	......	......
	4421	β Comæ	......	13 4 41	261 20	5 42·0	50·9	0·500	29·50	......	44·0	......	......	6	+27 22 49·1	−19·4
	4457	......	......	13 11 57	251 5	4 18·1	26·8	0·600	29·50	......	44·0	......	......	6	+20 6 27·1	−19·6
	4503	......	7·0	......	285 20	4 27·3	36·5	0·500	29·50	......	44·0	......	......	5	+51 21 35·6	−18·0
	......	Nadir ‖|	......	14 0 0	54 0	2 53·0	55·2	0·500	29·50	44·0	44·0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 63·5	67·0	0·500	......	......	......	......	......	......	......	......
April 1	......	Nadir ‖	......	10 37 0	54 0	2 52·4	55·4	0·500	29·75	47·2	43·8	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 63·8	65·0	0·500	......	......	......	......	......	......	......	......
	3780	......	......	10 56 27	281 35	5 13·0	24·0	0·627	29·75	......	43·4	0	0	6	+47 37 26·0	−18·1
	3834	δ Leonis	......	11 6 42	268 40	3 18·3	29·1	0·750	29·75	......	43·2	......	......	7	+34 40 33·7	−16·0
	4231	......	......	12 26 35	264 45	2 33·1	42·9	0·770	29·75	......	43·0	......	......	6	+30 44 46·2	−17·3
	4364	(a)	......	12 54 46	267 55	4 22·8	32·0	0·500	29·75	......	43·0	......	......	5	+33 56 30·6	−17·9
	4421	β Comæ	......	13 5 22	261 20	5 36·8	48·8	0·500	29·75	......	42·8	......	......	6	+27 22 45·9	−17·7
	......	Nadir ‖	......	14 1 0	54 0	2 51·7	54·1	0·500	29·75	45·5	42·8	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 62·2	64·9	0·500	......	......	......	......	......	......	......	......
April 6	......	Nadir ‖	......	11 15 0	54 0	2 50·5	53·4	0·500	29·04	44·8	39·3	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 62·7	64·9	0·500	......	......	......	......	......	......	......	......
	3996	......	......	11 41 51	284 0	2 26·6	37·0	0·350	29·04	......	39·2	3, W.	0	6	+49 59 32·0	−18·7
	4199	......	......	12 20 32	263 15	4 40·0	50·3	0·616	29·04	......	39·1	......	......	7	+29 16 52·3	−16·3
	4244	(b)	......	12 28 15	252 45	4 18·4	27·2	0·500	29·04	......	39·0	......	......	6	+18 46 25·8	−15·1
	4364	......	......	12 54 38	267 55	4 25·2	33·0	0·400	29·02	......	38·7	......	......	7	+33 56 30·3	−17·2
	4421	β Comæ	......	13 5 14	261 20	5 36·1	45·3	0·672	29·02	......	38·7	......	......	6	+27 22 49·4	−16·8
	4462	......	......	13 13 24	284 25	1 28·8	38·8	0·500	29·02	......	38·7	......	......	5	+50 23 38·0	−17·8
	4503	......	......	13 22 4	285 20	4 23·4	33·9	0·500	29·02	......	38·0	......	......	7	+51 21 33·5	−17·7
	4676	......	......	13 55 2	257 45	1 26·2	34·2	0·500	29·02	......	37·6	......	......	6	+23 43 33·1	−17·2
	4723	......	......	14 7 34	260 10	5 9·7	20·1	0·576	29·02	......	37·1	......	......	5	+26 12 20·8	−17·4
	4756	......	......	14 13 28	237 15	5 29·9	38·6	0·669	29·02	......	37·0	......	......	7	+ 3 17 40·1	−16·8
	4797	......	......	14 22 21	253 10	1 30·1	38·8	0·637	29·02	......	37·0	......	......	6	+19 8 40·7	−17·4
	......	Nadir ‖|	......	14 30 0	54 0	2 49·0	51·8	0·500	29·02	41·8	37·0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 63·4	66·1	0·500	......	......	......	......	......	......	......	......
April 8	......	Nadir ‖|	......	11 30 0	54 0	2 51·1	53·7	0·500	29·11	44·5	39·0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 64·0	66·4	0·500	......	......	......	......	......	......	......	......
	3996	......	......	11 41 52	284 0	2 26·2	36·2	0·423	29·11	......	39·0	3, W.	0	7	+49 59 33·5	−18·6
	4199	......	......	12 20 32	263 15	4 42·2	51·1	0·587	29·11	......	39·0	......	......	8	+29 16 52·9	−15·9
	4364	......	......	12 54 37	267 55	4 21·2	29·8	0·589	29·11	......	39·0	......	......	6	+33 56 32·0	−16·9
	4503	......	......	13 22 3	285 20	4 25·2	36·4	0·466	29·11	......	39·0	......	......	5	+51 21 34·8	−17·6
	4797	......	......	14 22 21	253 10	1 32·2	41·8	0·500	29·11	......	38·8	......	......	6	+19 8 30·6	−17·0
	......	Nadir ‖|	......	14 30 0	54 0	2 50·6	52·0	0·500	29·11	41·0	38·7	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 63·9	65·0	0·500	......	......	......	......	......	......	......	......

(a) Sky getting cloudy. (b) Middle star observed.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Corr. to Mean N.P.D. Jan. 1, 1863.
1863.				h m s	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
April 9	......	Nadir ‖ |	......	11 31 0	54 0	2 51.7	52.8	0.500	29.48	47.2	44.0	....	......	......	....	......
	......	Nadir | ‖	....	....	54 0	2 62.7	66.1	0.500	......	......	......	....	......	......	....	......
	4199	....	......	12 20 30	263 15	4 43.1	52.4	0.500	29.48	......	44.0	0	0	6	+29 16 51.2	−15.6
	4231	....	8.0	12 26 25	264 45	2 40.3	49.5	0.500	29.48	......	43.9	....	......	7	+30 44 47.0	−16.1
	4364	....	......	12 51 35	267 55	4 23.8	32.2	0.500	29.48	......	43.9	....	......	6	+33 56 31.5	−16.5
	4421	(a) β Comæ	......	13 5 12	261 20	5 37.4	45.8	0.500	29.50	......	43.9	....	......	7	+27 22 45.0	−14.3
	4457	....	......	13 12 28	254 5	4 15.8	24.4	0.500	29.50	......	43.9	....	......	7	+20 6 22.7	−15.8
	4503	....	......	13 22 0	285 20	4 28.1	36.0	0.370	29.50	......	43.8	....	......	6	+51 21 33.8	−17.5
	4550	....	......	13 30 52	236 35	2 5.2	15.4	0.682	29.50	......	43.8	....	......	8	+ 2 34 16.4	−11.6
	4575	....	......	13 37 0	266 35	1 20.7	30.9	0.579	29.50	......	43.8	....	......	7	+32 33 30.9	−16.0
	4610	....	......	13 42 10	258 5	2 43.8	53.0	0.652	29.50	......	43.8	....	......	8	+24 4 55.2	−16.4
	4652	....	......	13 49 49	257 15	2 59.0	68.0	0.500	29.50	......	43.8	....	......	6	+ [illegible] 15 6.1	−16.4
	4678	....	......	13 56 10	257 35	5 52.3	62.7	0.374	29.50	......	43.8	....	......	9	+23 37 57.1	−16.7
	4737	....	......	14 10 38	274 0	5 51.4	61.0	0.384	29.50	......	43.8	....	......	7	+40 2 57.1	−16.7
	4797	....	......	14 22 18	253 10	1 33.5	41.9	0.500	29.50	......	43.8	....	......	6	+19 8 39.8	−16.5
	4820	....	......	14 28 5	256 50	1 56.7	65.7	0.500	29.50	......	43.8	....	......	7	+22 [illegible] 3.6	−16.5
	......	Nadir ‖ |	......	14 40 0	54 0	2 53.2	55.4	0.500	29.50	45.0	43.8	....	......	......	....	......
	......	Nadir | ‖	......	....	54 0	2 62.6	64.4	0.500	......	......	......	....	......	......	....	..
April 13	......	Nadir ‖ |	......	12 50 0	54 0	2 51.6	55.2	0.500	29.77	49.0	41.5	....	......	......	....	....
	......	Nadir | ‖	......	....	54 0	2 62.6	66.2	0.500	......	......	......	....	......	......	....	....
	4421	β Comæ	......	13 5 5	261 20	5 37.3	46.9	0.500	29.77	......	41.5	5, E.	0	6	+27 [illegible] 44.9	−15.6
	4503	....	......	13 21 55	285 20	4 24.6	34.8	0.376	29.77	......	41.2	....	......	6	+51 21 30.2	−17.4
	4575	....	......	13 36 53	266 35	1 20.7	32.1	0.500	29.77	......	41.0	....	......	5	+32 33 28.5	−16.3
	4628	....	......	13 44 42	254 35	4 23.3	31.1	0.500	29.77	......	41.0	....	......	6	+20 36 29.5	−15.6
	4652	....	......	13 49 41	257 15	2 56.9	65.7	0.564	29.77	......	41.0	....	......	7	+ [illegible] 15 5.2	−15.4
	4694	....	......	13 59 56	258 25	4 39.1	49.7	0.588	29.77	......	41.0	....	......	6	+24 [illegible] 49.4	−15.1
	4820	....	......	14 27 58	256 50	1 50.9	60.3	0.630	29.77	......	41.0	....	......	6	+22 49 1.1	−16.1
	......	Nadir ‖ |	......	14 36 0	54 0	2 52.0	56.1	0.500	29.77	43.2	41.0	....	......	......	....	....
	......	Nadir | ‖	......	....	54 0	2 63.4	67.4	0.500	......	......	......	....	......	......	....	......
April 15	......	Nadir ‖ |	......	12 3 0	54 0	2 51.6	54.0	0.500	29.70	48.0	46.2	....	......	......	....	....
	......	Nadir | ‖	......	....	54 0	2 64.6	67.4	0.500	......	......	......	....	......	......	....	....
	4231	(b)	......	12 26 15	264 45	2 37.8	48.4	0.532	29.70	......	46.0	1, S.E.	0	6	+30 44 46.5	−15.2
	4364	....	......	12 54 26	267 55	4 23.4	32.4	0.449	29.70	......	45.2	....	......	7	+33 56 29.4	−15.9
	4421	β Comæ	......	13 5 2	261 20	5 37.6	46.8	0.500	29.70	......	45.1	....	......	6	+27 22 45.1	−15.3
	4457	....	......	13 12 19	254 5	4 14.2	23.1	0.500	29.70	......	45.1	....	......	8	+20 6 20.7	−14.5
	4513	(c)	8.0	13 23 56	265 0	3 17.6	27.0	0.433	29.70	......	45.0	....	......	7	+31 0 23.0	−15.5
	......	Nadir ‖ |	......	14 46 0	54 0	2 52.5	55.1	0.500	29.70	47.7	45.0	....	......	......	....	....
	......	Nadir | ‖	......	....	54 0	2 63.8	66.0	0.500	......	......	......	....	......	......	....	....
April 16	......	Nadir ‖ |	......	12 19 0	54 0	2 50.8	53.7	0.500	29.78	48.8	46.2	....	......	......	....	....
	......	Nadir | ‖	......	....	54 0	2 60.7	63.9	0.500	......	......	......	....	......	......	....	....
	4364	....	......	12 54 24	267 55	4 18.9	28.5	0.592	29.78	......	46.1	4, S.W.	0	6	+33 56 29.7	−15.4
	4421	β Comæ	......	....	261 20	5 37.8	47.4	0.500	29.78	......	46.0	....	......	7	+27 22 46.0	−15.1
	4550	....	......	13 30 41	236 35	2 5.5	14.2	0.631	29.78	......	45.8	....	......	5	+ 2 34 14.6	−11.6
	4628	....	6.0	13 44 38	254 35	4 24.1	32.4	0.500	29.78	......	45.8	....	......	8	+20 36 31.0	−14.9
	4694	....	......	13 59 55	258 25	4 38.6	47.0	0.598	29.78	......	45.1	....	......	7	+24 26 17.8	−15.3
	4729	α Bootis	......	14 8 56	270 5	1 0.0	8.6	0.500	29.78	......	44.8	....	......	8	+36 3 7.3	−16.4
	4820	....	......	14 27 54	256 50	1 54.7	64.3	0.500	29.78	......	44.7	....	......	6	+22 49 1.9	−15.4
	4876	ι Bootis	......	14 38 32	262 15	5 47.4	57.2	0.500	29.78	......	44.7	....	......	8	+28 17 55.8	−15.4

(a) Good definition. (b) Aurora in N. (c) Clouds gathering.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1863.
1863.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
April 16	4934		......	14 50 21	248 15	3 50·4	60·0	0·632	29·78	......	44·4	......	......	7	+ 14 16 1·1	− 15·3
	......	Nadir ‖ ∣	......	15 0 0	54 0	2 54·0	56·8	0·500	29·78	44·7	44·3	......	......	......	......	......
	......	Nadir ∣ ‖	......	......	51 0	2 62·8	64·3	0·500	......	......	......	......	......	......	......	......
April 17	......	Nadir ‖ ∣	......	12 20 0	54 0	2 51·7	54·2	0·500	29·89	48·7	43·2	......	......	......	......	......
	......	Nadir ∣ ‖	......	......	54 0	2 62·8	65·7	0·500	......	......	......	......	......	......	......	......
	4421	β Comæ	......	13 4 58	261 20	5 34·6	42·1	0·640	29·89	......	42·9	3, W.	0	7	+ 27 22 45·0	− 14·9
	4462		......	13 13 8	284 25	1 31·4	40·6	0·500	29·89	......	42·9	......	......	7	+ 50 23 39·1	− 17·2
	4503		......	13 21 49	285 20	4 25·1	35·9	0·434	29·89	......	42·9	......	......	6	+ 51 21 32·4	− 17·1
	4550		......	13 30 39	236 35	2 9·1	18·9	0·500	29·89	......	42·4	......	......	5	+ 2 34 14·4	− 12·4
	4606		......	13 41 40	257 50	4 54·2	63·2	0·750	29·89	......	42·2	......	......	6	+ 23 52 6·0	− 14·9
	4676		......	13 54 47	257 45	1 22·0	30·2	0·658	29·89	......	42·0	......	......	5	+ 23 43 32·2	− 15·0
	4694		......	13 59 50	258 25	4 38·7	48·8	0·610	29·89	......	42·0	......	......	7	+ 24 26 49·2	− 15·1
	4863		......	14 36 36	252 35	4 38·3	48·8	0·500	29·89	......	41·3	......	......	6	+ 18 36 45·6	− 15·1
	......	Nadir ‖ ∣	......	15 8 0	54 0	2 53·7	56·2	0·500	29·89	42·4	41·2	......	......	......	......	......
	......	Nadir ∣ ‖	......	......	54 0	2 64·8	67·8	0·500	......	......	......	......	......	......	......	......
April 21	......	Nadir ‖ ∣	......	12 9 0	54 0	2 52·0	54·4	0·500	28·99	45·8	44·4	......	......	......	......	......
	......	Nadir ∣ ‖	......	......	54 0	2 64·0	66·4	0·500	......	......	......	......	......	......	......	......
	4231		......	12 26 6	264 45	2 38·6	47·2	0·500	28·99	......	44·4	20, S.W.	0	6	+ 30 44 45·4	− 14·2
	4364		......	12 54 16	267 55	4 20·0	27·3	0·572	28·99	......	44·4	......	......	7	+ 33 56 26·5	− 15·0
	4676		......	13 54 40	257 45	1 22·8	32·8	0·500	28·95	......	43·0	......	......	7	+ 23 43 29·7	− 14·2
	4729	α Boot.	......	14 8 49	270 5	1 0·0	9·4	0·500	28·95	......	43·0	......	......	6	+ 36 3 7·2	− 15·6
	4797		......	14 22 0	253 10	1 30·2	37·8	0·500	28·95	......	43·0	......	......	7	+ 19 8 35·5	− 14·1
	......	Nadir ‖ ∣	......	14 40 0	54 0	2 51·6	53·6	0·500	28·95	44·6	43·0	......	......	......	......	......
	......	Nadir ∣ ‖	......	......	54 0	2 65·3	66·7	0·500	......	......	......	......	......	......	......	......
April 22	......	Nadir ‖ ∣	......	12 43 0	54 0	2 52·2	54·1	0·500	29·52	46·2	41·5	......	......	......	......	......
	......	Nadir ∣ ‖	......	......	54 0	2 63·8	66·4	0·500	......	......	......	......	......	......	......	......
	4364		......	12 54 15	267 55	4 21·1	29·0	0·500	29·52	......	41·5	......	......	6	+ 33 56 28·2	− 14·9
	4503		......	13 21 40	285 20	4 25·8	35·9	0·500	29·52	......	41·4	......	......	7	+ 51 21 31·9	− 16·8
	4610		......	......	258 5	2 46·7	55·7	0·500	29·52	......	41·3	......	......	6	+ 24 4 53·6	− 13·9
	4652		......	13 49 27	257 15	3 3·1	11·4	0·284	29·52	......	41·3	......	......	6	+ 23 15 3·5	− 13·9
	4694		......	13 59 44	258 25	4 40·0	48·8	0·500	29·52	......	41·2	......	......	7	+ 24 26 47·2	− 14·1
	......	Nadir ‖ ∣	......	14 8 0	54 0	2 52·4	54·2	0·500	29·52	41·3	41·0	......	......	......	......	......
	......	Nadir ∣ ‖	......	......	54 0	2 63·7	66·3	0·500	......	......	......	......	......	......	......	......
April 23	......	Nadir ‖ ∣	......	13 21 0	54 0	2 52·3	54·4	0·500	29·96	45·7	41·0	......	......	......	......	......
	......	Nadir ∣ ‖	......	......	54 0	2 63·9	66·0	0·500	......	......	......	......	......	......	......	......
	4526		......	......	264 55	1 23·7	32·3	0·500	29·96	......	41·0	2, N.	5	5	+ 30 53 30·6	− 13·3
	5071	(a)	......	15 15 14	237 30	3 13·0	23·3	0·500	29·96	......	39·4	......	......	4	+ 3 30 19·3	− 11·6
May 1	......	Nadir ‖ ∣	......	12 38 0	54 0	2 52·8	53·4	0·500	29·99	51·1	51·0	......	......	......	......	......
	......	Nadir ∣ ‖	......	......	54 0	2 63·1	64·1	0·500	......	......	......	......	......	......	......	......
	4364		......	12 54 1	267 55	4 18·4	27·1	0·567	29·99	......	51·0	......	......	7	+ 33 56 28·0	− 13·5
	4526		......	13 25 27	264 55	1 20·3	30·7	0·500	29·99	......	50·0	3, S.	0	6	+ 30 53 28·4	− 13·0
	4575		......	13 36 25	266 35	1 16·4	27·4	0·500	29·99	......	50·0	......	......	7	+ 32 33 24·0	− 13·2
	4756		......	14 12 50	237 15	5 23·4	34·8	0·677	29·99	......	50·0	......	......	8	+ 3 17 35·4	− 9·7
	4863		......	14 36 15	252 35	4 33·2	43·0	0·688	29·99	......	50·0	......	......	7	+ 18 36 45·7	− 11·7
	4934		......	14 49 57	248 15	3 47·3	56·3	0·605	29·99	......	50·0	......	......	6	+ 14 15 56·7	− 11·4
	4965		......	14 57 24	244 45	4 22·6	31·8	0·502	29·99	......	50·0	......	......	6	+ 10 46 29·3	− 11·2

(a) Bad definition.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N.P.D. Jan. 1, 1863.
1863.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
May 1	5071	....	......	15 15 10	237 30	3 8·9	20·0	0·621	29·99	......	49·9	....	......	7	+ 3 30 19·0	− 11·6
	5284	γ Serpentis.........	......	15 49 16	273 50	2 58·1	68·1	0·500	29·99	......	49·8	....	......	6	+39 50 6·7	− 11·2
	......	Nadir	......	16 [illegible] 0	54 0	2 52·7	55·1	0·500	29·99	48·2	48·2	....	......	......	....	......
	......	Nadir		....	54 0	2 61·9	65·8	0·500	......	......	......	....	......	......	....	......
May 5	......	Nadir	......	12 49 0	54 0	2 51·7	53·2	0·500	29·67	50·8	43·0	....	......	......	....	......
	......	Nadir	......	....	54 0	2 62·2	65·4	0·500	......	......	......	....	......	......	....	......
	4513	(a)	......	13 23 24	265 [illegible]	3 12·4	20·3	0·500	29·67	......	43·0	12, W.	0	6	+31 0 19·3	− 13·3
	4559	....	......	13 31 52	278 30	2 57·1	66·0	0·500	29·67	......	43·0	....	......	6	+44 30 5·2	− 14·5
	4606	....	7·0	13 41 12	257 50	4 52·4	60·3	0·500	29·67	......	43·0	....	......	5	+[illegible] 51 59·0	− 11·1
	4676	....	......	13 54 19	257 45	1 21·0	29·6	0·500	29·65	......	43·0	....	......	6	+23 43 27·6	− 11·1
	4723	....	......	14 6 51	260 10	5 1·4	12·0	0·711	29·65	......	42·8	....	......	7	+26 12 15·4	− 11·5
	4797	....	......	14 21 37	253 10	1 20·0	29·4	0·742	29·65	......	42·8	....	......	7	+19 8 33·3	− 10·6
	4820	....	......	14 27 24	256 50	1 50·0	59·9	0·500	29·65	......	42·8	....	......	6	+22 48 57·3	− 11·1
	4863	....	......	14 36 7	252 35	4 36·0	45·0	0·590	29·65	......	42·7	....	......	7	+18 36 45·2	− 10·7
	4934	....	......	....	248 15	3 44·6	54·2	0·732	29·65	......	42·5	....	......	6	+14 15 57·6	− 10·3
	5071	....	......	15 15 4	237 30	3 10·7	21·1	0·500	29·65	......	42·5	....	......	7	+ 3 30 17·0	− 9·6
	5284	γ Serpentis.........	......	15 49 9	273 50	3 0·0	11·3	0·394	29·65	......	41·0	....	......	7	+39 50 6·1	− 10·4
	......	Nadir	......	16 6 0	[illegible] 0	2 54·8	57·0	0·500	29·65	42·6	41·0	....	......	......	....	......
	......	Nadir	......	....	54 0	2 64·0	66·0	0·500	......	......	......	....	......	......	....	......
May 8	......	Nadir	......	12 45 [illegible]	54 0	2 51·1	56·3	0·500	29·90	54·2	55·0	....	......	......	....	......
	......	Nadir	......	....	54 0	2 61·6	66·0	0·500	......	......	......	....	......	......	....	......
	4364	....	......	12 53 50	267 55	4 16·9	27·8	0·602	29·90	......	55·0	....	......	7	+33 56 26·7	− 13·4
	4421	β Comæ..............	......	....	261 25	0 32·4	42·6	0·500	29·90	......	55·0	....	......	5	+27 22 40·4	− 11·4
	4462	....	......	13 12 36	284 25	1 29·4	38·4	0·533	29·90	......	55·0	5, S.W.	0	6	+50 23 38·8	− 15·6
	4513	(a)	6·5	13 [illegible] 19	265 0	3 12·0	21·8	0·500	29·90	......	55·0	....	......	5	+31 0 20·2	− 11·7
	4575	....	......	13 36 15	266 35	1 15·8	28·4	0·517	29·90	......	55·0	....	......	6	+32 33 25·8	− 12·0
	4621	....	......	13 42 31	270 35	6 6·3	16·8	0·500	29·90	......	55·0	....	......	7	+36 36 15·0	− 12·6
	4678	....	......	13 55 25	257 35	5 41·[illegible]	51·0	0·500	29·90	......	54·4	12	1	......	+[illegible] 37 49·3	− 10·4
	4729	(b) α Bootis.........	......	14 8 22	270 5	0 55·1	64·8	0·500	29·90	......	54·3	....	......	7	+[illegible] 3 3·4	− 12·6
	4797	....	......	14 21 33	253 10	1 28·4	36·6	0·426	29·90	......	54·[illegible]	....	......	8	+[illegible] 8 33·8	− 9·9
	4820	....	......	14 27 18	256 50	1 49·0	58·4	0·500	29·90	......	54·0	....	......	7	+[illegible] 48 56·4	− 10·4
	4863	(c)	......	14 36 4	252 35	4 34·0	43·8	0·562	29·90	......	54·0	....	......	8	+18 36 43·2	− [illegible]
	4934	....	......	14 49 45	248 15	3 49·4	59·4	0·426	29·90	......	54·0	....	......	7	+14 15 54·6	− 9·1
	4965	....	......	14 57 12	244 45	4 16·6	28·0	0·630	29·90	......	53·2	....	......	6	+10 46 28·1	− 9·3
	5091	....	......	15 19 17	226 5	5 41·1	50·9	[illegible]·500	29·90	......	53·0	....	......	[illegible]	− 7 52 12·5	− 9·0
	5284	γ Serpentis.........	......	15 49 5	273 50	2 57·2	68·7	0·500	29·90	......	53·0	....	......	6	+39 50 6·8	− 10·0
	5415	....	......	16 5 17	231 40	2 38·7	49·8	0·714	29·90	......	53·0	....	......	7	− 2 20 8·5	− 8·3
	5452	....	......	16 13 5	268 30	1 50·2	60·4	0·500	29·90	......	53·0	....	......	[illegible]	+34 28 58·7	− 9·4
	......	Nadir	......	16 26 0	54 0	2 50·4	52·0	0·500	29·90	53·3	53·0	....	......	......	....	......
	......	Nadir	......	....	54 0	2 64·[illegible]	66·1	0·500	......	......	......	....	......	......	....	......
May 26	......	Nadir	......	13 40 0	54 0	2 52·8	54·4	0·500	29·92	48·0	49·1	....	......	......	....	——
	......	Nadir	......	....	54 0	2 64·2	66·2	0·500	......	......	......	....	......	......	....	——
	4876	ε Bootis............	......	14 39 6	262 20	0 41·9	51·5	0·436	29·91	......	49·1	3, W.	0	7	+28 17 47·2	− 7·1
	4934	....	......	14 50 55	248 15	3 39·4	47·8	0·702	29·91	......	49·0	....	......	6	+14 15 50·7	− 4·7
	4965	....	......	14 58 22	244 45	4 15·1	25·3	0·500	29·91	......	48·4	....	......	6	+10 46 21·7	− 4·2
	5071	....	......	15 16 8	237 30	3 0·6	10·2	0·686	29·90	......	48·0	....	......	6	+ 3 30 11·3	− 3·4
	5284	γ Serpentis.........	......	15 50 15	273 50	2 51·1	60·9	0·640	29·90	......	47·4	....	......	6	+39 50 2·9	− 6·6
	5415	....	......	16 8 25	231 40	2 37·8	47·6	0·550	29·90	......	47·1	....	......	6	− 2 20 15·2	− 3·4

(a) The following of two stars. (b) Good definition. (c) Aurora in N.W.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1863.
1863.				h m s	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
May 26	5452	......	......	16 14 14	268 30	1 45·3	56·3	0·500	29·90	......	47·0	......	......	6	+34 28 53·4	− 5·5
	......	Nadir ‖	......	17 0 0	54 0	2 52·6	54·3	0·500	29·90	......	47·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 64·4	66·4	0·500	......	......	......	......	......	......	......	......
May 29	......	Nadir ‖	......	15 38 0	54 0	2 51·7	54·0	0·500	29·87	55·0	52·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 62·5	65·9	0·500	......	......	......	......	......	......	......	......
July 3	......	Nadir ‖	......	18 0 0	54 0	2 49·7	52·2	0·500	29·96	58·8	53·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 62·3	66·4	0·500	......	......	......	......	......	......	......	......
	6602	......	......	......	267 10	2 31·9	41·5	0·500	29·96	......	53·0	4, E.	......	6	+33 9 43·9	+ 9·7
	6772	γ Aquilæ	......	19 40 0	279 40	2 6·7	17·7	0·500	29·96	......	53·0	......	......	7	+45 39 17·0	+11·6
	6855	......	......	19 52 15	273 50	1 38·7	49·3	0·500	29·96	......	53·0	......	......	6	+39 48 48·5	+11·5
	6941	......	......	20 5 17	269 15	0 37·4	47·0	0·500	29·96	......	53·0	......	......	7	+35 12 46·3	+11·3
	......	Nadir ‖	......	20 20 0	54 0	2 50·0	52·6	0·500	29·96	52·0	52·1	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 62·1	66·7	0·500	......	......	......	......	......	......	......	......
July 6	......	Nadir ‖	......	17 22 0	54 0	2 50·1	54·1	0·500	29·65	62·0	61·5	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 61·1	65·9	0·500	......	......	......	......	......	......	......	......
	6468	......	......	18 50 9	256 10	1 54·0	66·1	0·641	29·63	......	60·0	......	......	7	+22 9 7·3	+ 9·7
July 7	......	Nadir ‖	......	17 22 0	54 0	2 49·9	53·0	0·500	29·74	62·4	60·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 64·1	65·2	0·500	......	......	......	......	......	......	......	......
	6302	χ Draconis	......	18 23 43	217 15	4 58·2	69·1	0·641	29·73	......	58·3	1, W.	0	7	−16 42 49·9	+ 9·5
	6429	β Lyræ	2·0	18 45 19	256 45	2 19·8	30·7	0·500	29·73	......	58·0	......	......	7	+22 44 29·0	+ 9·9
	6480	......	......	18 52 10	257 15	0 58·9	72·0	0·569	29·73	......	58·0	......	......	6	+23 13 10·9	+10·0
	6534	......	......	18 60 2	258 25	2 4·6	16·1	0·593	29·73	......	58·0	......	......	8	+24 24 16·8	+10·2
	6574	......	......	19 7 2	268 35	4 18·4	59·6	0·629	29·73	......	58·0	......	......	7	+34 37 2·3	+10·6
	6617	......	......	19 13 46	278 40	2 4·9	6·3	0·550	29·73	......	58·0	......	......	8	+44 39 11·9	+11·2
	6652	......	......	19 19 13	269 55	4 6·1	19·2	0·500	29·73	......	58·0	......	......	7	+35 56 17·6	+11·1
	6762	......	......	19 38 38	263 10	0 56·2	68·6	0·500	29·73	......	57·6	......	......	6	+29 8 6·5	+11·2
	6852	......	......	19 51 52	230 35	4 16·8	27·8	0·669	29·73	......	57·0	......	......	6	− 3 23 30·2	+ 8·7
	6941	......	......	20 5 20	269 15	0 37·0	48·8	0·500	29·73	......	57·0	......	......	6	+35 12 47·2	+12·3
	7006	......	......	20 14 58	253 15	2 32·2	43·2	0·640	29·73	......	57·0	......	......	7	+19 14 45·1	+10·6
	7150	......	......	20 33 36	279 10	3 8·8	21·5	0·500	29·73	......	57·0	......	......	......	+45 10 20·3	+14·4
	......	Nadir ‖	......	20 37 0	54 0	2 48·8	53·3	0·500	29·73	58·0	57·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 62·2	66·1	0·500	......	......	......	......	......	......	......	......
July 9	......	Nadir ‖	......	17 17 0	54 0	2 48·8	55·0	0·500	30·05	65·0	65·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 61·2	66·8	0·500	......	......	......	......	......	......	......	......
	6245	......	......	18 17 4	272 10	3 37·8	50·5	0·671	30·05	......	64·2	1, W	5	7	+38 10 53·5	+ 9·1
	6429	β Lyræ	3·0	18 45 19	256 45	2 19·9	30·9	0·500	30·05	......	64·0	......	......	6	+22 44 29·0	+10·8
July 10	......	Nadir ‖	......	19 7 0	54 0	2 49·8	52·1	0·500	30·20	65·0	61·6	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 62·0	65·0	0·500	......	......	......	......	......	......	......	......
	6602	......	......	19 12 14	267 10	2 30·9	42·7	0·633	30·20	......	61·6	......	......	6	+33 9 44·9	+11·5
	6729	......	......	19 32 44	284 50	3 27·7	40·0	0·668	30·20	......	61·4	......	......	7	+50 50 44·4	+13·0
	6772	γ Aquilæ	......	19 40 4	279 40	2 3·1	16·0	0·610	30·20	......	61·2	......	......	8	+45 39 17·6	+13·1
July 13	......	Nadir ‖	......	19 42 0	54 0	2 50·7	53·3	0·500	30·20	59·0	55·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 61·2	64·8	0·500	......	......	......	......	......	......	......	......
	6941	......	......	......	269 15	0 33·1	44·1	0·500	30·20	......	55·0	4, W.	3	6	+35 12 42·9	+13·9

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1863.
1863.				h. m. s.	° ′	′ ″	″	rev.	inches.	°	°				° ′ ″	″
July 13	7006	......	......	20 15 0	253 15	2 31.2	41.3	0.541	30.20	......	55.0	......	......	7	+19 14 40.8	+12.5
	7086	......	......	20 26 18	234 20	3 31.7	41.9	0.500	30.20	......	55.0	......	......	6	+ 0 20 39.3	+10.5
	7161	......	......	20 35 3	244 45	3 45.6	55.8	0.715	30.20	......	55.0	......	......	7	+10 45 59.6	+11.5
	7268	......	......	20 51 29	243 5	1 13.3	27.1	0.620	30.20	......	55.0	......	......	6	+ 9 3 26.3	+11.1
	......	Nadir ‖|	......	21 0 0	54 0	2 51.0	53.2	0.500	30.20	55.0	55.0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 61.6	64.6	0.500	......	......	......	......	......	......	......	......
July 14	......	Nadir ‖|	......	18 32 0	54 0	2 50.0	53.4	0.500	30.05	63.0	56.3	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 62.8	66.8	0.500	......	......	......	......	......	......	......	......
	6429	β Lyræ	3.0	18 45 21	256 45	2 17.2	28.6	0.500	30.05	......	56.3	10, W.	5	6	+22 44 26.2	+11.9
	6528	ζ Aquilæ	......	18 59 26	276 15	4 23.5	33.4	0.500	30.05	......	56.2	......	......	7	+42 16 33.0	+11.9
	6617	......	......	19 13 46	278 40	2 0.8	12.0	0.615	30.05	......	56.0	......	......	7	+44 39 13.9	+12.6
	6762	......	......	19 38 38	263 10	0 53.8	65.5	0.574	30.05	......	56.0	......	......	8	+29 8 5.2	+13.2
	6852	......	......	19 51 25	230 35	4 15.7	25.9	0.622	30.05	......	56.0	......	......	7	− 3 23 33.6	+11.2
	7006	......	......	20 14 59	253 15	2 31.9	42.7	0.576	30.05	......	56.0	......	......	6	+19 14 42.4	+12.9
	......	Nadir ‖|	......	20 30 0	54 0	2 50.1	53.6	0.500	......	......	......	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 62.9	67.0	0.500	......	......	......	......	......	......	......	......
July 15	......	Nadir ‖|	......	18 13 0	54 0	2 50.7	53.5	0.500	29.89	58.0	51.2	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 63.1	65.2	0.500	......	......	......	......	......	......	......	......
	6429	(a) β Lyræ	......	......	256 45	2 15.0	26.3	0.500	29.89	......	51.2	0	5	4	+22 44 23.6	+12.2
	6762	......	......	19 38 38	263 10	0 49.0	61.0	0.694	29.89	......	51.2	......	......	5	+29 8 3.6	+13.4
	6855	......	......	......	273 50	1 32.2	45.1	0.620	29.89	......	51.2	......	......	6	+39 48 45.8	+14.3
	7006	......	......	20 15 0	253 15	2 29.6	41.0	0.595	29.86	......	50.0	......	......	6	+19 14 40.8	+13.2
	......	Nadir ‖|	......	20 40 0	54 0	2 51.0	53.6	0.500	......	......	......	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 63.0	65.0	0.500	......	......	......	......	......	......	......	......
July 21	......	Nadir ‖|	......	18 26 0	54 0	2 51.8	54.0	0.500	29.48	56.0	50.0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 62.8	65.2	0.500	......	......	......	......	......	......	......	......
	6429	β Lyræ	2.0	18 45 26	256 45	2 14.1	21.4	0.520	29.45	......	48.0	3, N.	3	6	+22 44 22.7	+13.9
	6542	......	......	19 1 19	265 55	1 56.8	67.6	0.600	29.43	......	47.5	......	......	6	+31 54 8.4	+13.9
	6602	......	......	19 12 20	267 10	2 31.3	42.2	0.500	29.43	......	47.0	......	......	6	+33 9 40.4	+14.3
	6729	......	......	19 32 51	284 50	3 29.2	41.1	0.540	29.43	......	47.0	......	......	7	+50 50 40.9	+14.9
	6791	......	......	19 42 50	278 35	3 10.4	22.3	0.740	29.43	......	47.0	......	......	6	+44 35 27.5	+15.4
	6852	......	......	19 51 31	230 35	4 13.9	27.4	0.558	29.41	......	46.9	......	......	7	− 3 23 34.8	+13.7
	......	Nadir ‖|	......	20 30 0	54 0	2 52.2	54.2	0.500	29.40	......	46.7	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 63.0	65.0	0.500	......	......	......	......	......	......	......	......
July 31	......	Nadir ‖|	......	20 30 0	54 0	2 51.2	54.0	0.500	30.00	60.7	59.0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 62.8	66.7	0.500	......	......	......	......	......	......	......	......
	6729	......	......	19 32 57	284 50	3 29.7	42.3	0.500	30.00	......	59.0	0	0	6	+50 50 40.6	+16.4
	6941	......	......	20 5 32	269 15	0 27.0	39.6	0.660	30.00	......	59.0	......	......	5	+35 12 41.2	+18.4
	6966	......	......	20 9 58	264 45	3 50.3	61.7	0.469	30.00	......	59.0	......	......	7	+30 45 58.8	+18.4
	7014	......	6.0	20 16 54	285 0	4 13.9	27.3	0.529	30.00	......	59.0	......	......	6	+51 1 26.1	+18.8
	7086	......	......	20 26 30	234 20	3 20.8	31.8	0.640	30.00	......	59.0	......	......	7	+ 0 20 31.9	+16.9
	7150	......	......	20 33 48	279 10	3 0.0	12.4	0.626	30.00	......	59.0	......	......	6	+46 10 14.0	+19.4
	7268	......	......	20 51 41	243 5	1 8.7	23.3	0.500	30.00	......	56.2	......	......	6	+ 9 3 16.0	+17.3
	7336	61 Cygni	4.0	21 1 15	251 55	0 0.0	12.0	0.419	30.00	......	58.0	......	......	5	+17 52 6.0	+19.7
	7410	......	......	21 15 23	266 40	2 27.4	39.8	0.500	30.00	......	58.0	......	......	6	+32 39 37.2	+19.4
	7497	......	7.5	21 28 14	268 45	0 10.8	24.0	0.500	30.00	......	57.4	......	......	7	+54 42 21.9	+21.9

(a) Sky hazy.

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Date	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes A.	Microscopes B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1868.
				h. m. s.	° ′	r. ″	″	revs.	inches.	°	°				° ′ ″	″
1863. July 31	......	Nadir ‖ǀ	......	21 51 0	54 0	2 49·7	52·9	0·500	30·00	60·0	57·0	....	......	......	....	......
	......	Nadir ǀ‖	......	....	54 0	2 62·8	66·2	0·500	......	......	......	....	......	......	....	......
Aug. 4	......	Nadir ‖ǀ	......	19 31 0	54 0	2 50·4	55·0	0·500	29·54	62·0	56·6	....	......	......	....	......
	......	Nadir ǀ‖	......	....	54 0	2 61·5	67·7	0·500	......	......	......	....	......	......	....	......
	6852	....	......	19 51 36	230 35	4 10·2	19·3	0·577	29·54	......	56·5	2, W.	0	6	− 3 23 41·4	+ 18·6
	6941	....	......	20 5 32	269 15	0 30·8	41·8	0·530	29·54	......	56·5	....	......	7	+ 35 12 41·0	+ 19·3
	6966	....	......	....	264 45	3 50·1	60·9	0·500	29·54	......	56·5	....	......	5	+ 30 45 59·0	+ 19·4
	7086	....	......	20 26 31	234 20	3 24·0	34·6	0·500	29·54	......	56·5	....	......	6	+ 0 20 30·8	+ 18·4
	7410	....	......	21 15 23	266 40	2 25·3	38·3	0·580	29·54	......	56·0	....	......	6	+ 32 39 37·4	+ 20·5
	7497	....	7·0	....	288 45	0 11·8	25·0	0·500	29·54	......	56·0	....	......	4	+ 54 42 22·7	+ 22·5
	......	Nadir ‖ǀ	......	22 7 0	54 0	2 51·0	54·4	0·500	29·54	59·5	56·0	....	......	......	....	......
	......	Nadir ǀ‖	......	....	54 0	2 62·0	67·0	0·500	......	......	......	....	......	......	....	......
Aug. 6	......	Nadir ‖ǀ	......	19 10 0	54 0	2 50·0	56·0	0·500	29·56	62·5	60·0	....	......	......	....	......
	......	Nadir ǀ‖	......	....	54 0	2 61·1	67·3	0·500	......	......	......	....	......	......	....	......
	6729	....	......	19 32 57	284 50	3 26·5	38·1	0·612	29·56	......	60·0	0	0	6	+ 50 50 40·0	+ 17·3
	6772	γ Aquilæ	......	19 40 16	279 40	2 4·2	16·4	0·462	29·56	......	60·0	....	......	7	+ 45 39 13·4	+ 18·2
	6855	....	7·5	19 52 31	273 50	1 31·0	42·4	0·597	29·56	......	59·8	....	......	7	+ 39 48 43·3	+ 19·1
	6966	....	......	20 9 58	264 45	3 50·7	62·3	0·390	29·56	......	59·8	....	......	6	+ 30 45 57·1	+ 19·9
	7014	....	......	20 16 54	285 0	4 11·4	24·7	0·748	29·56	......	59·6	....	......	8	+ 51 1 29·6	+ 19·7
	7086	....	......	20 26 30	234 20	3 19·3	29·3	0·641	29·56	......	59·6	....	......	6	+ 0 20 29·9	+ 19·0
	7501	....	......	21 28 40	244 40	4 53·6	66·5	0·553	29·57	......	57·6	....	......	......	+ 10 12 4·1	+ 18·7
	7644	....	......	21 50 46	218 5	4 39·9	50·5	0·500	29·57	......	57·3	....	......	7	− 15 53 13·0	+ 14·6
	7708	....	5·0	....	228 20	3 9·0	22·1	0·500	29·57	......	57·2	....	......	6	− 5 39 42·7	+ 15·4
	7779	(a)	10·0	....	217 20	2 14·1	25·0	0·489	29·57	......	57·0	....	......	5	− 16 40 39·2	+ 13·4
	......	Nadir ‖ǀ	......	22 30 0	54 0	2 51·0	54·6	0·500	29·57	60·2	57·0	....	......	......	....	......
	......	Nadir ǀ‖	......	....	54 0	2 61·6	65·0	0·500	......	......	......	....	......	......	....	......
Aug. 11	......	Nadir ‖ǀ	......	20 0 0	54 0	2 50·8	55·6	0·500	29·78	59·0	50·8	....	......	......	....	......
	......	Nadir ǀ‖	......	....	54 0	2 61·9	66·7	0·500	......	......	......	....	......	......	....	......
	7006	....	......	20 15 10	253 15	2 21·0	31·4	0·654	29·78	......	50·0	....	......	6	+ 19 14 32·9	+ 21·3
	7161	....	......	20 35 16	244 45	3 33·9	44·9	0·790	29·78	......	50·0	....	......	6	+ 10 45 49·5	+ 21·2
	7285	....	......	20 53 50	282 55	4 43·8	55·9	0·500	29·78	......	50·0	....	......	5	+ 48 56 54·2	+ 22·1
	7336	(b) 61 Cygni	......	21 1 15	251 50	4 52·2	64·2	0·557	29·78	......	50·0	....	......	6	+ 17 52 2·3	+ 23·3
	7410	....	......	21 15 23	266 40	2 25·9	38·3	0·500	29·78	......	49·9	....	......	5	+ 32 39 35·4	+ 22·2
	7528	....	......	21 33 8	270 20	0 10·9	22·9	0·686	29·78	......	49·9	....	......	7	+ 36 17 25·3	+ 22·6
	7590	....	......	21 41 5	273 25	0 19·3	31·2	0·500	29·78	......	49·9	....	......	6	+ 39 22 26·6	+ 22·9
Aug. 12	......	Nadir ‖ǀ	......	21 0 0	54 0	2 50·8	55·6	0·500	29·79	58·1	53·5	....	......	......	....	......
	......	Nadir ǀ‖	......	....	54 0	2 62·0	67·2	0·500	......	......	......	....	......	......	....	......
	7368	ζ Cygni	......	21 7 42	260 15	4 25·6	36·4	0·500	29·80	......	53·5	....	......	6	+ 26 16 33·9	+ 23·6
	7450	....	......	21 20 36	271 10	2 7·8	17·4	0·450	29·80	......	53·5	....	......	6	+ 37 9 14·3	+ 22·7
	......	Nadir ‖ǀ	......	21 38 0	54 0	2 51·8	54·9	0·500	29·80	54·6	52·2	....	......	......	....	......
	......	Nadir ǀ‖	......	....	54 0	2 63·3	67·2	0·500	......	......	......	....	......	......	....	......
Aug. 13	......	Nadir ‖ǀ	......	20 8 0	54 0	2 51·8	56·0	0·500	29·89	58·0	52·3	....	......	......	....	......
	......	Nadir ǀ‖	......	....	54 0	2 61·8	66·3	0·500	......	......	......	....	......	......	....	......
	7086	....	......	20 26 32	234 20	3 19·8	32·0	0·560	29·90	......	52·1	....	......	5	+ 0 20 28·4	+ 21·4
	7161	....	......	20 35 18	244 45	3 38·2	51·0	0·566	29·90	......	52·0	....	......	7	+ 10 45 48·0	+ 21·8
	7220	κ Cephei	......	20 42 59	228 40	1 35·3	48·1	0·500	29·90	......	52·0	....	......	6	− 5 21 18·5	+ 20·8

(a) Smaller star observed. (b) Larger star observed.

Date.	Star or other Object Observed. No. in British Assn Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Corr. to Mean N. Polar Dist. Jan. 1, 1863.
1863.				h. m. s.				revols.	inches.	°	°				° ′ ″	
Aug. 13	7268	....	......	20 51 41	213 5	1 3.5	17.4	0.606	29.90	......	52.0	....	......	7	+ 9 3 14.5	+21.6
	7336	61 Cygni	5.0	21 1 18	251 50	4 40.7	62.4	0.608	29.90	......	51.9	....	......	8	+17 52 0.9	+23.0
	7368	ζ Cygni	......	21 7 37	260 15	4 22.8	34.4	0.540	29.90	......	51.9	....	......	5	+26 16 32.5	+22.3
	7430	(a)	7.5	21 17 21	229 45	3 32.4	42.8	0.731	29.90	......	51.9	....	......	7	− 4 14 14.9	+19.9
	7497	....	......	21 28 17	288 45	0 2.6	15.4	0.755	29.90	......	51.9	....	......	7	+54 42 19.7	+23.7
	7561	ε Pegasi	......	21 37 59	280 40	3 55.0	66.9	0.500	29.90	......	51.8	....	......	8	+46 41 4.6	+21.7
	7644	....	......	21 50 48	218 5	4 35.7	47.0	0.626	29.90	......	51.8	....	......	6	−15 53 14.1	+17.2
	7708	....	5.0	22 1 26	228 20	3 14.3	25.9	0.429	29.90	......	51.8	....	......	5	− 5 39 40.9	+15.0
	7779	(b)	10.0	22 10 49	217 20	2 9.6	20.2	0.590	29.90	......	51.8	....	......	......	−16 40 41.9	+16.1
	7908	ζ Pegasi	......	22 35 10	279 50	1 51.4	64.1	0.407	29.90	......	51.3	1, E.	0	6	+45 48 58.6	+24.2
	7996	....	......	22 51 7	286 50	3 50.9	62.4	0.500	29.90	......	51.0	....	......	......	+52 51 0.6	+25.2
	......	Nadir	......	23 0 0	54 0	2 51.6	56.6	0.500	29.90	54.6	50.0	....	......	......	....	......
	......	Nadir	......	....	54 0	2 62.2	67.2	0.500	......	......	......	....	......	......	....	......
Aug. 18	......	Nadir	......	19 0 0	54 0	2 50.4	55.8	0.500	29.44	57.5	53.6	....	......	......	....	......
	......	Nadir	......	....	54 0	2 62.4	67.9	0.500	......	......	......	....	......	......	....	......
	6574	....	......	19 7 18	268 35	4 39.9	50.9	0.500	29.45	......	53.7	3, W.	2	5	+34 36 48.6	+19.5
	6602	....	......	....	267 10	2 26.6	37.0	0.500	29.45	......	53.7	....	......	2	+33 9 34.6	+20.2
	6644	b Aquilæ	......	19 19 0	278 15	4 46.0	57.2	0.500	29.45	......	53.9	....	......	6	+44 16 55.0	+18.9
	6729	....	......	19 33 0	284 50	3 26.0	37.3	0.500	29.41	......	54.0	7, W.	......	6	+50 50 35.4	+18.7
	6762	....	......	19 38 55	263 10	0 47.4	58.4	0.500	29.44	......	54.0	....	......	5	+29 7 55.3	+21.8
	6791	....	7.5	19 43 0	278 35	3 13.8	24.8	0.500	29.14	......	54.0	....	......	6	+44 35 22.8	+20.2
	6852	....	......	19 51 40	230 35	4 6.2	17.0	0.500	29.14	......	54.0	....	......	7	− 3 23 17.3	+21.1
	7417	....	6.0	21 16 2	231 55	2 12.2	24.5	0.600	29.60	......	52.4	....	......	7	− 2 5 37.9	+21.9
	7501	....	......	21 28 44	241 40	4 52.0	63.0	0.556	29.60	......	52.0	....	......	6	+10 42 0.8	+22.7
	7561	ε Pegasi	......	21 38 2	280 40	3 54.4	61.4	0.500	29.60	......	52.0	....	......	8	+46 41 3.0	+24.5
	7644	....	......	21 50 51	218 5	4 31.6	45.4	0.608	29.60	......	51.7	....	......	7	−15 53 16.0	+19.1
	7706	....	......	22 1 27	228 20	3 10.4	20.0	0.600	29.60	......	51.4	....	......	6	− 5 39 41.1	+19.6
	......	Nadir	......	22 6 0	54 0	2 52.0	56.2	0.500	29.60	53.2	51.3	....	......	......	....	......
	......	Nadir	......	....	54 0	2 62.4	65.8	0.500	......	......	......	....	......	......	....	......
Aug. 19	......	Nadir	......	20 21 0	54 0	2 51.0	55.2	0.500	29.60	57.0	52.3	....	......	......	....	......
	......	Nadir	......	....	54 0	2 63.2	66.0	0.500	......	......	......	....	......	......	....	......
	7268	....	5.5	20 51 45	213 5	1 4.9	20.3	0.412	29.60	......	52.2	0	2	6	+ 9 3 12.0	+23.5
	7336	61 Cygni	......	21 1 20	251 50	4 51.7	63.2	0.500	29.60	......	52.2	....	......	7	+17 51 59.3	+25.7
	7410	....	......	21 15 27	266 40	2 24.2	35.9	0.500	29.60	......	52.2	....	......	6	+32 39 32.6	+24.1
	7497	....	......	21 28 21	288 45	0 10.7	22.1	0.500	29.60	......	52.2	....	......	7	+54 42 19.8	+24.1
	7528	....	......	21 33 13	270 20	0 11.8	23.9	0.514	29.60	......	52.1	....	......	......	+36 17 20.7	+24.4
	7590	....	......	21 41 10	273 25	0 18.0	26.6	0.590	29.60	......	52.0	....	......	6	+39 22 28.4	+24.5
	7759	....	......	22 8 3	229 55	0 5.4	14.8	0.559	29.60	......	50.0	....	......	6	− 4 7 47.7	+20.1
	......	Nadir	......	22 15 0	54 0	2 52.6	56.6	0.500	29.60	50.4	50.0	....	......	......	....	......
	......	Nadir	......	....	54 0	2 63.6	68.0	0.500	......	......	......	....	......	......	....	......
Aug. 20	......	Nadir	......	18 55 0	54 0	2 53.3	55.7	0.500	29.88	58.2	53.2	....	......	......	....	......
	......	Nadir	......	....	54 0	2 63.0	66.0	0.500	......	......	......	....	......	......	....	......
	6602	....	......	19 12 31	267 10	2 25.5	37.0	0.537	29.88	......	53.2	....	......	......	+33 9 31.8	+20.6
	6729	....	......	19 33 2	284 50	3 27.3	39.8	0.500	29.88	......	53.0	0	0	6	+50 50 37.2	+19.0
	6791	....	......	19 43 1	278 35	3 13.1	24.7	0.500	29.88	......	53.0	....	......	......	+44 35 22.2	+20.5
	6852	....	......	19 51 40	230 35	4 4.0	14.2	0.642	29.88	......	53.0	....	......	7	− 3 23 46.1	+23.6
	6941	....	......	20 5 37	269 15	0 26.8	39.3	0.500	29.88	......	53.0	....	......	6	+35 12 35.5	+22.6
	6966	....	......	20 10 2	264 45	3 45.2	60.0	0.460	29.88	......	53.0	....	......	5	+30 45 55.7	+22.1

(a) Middle star observed. (b) Smaller star observed.

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Date.	Star or other Object Observed: No. in British Asso. Catalogue.	Star or other Object Observed: Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in minutes per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1. 1863.
1863.				h. m. s.	° '	' "	"	revs.	inches.	°	°				° ' "	"
Aug. 20	7086	....	......	20 26 36	234 20	3 15·8	27·0	0·646	29·90	......	52·3	....	......	8	+ 0 20 26·1	+23·7
	7268	....	5·5	20 51 42	243 5	1 2·8	17·4	0·560	29·90	......	52·1	....	......	5	+ 9 3 13·6	+23·8
	7356	(a)	......	....	268 5	0 17·0	27·8	0·500	29·90	......	52·1	....	......	6	+34 2 24·8	+24·2
	7410	....	......	21 15 28	266 40	2 21·2	36·8	0·500	29·90	......	52·0	....	......	7	+32 39 33·1	+24·3
	7497	....	......	21 28 20	288 45	0 9·1	22·0	0·500	29·90	......	52·0	....	......	5	+54 42 19·0	+24·6
	7523	....	......	21 33 14	270 20	0 11·6	24·2	0·500	29·90	......	52·0	....	......	6	+36 17 20·5	+24·6
	7566	....	......	21 38 20	252 20	0 3·9	16·1	0·520	29·90	......	52·0	....	......	7	+18 17 11·8	+23·7
	......	Nadir ‖ |	......	22 25 0	54 0	2 51·1	54·9	0·500	29·90	53·9	52·0	....	......	......	....	......
	......	Nadir | ‖	......	....	54 0	2 62·7	66·7	0·500	......	......	......	....	......	......	....	......
Aug. 24	......	Nadir ‖ |	......	19 5 0	54 0	2 51·6	54·8	0·500	29·35	57·0	52·0	....	......	......	....	......
	......	Nadir | ‖	......	....	54 0	2 63·7	67·3	0·500	......	......	......	....	......	......	....	......
	6729	....	......	19 33 5	284 50	3 28·0	39·8	0·540	29·35	......	52·0	7, W.	0	6	+50 50 38·6	+19·4
	6762	....	......	19 38 57	263 10	0 47·7	59·0	0·428	29·35	......	52·0	....	......	7	+29 7 53·6	+23·0
	6852	....	......	19 51 45	230 35	4 2·4	12·8	0·639	29·35	......	52·0	....	......	6	− 3 23 47·6	+24·8
	6941	....	......	20 5 40	269 15	0 28·1	38·2	0·500	29·35	......	52·0	....	......	5	+35 12 35·7	+23·3
	6966	....	......	20 10 6	264 45	3 17·2	58·0	0·530	29·35	......	52·0	....	......	6	+30 45 56·0	+23·9
	7006	....	......	20 15 18	253 15	2 23·3	32·9	0·500	29·35	......	52·0	....	......	7	+19 14 29·8	+24·8
	7086	....	......	20 26 37	234 20	3 19·3	29·3	0·470	29·35	......	52·0	....	......	7	+ 0 20 24·2	+24·9
	7150	....	......	20 33 56	279 10	3 0·9	12·5	0·592	29·35	......	52·0	....	......	6	+45 10 12·5	+23·5
	7268	....	......	20 51 49	243 5	1 2·0	16·2	0·591	29·35	......	52·0	....	......	5	+ 9 3 12·6	+25·0
	7336	61 Cygni	......	21 1 24	251 50	4 51·6	63·0	0·500	29·35	......	52·0	....	......	7	+17 51 59·2	+27·1
	7417	....	......	21 16 5	231 55	2 12·6	22·8	0·591	29·35	......	52·4	8, S.W.	0	8	− 2 5 39·1	+24·0
	7501	....	......	21 28 48	244 40	4 48·7	60·0	0·624	29·35	......	52·3	....	......	6	+10 41 59·4	+24·6
	7561	ι Pegasi	......	21 38 6	280 40	3 53·8	65·0	0·583	29·35	......	52·4	....	......	7	+46 41 5·1	+25·5
	7688	α Aquarii	......	21 59 23	290 55	2 22·6	33·8	0·613	29·35	......	52·1	....	......	9	+56 54 35·0	+27·0
	7759	....	......	22 8 6	220 55	0 3·8	13·9	0·500	29·35	......	52·4	....	......	7	− 4 7 50·7	+21·9
	......	Nadir ‖ |	......	22 36 0	54 0	2 51·7	54·9	0·500	29·35	53·5	52·3	....	......	......	....	......
	......	Nadir | ‖	......	....	54 0	2 63·7	68·1	0·500	......	......	......	....	......	......	....	......
Aug. 26	......	Nadir ‖ |	......	19 38 0	54 0	2 51·0	53·7	0·500	29·26	57·5	52·5	....	......	......	....	......
	......	Nadir | ‖	......	....	54 0	2 63·6	66·4	0·500	......	......	......	....	......	......	....	......
	6852	....	......	19 51 44	230 35	4 6·8	16·0	0·500	29·26	......	52·5	0	5	6	− 3 23 47·4	+25·4
	6941	(b)	7·0	20 5 41	269 15	0 25·9	36·0	0·558	29·26	......	52·5	....	......	7	+35 12 35·4	+23·7
Sept. 2	......	Nadir ‖ |	......	20 0 0	54 0	2 51·3	55·1	0·500	29·35	55·0	52·0	....	......	......	....	......
	......	Nadir | ‖	......	....	54 0	2 63·0	66·4	0·500	......	......	......	....	......	......	....	......
	6966	(c)	......	20 10 19	264 45	3 46·4	56·4	0·465	29·35	......	52·0	8, S	0		+30 45 53·7	+25·6
	7086	....	......	20 26 55	234 20	3 11·1	21·9	0·678	29·35	......	51·9	....	......	7	+ 0 20 22·6	+27·5
	7336	61[1] Cygni	......	21 1 38	251 50	4 50·1	61·1	0·479	29·35	......	51·9	....	......	7	+17 51 57·4	+29·5
	7410	....	......	21 15 45	266 40	2 22·3	32·8	0·566	29·35	......	51·9	....	......	6	+32 39 32·6	+27·1
	7501	....	7·0	21 29 2	244 40	4 49·0	59·3	0·490	29·35	......	51·9	....	......	6	+10 41 56·0	+27·3
	7561	ι Pegasi	......	21 38 20	280 40	3 52·2	62·0	0·565	29·35	......	51·9	....	......	8	+46 41 2·8	+26·7
	......	Nadir ‖ |	......	23 0 0	54 0	2 50·9	54·0	0·500	29·35	54·0	51·8	....	......	......	....	......
	......	Nadir | ‖	......	....	54 0	2 62·6	66·2	0·500	......	......	......	....	......	......	....	......
Sept. 3	......	Nadir ‖ |	......	22 8 0	54 0	2 50·6	55·4	0·500	29·55	55·1	53·5	....	......	......	....	......
	......	Nadir | ‖	......	....	54 0	2 63·4	66·6	0·500	......	......	......	....	......	......	....	......
	7908	(d) ζ Pegasi	3·0	22 35 26	279 50	1 46·8	58·9	0·500	29·55	......	52·8	1, W.	0	6	+45 48 56·3	+27·6
	7977	....	......	22 47 41	288 50	1 30·2	42·7	0·500	29·55	......	52·0	....	......	7	+54 48 40·4	+27·8
	8024	....	......	22 56 29	233 35	2 42·7	51·7	0·500	29·55	......	51·9	....	......	7	− 0 25 11·8	+23·3

(a) Double star. (b) Foggy. (c) Sidereal time of Observation taken from old Transit Clock, which is fast 51 secs. (d) Fog on surface of the ground.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Rel. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist. Jan. 1, 1863.
1863.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Sept. 3	8083	......	......	23 7 28	233 35	0 11.0	21.1	0.454	29.55	......	51.9	......	......	6	− 0 27 43.7	+22.6
	8135	......	......	23 15 2	246 35	2 35.8	46.2	0.500	29.55	......	52.0	......	......	8	+12 34 42.7	+23.9
	......	Nadir	......	23 21 0	54 0	2 51.8	55.0	0.500	29.55	55.0	52.0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63.2	66.0	0.500	......	......	......	......	......	......	......	......
Sept. 4	......	Nadir	......	20 0 0	54 0	2 50.5	55.7	0.500	29.48	55.0	53.8	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63.0	66.8	0.500	......	......	......	......	......	......	......	......
	7006	......	7.0	20 15 27	253 15	2 17.7	27.0	0.622	29.48	......	53.7	0	0	6	+19 14 27.7	+27.3
	7086	......	......	20 26 47	234 20	3 13.6	23.0	0.567	29.48	......	53.6	......	......	7	+ 0 20 21.1	+25.1
	7220	η Cephei	......	20 43 15	228 40	1 25.0	33.4	0.608	29.48	......	53.6	......	......	5	− 5 21 27.0	+27.9
	7268	......	......	20 51 59	243 5	1 0.4	13.0	0.582	29.48	......	53.5	......	......	6	+ 9 3 10.2	+28.1
	7336	61¹ Cygni	......	21 1 35	251 50	4 48.4	59.5	0.482	29.48	......	53.5	......	......	7	+17 51 33.6	+30.1
	7410	......	......	21 15 40	266 40	2 20.0	30.4	0.590	29.47	......	53.6	......	......	6	+32 39 30.5	+27.4
	7496	(a)	6.5	21 26 11	242 10	2 13.5	26.0	0.559	29.47	......	53.6	......	......	5	+ 8 9 22.7	+27.5
	7588	α Aquarii	......	21 59 33	290 55	2 20.0	30.0	0.550	29.47	......	53.5	......	......	7	+36 54 30.3	+26.9
	7759	......	......	22 8 16	229 50	4 56.4	65.0	0.590	29.47	......	53.5	......	......	8	− 4 7 55.6	+23.9
	7908	ζ Pegasi	......	22 35 25	279 50	1 48.2	56.8	0.500	29.47	......	53.5	......	......	8	+45 48 56.8	+29.7
	7977	......	7.0	22 47 40	288 50	1 28.8	39.6	0.540	29.47	......	53.4	......	......	6	+54 48 39.1	+27.9
	8024	......	......	22 56 30	233 35	2 39.9	49.9	0.598	29.47	......	53.4	......	......	7	− 0 25 11.6	+23.6
	8065	......	8.0	23 3 10	288 30	4 19.8	30.0	0.500	29.47	......	52.8	......	......	6	+54 31 29.1	+28.0
	8091	......	......	23 9 5	262 35	4 46.0	56.8	0.500	29.47	......	52.7	......	......	7	+28 36 54.3	+26.2
	8135	......	......	23 15 3	246 35	2 35.4	45.9	0.500	29.47	......	52.6	......	......	6	+12 34 42.1	+24.2
	......	Nadir	......	23 25 0	54 0	2 51.4	55.3	0.500	29.47	55.0	52.5	......	......	......	......	......
	......	Nadir	......	......	54 0	2 62.9	65.9	0.500	......	......	......	......	......	......	......	......
Sept. 7	......	Nadir	......	20 3 0	54 0	2 51.4	54.8	0.500	29.19	51.9	49.1	......	......	......	......	......
	......	Nadir	......	......	54 0	2 62.8	66.8	0.500	......	......	......	......	......	......	......	......
	7290	......	5.5	20 54 14	246 0	3 13.6	23.1	0.574	29.20	......	49.0	20, S.W.	4	6	+12 0 21.6	+28.5
	7336	61¹ Cygni	5.5	21 1 35	251 50	4 47.4	58.0	0.573	29.20	......	49.0	......	......	7	+17 51 56.4	+30.8
	7368	ζ Cygni	......	21 7 57	260 15	4 22.3	33.4	0.446	29.20	......	49.0	......	......	6	+26 16 28.7	+28.3
	7410	......	......	21 15 44	266 40	2 20.8	32.0	0.524	29.20	......	49.0	......	......	6	+32 39 29.5	+28.0
	7590	......	......	21 41 26	273 25	0 16.7	27.8	0.550	29.20	......	48.2	......	......	7	+39 22 26.1	+27.9
	7708	......	......	22 1 44	228 20	3 5.5	15.3	0.500	29.20	......	48.0	......	......	6	− 5 39 49.1	+26.9
	7759	......	......	22 8 19	229 55	0 0.0	9.0	0.500	29.20	......	47.5	......	......	7	− 4 7 55.2	+26.6
	7908	ζ Pegasi	......	22 35 28	279 50	1 48.1	60.0	0.500	29.20	......	47.1	......	......	8	+45 48 56.9	+28.2
	7977	(b)	......	22 47 43	288 50	1 29.3	39.0	0.612	29.20	......	47.0	......	......	6	+54 48 40.7	+28.2
	8034	α Pegasi	......	22 58 47	275 30	0 48.2	58.6	0.690	29.23	......	47.0	......	......	8	+41 28 1.3	+27.8
	8083	......	......	23 7 2	233 35	0 6.8	7.8	0.664	29.25	......	47.0	......	......	6	− 0 27 48.1	+24.0
	8136	......	......	23 15 26	228 30	2 15.5	24.0	0.500	29.25	......	47.0	......	......	7	− 5 30 39.7	+22.5
	......	Nadir	......	23 40 0	54 0	2 52.7	55.9	0.500	29.25	47.1	47.0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 65.3	67.7	0.500	......	......	......	......	......	......	......	......
Sept. 9	......	Nadir	......	20 0 0	54 0	2 51.6	54.9	0.500	29.51	53.3	49.5	......	......	......	......	......
	......	Nadir	......	......	54 0	2 62.0	66.0	0.500	......	......	......	......	......	......	......	......
	7290	......	......	20 54 16	246 0	3 10.4	20.0	0.654	29.51	......	49.0	3, W.	2	6	+12 0 20.7	+29.1
	7354	......	8.5	......	268 5	0 15.9	25.7	0.500	29.51	......	49.0	......	......	5	+34 2 23.9	+26.4
	7450	......	9.0	21 20 57	271 10	2 2.2	12.2	0.500	29.51	......	48.9	......	......	5	+37 9 9.7	+26.0
	7908	ζ Pegasi	......	22 35 31	279 50	1 47.8	58.1	0.494	29.51	......	48.1	......	......	7	+45 48 55.7	+29.4
	7996	......	......	22 51 27	286 50	3 51.7	62.7	0.583	29.51	......	48.0	......	......	6	+52 51 3.1	+28.4
	8083	......	......	23 7 34	233 35	0 5.2	15.8	0.668	29.51	......	47.9	......	......	7	− 0 27 44.8	+24.7
	8147	......	......	......	270 10	0 35.1	45.0	0.550	29.51	......	47.9	......	......	6	+36 7 43.8	+27.6

(a) Neb. 1st star in group observed.

(b) Definition good.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1863.
1863.				h m s	° '	' "	"	revols.	inches	°	°				° ' "	"
Sept. 9	......	Nadir ‖	......	23 30 0	54 0	2 53·0	56·0	0·500	29·51	50·0	47·9	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 65·0	68·1	0·500	......	......	......	......	......	......	......	......
Sept. 10	......	Nadir ‖	......	20 15 0	54 0	2 52·0	54·8	0·500	29·78	52·8	50·0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 64·5	66·0	0·500	......	......	......	......	......	......	......	......
	7161	......	......	20 35 38	244 45	3 33·1	43·1	0·575	29·78	......	50·0	3, W.	3	6	+ 10 45 41·3	+ 29·5
	7220	η Cephei	......	20 43 21	228 40	1 23·9	32·9	0·610	29·78	......	50·0	......	......	7	− 5 21 28·3	+ 29·6
	7268	......	6·5	20 52 3	243 5	1 4·5	16·4	0·367	29·78	......	49·9	......	......	5	+ 9 3 7·4	+ 29·7
	7336	61[1] Cygni	......	21 1 38	251 50	4 47·1	57·3	0·500	29·78	......	49·5	......	......	6	+ 17 51 53·8	+ 31·6
	7368	ζ Cygni	......	21 7 59	260 15	4 17·2	26·2	0·590	29·78	......	49·2	......	......	7	+ 26 16 26·4	+ 28·9
	7590	......	......	21 41 27	273 25	0 16·1	27·7	0·500	29·78	......	49·0	......	......	8	+ 39 22 24·2	+ 28·4
	7708	......	......	22 1 47	228 20	3 3·5	13·3	0·590	29·78	......	48·2	......	......	6	− 5 39 48·7	+ 27·9
	7908	ζ Pegasi	......	22 35 32	279 50	1 49·4	59·0	0·500	29·78	......	47·7	......	......	8	+ 45 48 57·0	+ 28·5
	7977	......	......	22 47 47	288 50	1 28·3	37·7	0·500	29·78	......	47·3	......	......	6	+ 54 48 36·3	+ 28·4
	8034	α Pegasi	......	22 58 50	275 30	0 47·0	57·0	0·649	29·78	......	47·3	......	......	7	+ 41 27 58·7	+ 28·3
	8083	......	......	23 7 35	233 35	0 6·8	15·7	0·622	29·78	......	47·3	......	......	8	− 0 27 45·4	+ 25·0
	8135	......	......	23 15 9	246 35	2 34·7	44·8	0·500	29·78	......	47·2	......	......	6	+ 12 34 40·8	+ 26·0
	8247	......	......	23 36 29	272 0	4 32·7	42·4	0·576	29·78	......	47·2	......	......	6	+ 38 1 42·6	+ 27·4
	......	Nadir ‖	......	23 41 0	54 0	2 53·8	56·4	0·500	29·78	47·3	47·1	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 64·2	67·0	0·500	......	......	......	......	......	......	......	......
Sept. 11	......	Nadir ‖	......	20 30 0	54 0	2 51·3	55·3	0·500	29·83	52·4	50·0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 63·7	67·1	0·500	......	......	......	......	......	......	......	......
	7220	(a) η Cephei	......	20 43 21	228 40	1 24·6	32·3	0·640	29·83	......	50·0	10, W.	3	7	− 5 21 27·3	+ 29·9
Sept. 15	......	Nadir ‖	......	20 50 0	54 0	2 51·5	55·6	0·500	29·61	63·4	49·0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 62·8	68·0	0·500	......	......	......	......	......	......	......	......
	7336	61[1] Cygni	......	21 1 43	251 50	4 45·1	55·6	0·578	29·61	......	48·9	7, S.W.	0	6	+ 17 51 54·2	+ 32·7
	7410	......	......	21 15 50	266 40	2 20·5	30·5	0·500	29·61	......	48·9	......	......	7	+ 32 39 27·9	+ 29·4
	7497	......	......	21 28 43	288 45	0 6·3	17·1	0·600	29·62	......	48·9	......	......	8	+ 54 42 17·7	+ 26·7
	7569	......	6·5	21 38 57	261 50	1 44·8	54·4	0·617	29·62	......	48·9	......	......	7	+ 27 48 55·0	+ 30·0
	7908	ζ Pegasi	......	22 35 36	279 50	1 46·8	57·0	0·500	29·62	......	48·9	......	......	6	+ 45 48 54·8	+ 29·1
	7977	......	......	22 47 51	288 50	1 26·7	37·3	0·617	29·62	......	48·2	......	......	7	+ 54 48 38·7	+ 28·7
	8024	......	......	22 56 40	233 35	2 38·7	47·3	0·600	29·62	......	48·0	......	......	6	− 0 25 13·8	+ 27·4
	8091	......	8·0	23 9 15	262 35	4 45·9	55·9	0·500	29·62	......	47·9	......	......	8	+ 28 36 53·4	+ 28·7
	8247	......	......	......	272 0	4 35·0	42·7	0·500	29·62	......	47·9	......	......	6	+ 38 1 41·8	+ 28·2
	......	Nadir ‖	......	23 50 0	54 0	2 53·9	56·3	0·500	29·59	49·2	47·9	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 63·3	65·9	0·500	......	......	......	......	......	......	......	......
Sept. 16	......	Nadir ‖	......	20 51 0	54 0	2 51·1	54·5	0·500	29·60	52·3	49·0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 62·8	66·2	0·500	......	......	......	......	......	......	......	......
	7410	......	......	21 15 52	266 40	2 14·3	25·6	0·731	29·60	......	49·0	10, W.	0	6	+ 32 39 29·1	+ 29·5
	7497	......	......	21 28 43	288 45	0 5·4	17·2	0·655	29·60	......	48·3	......	......	6	+ 54 42 19·1	+ 26·7
	7688	α Aquarii	......	21 59 43	290 55	2 21·4	31·1	0·500	29·59	......	48·3	......	......	6	+ 56 54 30·0	+ 27·5
	7908	ζ Pegasi	......	22 35 37	279 50	1 46·9	56·7	0·500	29·59	......	48·8	......	......	7	+ 45 48 55·0	+ 29·3
	8024	......	......	22 56 42	233 35	2 36·2	45·2	0·661	29·59	......	48·7	......	......	8	− 0 25 14·1	+ 27·7
	8247	......	......	23 36 34	272 0	4 36·0	44·9	0·500	29·59	......	48·5	......	......	5	+ 38 1 43·7	+ 25·4
	8280	......	......	23 43 9	230 45	1 57·4	66·9	0·500	29·59	......	48·4	......	......	6	− 3 15 57·1	+ 24·1
	8364	......	......	23 58 50	232 10	3 46·0	55·0	0·585	29·59	......	48·4	......	......	7	− 1 49 6·3	+ 23·1
	......	Nadir ‖	......	0 6 0	54 0	2 52·7	56·0	0·500	29·59	48·7	48·4	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 64·2	67·5	0·500	......	......	......	......	......	......	......	......

(a) Definition good.

Date.	Star or other Object Observed. No. in British Assoc. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1863.
1863.				h m s	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Sept. 17	......	Nadir ‖ |	......	21 17 0	54 0	2 52·0	54·1	0·500	29·57	53·9	57·0	......	......	......	......	......
	......	Nadir | ‖	......	....	54 0	2 61·9	64·9	0·500	......	......	......	......	......	......	......	......
	7450	......	......	21 21 5	271 10	2 1·8	11·2	0·500	29·60	......	57·2	15, S.W.	4	7	+37 9 9·7	+29·2
	7561	ι Pegasi	......	21 38 28	280 40	3 51·6	61·7	0·500	29·60	......	57·1	......	......	6	+46 41 0·5	+26·4
Sept. 21	......	Nadir ‖ |	......	4 53 0	54 0	2 52·3	55·3	0·500	28·52	51·0	46·9	......	......	......	......	......
	......	Nadir | ‖	......	....	54 0	2 62·8	65·8	0·500	......	......	......	......	......	......	......	......
	7708	......	......	22 1 55	228 20	3 1·7	10·7	0·500	28·52	......	46·0	......	......	7	− 5 39 52·9	+31·5
	7977	......	......	22 47 55	288 50	1 32·2	42·8	0·500	28·52	......	46·2	8, W.	2	7	+54 48 38·3	+29·4
	8024	......	6·5	22 56 45	233 35	2 39·0	48·0	0·500	28·52	......	46·2	......	......	6	− 0 25 15·7	+29·1
	8091	......	......	23 9 19	262 25	4 43·4	53·8	0·562	28·52	......	46·0	......	......	7	+28 36 53·2	+29·3
	8247	......	......	23 36 38	272 0	4 33·1	42·7	0·500	28·51	......	45·3	......	......	8	+38 1 41·3	+29·1
	8280	......	......	23 43 13	230 45	1 55·0	63·2	0·573	28·51	......	45·1	......	......	7	− 3 15 58·1	+25·8
	8315	......	......	23 49 40	282 30	1 1·8	12·2	0·607	28·51	......	45·0	......	......	7	+48 28 13·1	+28·9
	8350	85 Pegasi	......	23 56 3	263 35	2 51·1	60·2	0·600	28·51	......	45·0	......	......	6	+29 35 1·2	+27·9
	8372	......	......	0 0 10	232 15	4 29·0	37·6	0·712	28·50	......	45·0	......	......	6	− 1 43 19·6	+24·6
	57	......	......	0 11 48	280 0	2 51·2	62·0	0·500	28·50	......	45·0	......	......	7	+55 0 0·6	+28·5
	83	......	......	0 18 44	237 40	2 33·9	43·7	0·629	28·50	......	45·0	......	......	7	+ 3 39 43·2	+23·7
	......	Nadir ‖ |	......	0 25 0	54 0	2 53·[illegible]	56·1	0·500	28·50	46·3	45·0	......	......	......	......	......
	......	Nadir | ‖	......	....	54 0	2 63·4	66·0	0·500	......	......	......	......	......	......	......	......
Sept. 23	......	Nadir ‖ |	......	0 0 0	54 0	2 52·4	54·2	0·500	29·03	50·1	46·6	......	......	......	......	......
	......	Nadir | ‖	......	....	54 0	2 63·9	66·4	0·500	......	......	......	......	......	......	......	......
	42	......	7·0	0 10 1	286 25	4 10·3	19·3	0·500	29·03	......	46·6	......	......	6	+52 26 18·5	+28·6
	83	(a)	......	0 18 46	237 40	2 34·4	44·2	0·567	29·03	......	46·6	......	......	7	+ 3 39 41·9	+24·5
Sept. 24	......	Nadir ‖ |	......	21 26 0	54 0	2 52·4	51·7	0·500	29·21	50·0	47·6	......	......	......	......	......
	......	Nadir | ‖	......	....	54 0	2 63·8	66·8	0·500	......	......	......	......	......	......	......	......
	8083	......	......	23 7 48	233 35	0 1·2	11·4	0·631	29·21	......	47·0	0	5	7	− 0 27 49·9	+29·4
	8136	......	......	23 15 40	228 30	2 4·7	14·3	0·618	29·21	......	47·0	......	......	7	− 5 30 46·0	+24·7
	8247	......	......	23 36 42	272 0	4 32·3	42·2	0·500	29·21	......	47·0	......	......	6	+38 1 40·2	+29·5
	......	Nadir ‖ |	......	0 25 0	54 0	2 53·9	55·7	0·500	29·21	50·5	47·0	......	......	......	......	......
	......	Nadir | ‖	......	....	54 0	2 63·9	66·3	0·500	......	......	......	......	......	......	......	......
Sept. 25	......	Nadir ‖ |	......	21 44 0	54 0	2 51·6	54·3	0·500	29·46	50·3	47·1	......	......	......	......	......
	......	Nadir | ‖	......	....	54 0	2 63·8	67·6	0·500	......	......	......	......	......	......	......	......
	7708	......	......	22 2 2	228 20	3 2·8	12·2	0·381	29·46	......	47·0	4, W.	3	5	− 5 39 55·3	+32·7
	7759	......	......	22 8 35	229 50	4 51·7	59·1	0·566	29·46	......	47·0	......	......	8	− 4 8 1·9	+33·5
	7908	ζ Pegasi	......	22 35 45	279 50	1 46·8	57·1	0·500	29·46	......	46·9	......	......	7	+15 48 54·9	+30·1
Sept. 28	......	(b) Nadir ‖ |	......	21 28 0	54 0	2 51·7	51·9	0·500	29·39	49·2	45·0	......	......	......	......	......
	......	Nadir | ‖	......	....	54 0	2 63·1	64·4	0·500	......	......	......	......	......	......	......	......
	7703	......	......	22 1 6	228 20	2 56·4	63·9	0·627	29·39	......	45·0	......	......	6	− 5 39 55·6	+31·5
	7759	......	......	22 7 42	229 50	4 52·4	59·7	0·500	29·40	......	44·7	......	......	7	− 4 8 2·9	+31·4
	7908	ζ Pegasi	......	22 34 52	279 50	1 46·4	53·7	0·500	29·41	......	44·6	......	......	6	+45 48 53·1	+30·4
	7977	......	......	22 47 0	288 50	1 20·4	37·9	0·500	29·41	......	44·6	......	......	7	+54 48 37·2	+29·3
	8024	......	......	22 55 57	233 35	2 36·7	44·9	0·500	29·41	......	44·6	......	......	6	− 0 25 18·6	+31·5
	8083	......	......	23 6 55	233 35	0 3·3	12·1	0·591	29·41	......	44·6	......	......	7	− 0 27 49·5	+30·1
	8252	......	......	23 36 39	237 35	1 12·0	22·4	0·500	29·41	......	44·4	......	......	6	+ 3 33 17·8	+29·2
	8338	......	......	23 53 56	228 35	0 4·4	14·0	0·581	29·42	......	44·4	......	......	7	− 5 27 48·1	+27·0
	......	Nadir ‖ |	......	0 10 0	54 0	2 53·3	56·1	0·500	29·42	46·2	44·3	......	......	......	......	......
	......	Nadir | ‖	......	....	54 0	2 64·8	67·2	0·500	......	......	......	......	......	......	......	......

(a) Sky getting cloudy.

(b) Clock put forward 1 minute on the 27th.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Corr. to Mean N. Polar Dist., Jan. 1, 1863.
1863.				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
Oct. 2	......	Nadir ‖	......	0 0 0	54 0	2 52·9	54·9	0·500	29·43	50·4	49·9	......	......	......	......	......
	......	Nadir ‖	......	....	54 0	2 62·9	64·3	0·500	......	......	......	......	......	......	......	......
	218	(a) η Cassiopeæ	......	0 41 7	232 50	4 40·9	50·3	0·376	29·40	......	50·0	10, S.W.	5	7	− 1 8 16·4	+24·3
	299	......	......	0 57 17	261 0	3 46·3	56·4	0·500	29·35	......	50·0	......	......	7	+27 [illegible] 54·1	+25·8
Oct. 5	......	Nadir ‖	......	23 36 0	54 0	2 52·8	55·8	0·500	29·60	48·0	41·0	......	......	......	......	......
	......	Nadir ‖	......	....	54 0	2 65·4	67·2	0·500	......	......	......	......	......	......	......	......
	8272	......	7·0	23 41 35	282 25	4 30·8	40·0	0·500	29·60	......	41·0	......	......	5	+48 26 38·9	+30·0
	8338	......	......	23 54 6	228 35	0 0·7	10·4	0·587	29·60	......	40·0	......	......	5	− 5 27 52·0	+29·3
	83	......	......	0 18 5	237 40	2 32·7	42·8	0·500	29·60	......	39·9	......	......	7	+ 3 39 38·3	+27·9
	177	......	......	0 34 29	281 20	2 23·0	32·2	0·500	29·60	......	39·2	......	......	7	+47 19 30·6	+28·4
Oct. 6	......	Nadir ‖	......	0 9 0	54 0	2 53·8	54·8	0·500	29·72	47·8	42·0	......	......	......	......	......
	......	Nadir ‖	......	....	54 0	2 64·8	66·1	0·500	......	......	......	......	......	......	......	......
	98	......	......	0 20 47	274 40	2 55·8	66·0	0·544	29·72	......	42·0	var.	3	6	+40 40 5·0	+29·1
	299	......	......	0 57 22	261 0	3 41·8	49·7	0·563	29·71	......	42·2	......	......	7	+27 0 49·8	+26·5
	......	Nadir ‖	......	1 20 0	54 0	2 52·3	54·6	0·500	29·71	45·0	42·3	......	......	......	......	......
	......	Nadir ‖	......	....	54 [illegible]	2 63·7	66·0	0·500	......	......	......	......	......	......	......	......
Oct. 12	......	Nadir ‖	......	23 10 0	54 0	2 51·8	54·2	0·500	29·15	53·0	49·1	......	......	......	......	......
	......	Nadir ‖	......	....	54 0	2 63·8	66·4	[illegible]·500	......	......	......	......	......	......	......	......
	8350	85 Pegasi	......	23 55 30	263 35	2 52·3	61·0	0·337	29·15	......	49·0	2, E.	0	6	+29 34 54·3	+31·5
	26	γ Pegasi	......	0 6 41	275 30	3 37·8	46·6	0·500	29·14	......	49·0	......	......	7	+41 30 45·4	+30·2
	83	......	......	0 18 1[illegible]	237 40	2 29·8	39·4	0·500	29·14	......	49·0	......	......	6	+ 3 39 35·3	+29·9
	177	......	......	0 34 37	281 20	2 23·1	31·9	0·500	29·14	......	49·0	......	......	7	+47 19 30·7	+28·7
	237	......	......	0 44 46	287 20	0 3·4	13·2	0·500	29·14	......	49·0	......	......	6	+53 17 11·4	+28·0
	455	......	8·0	1 25 11	273 40	4 10·0	20·7	0·500	29·14	......	49·0	......	......	6	+39 41 18·7	+25·8
	514	......	......	1 34 25	260 35	3 14·4	23·1	0·500	29·14	......	49·0	......	......	7	+26 35 21·2	+24·2
	......	Nadir ‖	......	1 30 0	54 0	2 52·0	54·3	0·500	29·14	52·0	49·0	......	......	......	......	......
	......	Nadir ‖	......	....	54 0	2 63·5	66·7	0·500	......	......	......	......	......	......	......	......
Oct. 14	......	Nadir ‖	......	1 18 0	54 0	2 52·3	55·4	0·500	29·33	52·3	51·3	......	......	......	......	......
	......	Nadir ‖	......	....	54 0	2 64·4	66·8	0·500	......	......	......	......	......	......	......	......
	514	......	......	1 34 27	260 35	3 12·0	21·4	0·500	29·33	......	51·3	......	......	6	+26 35 18·9	+24·6
	538	......	......	1 39 41	273 15	0 35·2	44·8	0·500	29·33	......	51·2	......	......	6	+39 12 42·4	+24·8
Oct. 20	......	Nadir ‖	......	23 20 0	54 0	2 52·2	54·1	0·500	29·87	50·0	46·6	......	......	......	......	......
	......	Nadir ‖	......	....	54 [illegible]	2 64·2	66·8	0·500	......	......	......	......	......	......	......	......
	8247	......	......	23 36 11	272 [illegible]	4 29·0	38·1	0·560	29·87	......	46·5	......	......	6	+38 1 38·1	+32·3
	8280	......	7·0	23 42 47	230 45	1 46·8	55·8	0·500	29·86	......	46·4	6, W.	3	6	− 3 16 8·6	+34·8
	8364	......	......	23 58 27	232 10	3 36·3	43·0	0·572	29·86	......	46·3	......	......	6	− 1 49 18·0	+33·6
	83	......	......	0 18 18	237 40	2 27·6	38·2	0·488	29·86	......	46·3	......	......	7	+ 3 39 32·8	+32·1
	290	......	......	0 56 47	236 30	1 34·9	44·8	0·569	29·86	......	46·2	......	......	5	+ 2 28 41·7	+28·4
	455	......	......	1 25 16	273 40	4 6·3	16·9	0·633	29·86	......	46·1	......	......	6	+39 41 18·1	+26·4
	......	Nadir ‖	......	2 0 0	54 0	2 53·9	56·6	0·500	29·86	47·4	46·0	......	......	......	......	......
	......	Nadir ‖	......	....	54 0	2 65·8	68·4	0·500	......	......	......	......	......	......	......	......
Oct. 21	......	Nadir ‖	......	0 20 [illegible]	54 0	2 51·7	53·5	0·500	29·81	49·2	46·1	......	......	......	......	......
	......	Nadir ‖	......	....	54 0	2 64·7	67·4	0·500	......	......	......	......	......	......	......	......
	120	......	......	0 24 47	257 10	0 33·6	60·6	0·500	29·81	......	46·0	3, W.	6	5	+23 7 48·5	+31·4
	177	......	7·0	0 34 45	281 20	2 24·2	34·2	[illegible]·500	29·81	......	46·0	......	......	6	+47 19 32·1	+29·0

(a) Double.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist. Jan. 1, 1864.
1863.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Oct. 21	455	......	......	1 25 18	273 40	4 9·7	20·5	0·500	29·81	......	46·0	......	......	7	+39 41 18·1	+26·1
	516	......	......	1 34 46	255 25	1 20·8	29·9	0·501	29·80	......	45·9	......	......	6	+21 23 26·9	+25·1
	......	Nadir	......	1 40 0	54 0	2 52·0	54·8	0·500	29·80	46·1	45·9	......	......	......	......	......
	......	Nadir	......	......	54 0	2 64·4	66·8	0·500	......	......	......	......	......	......	......	......
Oct. 23	......	Nadir	......	23 26 0	54 0	2 53·7	56·3	0·500	30·00	49·8	47·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 64·2	67·4	0·500	......	......	......	......	......	......	......	......
	48	......	......	0 10 21	276 45	4 31·1	39·0	0·610	30·00	......	47·0	1, W.	0	5	+42 46 41·1	+30·6
	83	......	......	0 18 21	237 40	2 24·9	35·1	0·500	30·00	......	46·4	......	......	6	+3 39 30·3	+32·3
	133	......	......	0 27 9	270 15	3 22·6	32·0	0·500	30·00	......	46·2	......	......	7	+36 15 29·9	+3[illegible]
	177	......	7·0	0 34 46	281 20	2 23·1	32·8	0·400	30·00	......	46·2	......	......	7	+47 19 26·0	+29·4
	259	......	......	0 49 48	252 10	4 6·7	16·7	0·544	30·00	......	46·2	......	......	7	+18 11 14·4	+30·0
	357	......	9·0	1 5 56	258 35	3 30·9	40·4	0·500	30·00	......	46·2	......	......	6	+24 35 37·6	+25·5
	455	......	......	1 25 20	273 40	4 7·3	17·4	0·550	30·00	......	46·2	......	......	6	+39 41 16·7	+26·5
	538	......	......	1 39 49	273 15	0 31·4	41·8	0·546	30·00	......	46·2	......	......	7	+39 12 40·0	+25·4
	645	......	......	1 59 36	264 45	3 45·5	54·7	0·592	30·00	......	46·2	......	......	6	+30 45 55·0	+23·3
	718	......	......	2 12 56	233 20	3 11·8	21·4	0·603	30·00	......	46·1	......	......	7	−0 39 40·1	+19·4
	764	......	......	2 22 56	281 0	1 41·3	52·6	0·608	30·00	......	46·1	......	......	6	+46 58 52·7	+22·0
	793	......	......	2 29 14	283 40	4 50·0	60·0	0·603	30·00	......	46·1	......	......	5	+49 42 1·4	+21·6
	......	Nadir	......	2 34 0	54 0	2 53·8	57·0	0·500	30·00	47·8	46·1	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·0	65·8	0·500	......	......	......	......	......	......	......	......
Oct. 28	......	Nadir	......	23 0 0	54 0	2 51·1	53·2	0·500	29·27	48·2	49·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·8	66·0	0·500	......	......	......	......	......	......	......	......
	149	......	......	0 29 34	277 30	1 20·2	28·8	0·500	29·27	......	42·0	......	......	......	+43 28 27·6	+29·3
	834	......	......	2 36 39	264 55	0 56·1	65·2	0·905	29·27	......	42·0	......	......	......	+30 53 14·2	+20·2
	......	Nadir	......	2 57 0	54 0	2 51·8	53·0	0·500	29·27	42·0	42·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 64·0	65·8	0·500	......	......	......	......	......	......	......	......
Oct. 30	......	Nadir	......	0 6 0	54 0	2 52·8	54·2	0·500	28·51	43·6	41·9	......	......	......	......	......
	......	Nadir	......	......	54 0	2 65·3	66·9	0·500	......	......	......	......	......	......	......	......
	149	......	......	0 29 38	277 30	1 23·8	32·4	0·500	28·51	......	41·8	20, W.	0	6	+43 28 30·5	+30·4
	177	......	......	0 34 56	281 20	2 23·7	33·0	0·500	28·51	......	41·8	......	......	5	+47 19 31·1	+29·1
	263	(a)	......	0 50 40	263 40	3 48·8	57·4	0·456	28·51	......	41·8	40, W.	......	6	+29 40 54·2	+31·4
	357	(b)	9·0	1 6 6	258 35	3 29·8	38·4	0·592	28·50	......	41·6	......	......	5	+24 35 38·5	+29·5
	455	......	......	1 25 30	273 40	4 7·8	17·2	0·672	28·50	......	41·6	......	......	7	+39 41 20·1	+26·9
	......	Nadir	......	1 36 0	54 0	2 53·1	54·3	0·500	28·50	42·0	41·6	......	......	......	......	......
	......	Nadir	......	......	54 0	2 65·0	67·0	0·500	......	......	......	......	......	......	......	......
Nov. 2	......	Nadir	......	0 2 0	54 0	2 52·9	54·0	0·500	29·11	42·0	37·2	......	......	......	......	......
	......	Nadir	......	......	54 0	2 64·7	66·5	0·500	......	......	......	......	......	......	......	......
	299	......	......	0 57 53	261 0	3 41·0	46·4	0·500	29·11	......	37·0	......	......	6	+27 0 46·2	+31·4
	357	......	......	1 6 12	258 35	3 30·0	38·1	0·499	29·11	......	37·0	......	......	6	+24 35 35·3	+23·9
	455	......	......	1 25 34	273 40	4 10·9	19·7	0·433	29·11	......	37·0	......	......	6	+39 41 15·7	+27·1
	516	......	5·5	1 35 4	255 25	1 18·4	25·8	0·540	29·11	......	37·0	......	......	7	+21 23 23·9	+27·1
	562	......	......	1 45 1	239 10	1 59·8	68·9	0·610	29·11	......	37·0	......	......	5	+5 9 7·1	+25·3
	645	......	......	1 59 51	264 45	3 47·7	55·9	0·500	29·14	......	37·0	10, N.W.	0	7	+30 45 53·5	+24·5
	764	......	......	2 23 10	281 0	1 42·2	51·2	0·599	29·14	......	37·0	......	......	7	+46 58 51·5	+21·9
	834	......	......	2 36 48	264 55	1 9·8	19·4	0·539	29·14	......	37·0	......	......	6	+30 53 16·5	−20·6
	891	......	......	2 46 18	284 0	4 9·4	19·0	0·500	29·14	......	37·0	......	......	8	+50 1 16·9	−19·9
	949	a Ceti	......	2 56 1	286 25	0 41·1	50·0	0·640	29·14	......	37·0	......	......	7	+52 22 51·7	−18·9

(a) Wind very violent, and shaking the instrument.

(b) Double.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1863.
				h. m. s.	° ′	′ ″	″	revols.	inches	°	°				° ′ ″	″
1863. Nov. 2	980	......	......	3 3 12	263 35	2 20·3	29·4	0·437	29·14	......	37·0	......	......	10	+29 34 24·6	+17·5
	......	Nadir ‖|	......	3 7 0	54 0	2 55·7	56·3	0·500	29·35	38·0	36·9	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 65·9	66·9	0·500	......	......	......	......	......	......	......	......
Nov. 4	......	Nadir ‖|	......	1 3 0	54 [illegible]	2 53·7	56·3	0·500	29·55	46·0	43·3	......	......	......	......	......
	......	Nadir |‖	......	......	54 [illegible]	2 63·9	66·9	0·500	......	......	......	......	......	......	......	......
	455	......	8·0	1 25 37	273 40	4 5·6	15·6	0·602	29·55	......	43·2	12, W.	0	7	+39 41 15·7	+27·1
	514	......	......	1 34 52	260 35	3 9·9	18·7	0·500	29·55	......	43·2	......	......	4	+26 35 15·7	+27·4
	538	......	......	1 40 6	273 15	0 31·8	41·9	0·553	29·55	......	43·2	......	......	5	+39 12 39·8	+26·0
	......	Nadir ‖|	......	2 50 0	54 0	2 53·8	55·2	0·500	29·59	44·0	42·1	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 65·0	66·1	0·500	......	......	......	......	......	......	......	......
Nov. 5	......	Nadir ‖|	......	0 21 0	54 0	2 51·8	52·4	0·500	30·02	49·0	39·4	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 63·5	65·9	0·500	......	......	......	......	......	......	......	......
	299	(a)	......	0 57 56	261 [illegible]	3 37·4	45·1	0·567	30·02	......	39·3	2, N.W.	1	6	+27 0 45·4	+30·7
	455	......	......	1 25 36	273 40	4 5·1	14·5	0·500	30·02	......	39·1	......	......	6	+39 41 12·9	+27·2
	514	......	......	1 34 53	260 35	3 3·5	12·0	0·650	30·02	......	39·0	......	......	7	+26 35 14·1	+27·5
	562	......	......	1 45 5	239 10	1 57·2	65·4	0·580	30·02	......	39·0	......	......	8	+ 5 9 4·0	+27·0
	718	......	......	2 13 15	233 20	3 11·7	20·0	0·500	30·02	......	39·0	......	......	6	− [illegible] 39 43·6	+23·1
	764	......	......	2 23 15	281 0	1 44·9	53·5	0·438	30·02	......	39·0	......	......	5	+46 58 50·4	+21·9
	834	......	......	2 36 53	261 55	1 6·7	15·5	0·499	30·09	......	39·0	......	......	6	+30 53 13·0	+20·8
	920	......	......	2 52 0	268 55	0 13·4	22·9	0·457	30·09	......	38·7	......	......	7	+34 52 19·1	+19·2
	980	......	......	3 3 17	263 35	2 11·2	22·4	0·591	30·09	......	38·6	......	......	6	+29 34 21·5	+17·7
	1055	......	......	3 17 34	268 25	1 11·8	20·8	0·500	30·09	......	38·6	......	......	7	+34 23 18·4	+16·2
	......	Nadir ‖|	......	3 21 0	54 0	2 54·1	55·9	0·500	30·09	41·9	38·6	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 63·0	64·0	0·500	......	......	......	......	......	......	......	......
Nov. 6	......	Nadir ‖|	......	0 38 0	54 0	2 51·9	52·1	0·500	30·02	41·5	36·5	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 64·0	65·6	0·500	......	......	......	......	......	......	......	......
	562	(b)	......	1 45 7	239 10	2 2·2	9·8	0·500	30·02	......	34·0	......	......	6	+ 5 9 6·7	+27·2
	......	Nadir ‖|	......	2 12 0	54 0	2 52·0	52·2	0·500	30·02	37·4	33·9	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 63·9	66·1	0·500	......	......	......	......	......	......	......	......
Nov. 9	......	(c) Nadir ‖|	......	0 30 0	54 0	2 54·8	56·0	0·500	29·66	41·7	41·0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 65·7	66·4	0·500	......	......	......	......	......	......	......	......
	514	......	6·5	1 34 58	260 35	3 0·6	10·3	0·831	29·65	......	41·0	4, W.	3	5	+26 35 15·9	+27·9
	547	......	8·0	1 41 50	242 45	1 54·[illegible]	63·6	0·546	29·65	......	41·0	......	......	6	+ 8 44 0·1	+28·2
	586	......	......	1 50 38	226 0	2 51·6	59·7	0·569	29·65	......	41·0	......	......	7	+ 8 0 2·8	+27·1
	......	Nadir ‖|	......	3 35 0	54 0	2 54·1	56·0	0·500	29·50	42·7	42·7	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 64·0	67·5	0·500	......	......	......	......	......	......	......	......
Nov. 10	......	Nadir ‖|	......	0 32 0	54 0	2 54·5	55·1	0·500	29·18	42·2	39·2	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 64·8	66·1	0·500	......	......	......	......	......	......	......	......
	263	......	7·0	0 50 56	263 40	3 43·4	51·4	0·609	29·18	......	39·0	......	......	6	+29 40 52·1	+31·4
	314	μ Cassiopeæ	5·5	0 60 15	235 40	4 56·2	66·0	0·500	29·18	......	39·0	......	......	7	+ 1 42 1·2	+33·3
	357	......	......	1 6 [illegible]	258 35	3 28·6	36·6	0·546	29·18	......	39·0	......	......	6	+24 35 35·3	+30·8
	403	......	......	1 14 55	217 50	2 20·0	26·8	0·594	29·18	......	39·0	......	......	10	−16 10 34·5	+31·7
	459	......	8·0	1 26 22	278 45	3 16·2	24·0	0·520	29·18	......	39·0	......	......	8	+44 45 22·9	+26·6
	514	(d)	......	1 35 0	260 35	3 7·5	15·9	0·595	29·18	......	39·0	......	......	7	+26 35 15·8	+28·0
	562	......	......	1 45 10	239 10	1 58·8	66·8	0·587	29·14	......	39·0	5, W.	0	8	+ 5 9 4·9	+28·1
	620	......	......	1 55 30	225 30	3 23·1	31·6	0·677	29·14	......	39·0	......	......	8	− 8 29 27·9	+26·7

(a) Aurora near horizon. (b) Illumination of wires in eye-piece to-night very defective.

(c) Examined illumination apparatus, thoroughly cleaned all the internal tubes, reflectors, &c., &c., and replaced all parts both of eye-piece and tin-light tubes, between gas light on stage and eye-end of telescope-tube carrying the wires which were by no means disturbed.—C. P. S. Nov. 9, 1863. (d) Good definition.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Corr. to Mean N. Polar Dist. Jan. 1, 1863.
1863.				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
Nov. 10	694	......	......	2 9 22	226 10	2 43·2	50·0	0·714	29·14	......	39·0	......	......	7	− 7 50 7·9	+24·5
	725	......	8·0	2 14 25	233 10	4 23·8	32·2	0·500	29·12	......	39·0	......	......	7	− 0 48 31·9	+24·2
	891	(a)	......	2 46 29	284 0	4 8·0	17·5	0·524	29·11	......	39·4	......	......	5	+50 1 16·2	+19·4
	949	α Ceti	......	2 56 11	286 25	0 42·6	51·1	0·591	29·11	......	39·4	......	......	9	+52 22 51·5	+18·4
	980	......	......	3 3 24	263 35	2 16·8	26·6	0·500	29·11	......	39·3	......	......	8	+29 34 24·1	+15·1
	1055	......	......	3 17 42	268 25	1 9·0	18·0	0·736	29·11	......	39·3	......	......	7	+34 23 22·3	+14·4
	1166	η Tauri	......	3 40 26	266 15	3 42·8	50·8	0·500	29·07	......	39·5	......	......	8	+32 15 48·5	+11·4
	......	Nadir	......	3 50 0	54 0	2 54·4	55·8	0·500	29·07	40·1	39·5	......	......	......	......	......
	......	Nadir	......	......	54 0	2 64·8	65·8	0·500	......	......	......	......	......	......	......	......
Nov. 11	......	Nadir	......	0 43 0	54 0	2 53·7	55·3	0·500	29·18	41·1	38·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 64·0	65·4	0·500	......	......	......	......	......	......	......	......
	290	......	......	0 56 18	236 30	1 28·1	36·3	0·710	29·20	......	37·6	5. W.	0	6	+ 2 28 37·3	+31·7
	357	......	9·0	1 5 24	258 35	3 28·7	37·1	0·570	29·20	......	37·6	......	......	7	+24 35 36·0	+31·0
	403	......	......	1 13 59	217 50	2 23·3	30·2	0·500	29·19	......	36·6	......	......	9	−16 10 33·9	+32·0
	457	......	10·0	1 25 58	209 15	1 33·4	39·4	0·593	29·19	......	36·7	......	......	8	−24 46 21·9	+30·1
	538	......	......	1 39 15	273 15	0 35·6	43·9	0·457	29·19	......	36·6	......	......	6	+39 12 40·0	+25·3
	562	......	......	1 44 12	239 10	1 58·1	66·0	0·629	29·19	......	36·6	......	......	8	+ 5 9 5·2	+23·3
	620	......	......	1 54 32	225 30	3 28·4	34·9	0·566	29·19	......	36·6	......	......	9	− 8 29 27·0	+27·0
	694	......	......	2 8 23	226 10	2 43·7	51·2	0·750	29·19	......	36·5	......	......	7	− 7 50 6·3	+25·1
	764	(b)	......	2 22 22	281 0	1 48·1	55·7	0·500	29·19	......	36·5	......	......	9	+46 58 53·8	+21·8
	891	......	10·0	2 45 31	284 0	4 7·7	16·3	0·500	29·21	......	36·5	......	......	5	+50 1 14·5	+19·5
	1055	......	......	3 16 42	268 25	1 12·1	20·3	0·661	29·21	......	36·5	......	......	5	+34 23 21·8	+16·5
	1101	......	......	3 27 13	258 45	1 26·8	35·5	0·500	29·21	......	36·5	......	......	7	+24 43 31·7	+14·8
	1166	η Tauri	......	3 39 26	266 15	3 42·4	51·4	0·600	29·21	......	36·5	......	......	7	+32 15 51·2	+13·5
	......	Nadir	......	3 50 0	54 0	2 56·4	56·4	0·500	29·21	37·0	36·4	......	......	......	......	......
	......	Nadir	......	......	54 0	2 67·8	67·7	0·500	......	......	......	......	......	......	......	......
Nov. 13	......	Nadir	......	1 25 0	54 0	2 52·0	56·0	0·500	29·70	48·0	52·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 64·5	68·3	0·500	......	......	......	......	......	......	......	......
	776	......	......	2 24 30	268 15	4 5·6	14·0	0·500	29·70	......	52·0	20. W.	2	5	+54 16 12·9	+20·4
	949	α Ceti	......	2 55 12	286 25	0 43·1	52·0	0·469	29·70	......	52·0	......	......	6	+52 22 49·1	+18·2
Nov. 19	......	Nadir	......	1 50 0	54 0	2 53·2	55·9	0·500	29·65	51·0	51·4	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·7	66·5	0·500	......	......	......	......	......	......	......	......
	1055	......	......	3 16 35	268 25	1 12·4	21·5	0·531	29·74	......	50·0	0	3	5	+34 23 19·6	+16·9
	1166	η Tauri	......	3 39 19	266 15	3 39·1	50·0	0·639	29·74	......	50·0	......	......	7	+32 15 50·6	+13·4
	1282	......	8·0	4 3 33	241 15	0 41·5	53·4	0·539	29·74	......	50·0	......	......	5	+ 7 12 48·7	+ 9·5
	......	Nadir	......	4 20 0	54 0	2 52·0	55·4	0·500	29·74	51·0	50·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·4	65·4	0·500	......	......	......	......	......	......	......	......
Nov. 24	......	Nadir	......	1 43 0	54 0	2 51·7	54·3	0·500	29·50	46·6	45·4	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·9	67·4	0·500	......	......	......	......	......	......	......	......
	1166	η Tauri	......	3 39 14	266 15	3 41·4	51·5	0·530	29·50	......	44·6	1, S.E.	6	6	+32 15 49·6	+14·0
	......	(c) Nadir	......	4 20 0	54 0	2 53·6	55·9	0·500	29·50	46·6	44·6	......	......	......	......	......
	......	Nadir	......	......	54 0	2 64·8	67·0	0·500	......	......	......	......	......	......	......	......
Nov. 25	......	Nadir	......	1 41 0	54 0	2 52·6	55·0	0·500	29·73	50·9	51·3	......	......	......	......	......
	......	Nadir	......	......	54 0	2 62·2	65·0	0·500	......	......	......	......	......	......	......	......
	645	......	......	1 58 50	264 45	3 43·4	52·2	0·591	29·73	......	51·3	0	0	6	+30 45 53·5	+28·2
	718	......	......	2 12 9	233 20	3 3·7	12·7	0·553	29·73	......	51·3	......	......	7	− 0 39 49·0	+27·4

(a) Occasional showers. (b) Definition very good. (c) Sky getting overcast.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of ths. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1863.
1863.				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
Nov. 25	764	......	7·0	......	281 0	1 41·8	51·8	0·500	29·73	......	51·3	......	......	5	+46 58 50·4	+21·3
	793	......	......	2 28 26	283 40	4 52·8	62·4	0·500	29·73	......	51·3	......	......	6	+19 42 2·0	+20·3
	834	......	......	2 35 47	264 55	1 6·3	15·4	0·500	29·73	......	51·3	......	......	6	+30 53 13·5	+22·1
	891	......	......	......	284 0	4 6·7	17·0	0·500	29·73	......	51·3	......	......	5	+50 1 16·0	+15·7
	949	α Ceti	......	2 55 0	286 25	0 40·7	51·1	0·500	29·77	......	50·0	......	......	7	+52 22 49·6	+17·4
	980	......	6·5	3 2 13	263 35	2 13·0	23·0	0·164	29·77	......	49·8	......	......	7	+29 34 19·9	+19·1
	1101	......	......	3 27 0	258 45	1 21·3	30·7	0·500	29·80	......	49·9	......	......	8	+21 43 28·5	+16·1
	1166	η Tauri	......	3 39 14	266 15	3 39·2	50·7	0·555	29·80	......	49·9	......	......	7	+32 15 49·7	+14·0
	1282	......	......	4 3 28	241 15	0 43·3	54·1	0·490	29·80	......	49·9	......	......	7	+ 7 12 49·5	+10·6
	1318	......	......	4 10 38	233 45	4 47·7	57·1	0·500	29·80	......	49·9	......	......	8	− 0 13 6·0	+ 9·1
	1361	......	......	4 16 51	271 15	0 57·0	66·4	0·440	29·80	......	49·9	......	......	6	+37 13 3·0	+ 9·1
	1434	......	......	4 30 22	277 45	0 12·5	21·6	0·523	29·80	......	49·9	......	......	8	+43 42 20·9	+ 7·6
	......	Nadir ‖|	......	4 40 0	54 0	2 50·7	53·1	0·500	29·80	51·2	49·9	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 63·0	65·4	0·500	......	......	......	......	......	......	......	......
Nov. 26	......	Nadir ‖|	......	2 0 0	54 0	2 50·3	54·0	0·500	29·92	52·0	53·0	......	......	......		......
	......	Nadir |‖	......	......	54 0	2 64·0	65·2	0·500	......	......	......	......	......	......	......	......
	834	(a)	......	2 36 5	264 55	1 5·2	14·2	0·500	29·92	......	52·8	0	0	5	+30 53 12·2	+22·2
	920	......	......	......	268 55	0 9·9	20·1	0·500	29·92	......	52·8	......	......	4	+34 52 17·6	+20·0
	1166	......	......	3 39 13	266 15	3 40·0	50·7	0·564	29·92	......	52·8	......	......	5	+32 15 50·2	+14·1
	1434	......	......	4 30 23	277 45	0 11·7	22·1	0·659	29·92	......	52·0	......	......	5	+43 42 24·2	+ 7·5
	1491	......	......	4 43 0	281 15	4 25·8	35·1	0·442	29·92	......	52·0	......	......	4	+47 16 32·9	+ 6·1
	......	Nadir ‖|	......	4 50 0	54 0	2 53·1	55·7	0·500	29·92	52·1	52·0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 62·5	65·3	0·500	......	......	......	......	......	......	......	......
Nov. 27	......	Nadir ‖|	......	2 4 0	54 0	2 53·7	57·7	0·500	29·91	51·4	51·4	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 63·7	66·5	0·500	......	......	......	......	......	......	......	......
	776	(b)	......	2 24 16	288 15	4 7·3	17·2	0·500	29·91	......	51·3	0	3	4	+54 16 15·3	+19·7
	1166	η Tauri	......	3 39 14	266 15	3 38·9	49·9	0·624	29·91	......	49·1	......	......	5	+32 15 49·7	+14·1
	1434	......	......	4 30 23	277 45	0 10·9	22·3	0·670	29·91	......	48·3	......	......	5	+43 42 23·2	+ 7·5
	......	Nadir ‖|	......	4 48 0	54 0	2 53·7	56·6	0·500	29·91	50·7	48·2	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 63·9	66·3	0·500	......	......	......	......	......	......	......	......
Nov. 30	......	Nadir ‖|	......	3 18 0	54 0	2 52·4	54·0	0·500	29·68	43·3	38·1	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 63·1	65·3	0·500	......	......	......	......	......	......	......	......
	1434	......	......	4 30 26	277 45	0 13·7	23·7	0·500	29·65	......	36·5	2, N.E.	6	4	+43 42 21·4	+ 7·3
	1491	......	......	4 43 5	281 15	4 21·6	31·4	0·500	29·65	......	36·5	......	......	6	+47 16 30·1	+ 5·8
	1626	......	......	5 9 3	249 40	1 14·0	23·3	0·450	29·61	......	35·3	......	......	7	+15 36 18·3	+ 0·8
	......	Nadir ‖|	......	5 13 0	54 0	2 51·9	54·2	0·500	29·61	37·0	35·2	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 64·0	65·0	0·500	......	......	......	......	......	......	......	......
Dec. 1	......	Nadir ‖|	......	2 30 0	54 0	2 52·1	54·5	0·500	29·04	41·0	42·0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 64·6	65·2	0·500	......	......	......	......	......	......	......	......
	920	......	......	......	268 55	0 12·8	22·0	0·500	29·04	......	41·8	......	......	5	+34 52 19·7	+20·1
	1101	......	......	3 27 5	258 45	1 22·1	29·9	0·500	29·04	......	41·7	......	......	6	+24 43 27·9	+16·6
	1166	η Tauri	......	3 39 19	266 15	3 40·3	49·3	0·657	29·04	......	41·4	......	......	6	+32 15 51·8	+14·2
	1318	......	......	......	233 45	4 45·4	52·8	0·500	29·04	......	41·3	......	......	5	− 0 13 9·8	+10·4
	1434	......	......	4 30 28	277 45	0 17·4	26·8	0·400	29·04	......	41·3	......	......	7	+43 42 22·0	+ 7·3
	1501	......	......	4 45 31	234 20	4 12·8	20·0	0·662	29·04	......	41·2	......	......	6	+ 0 21 21·8	+ 4·2
	......	Nadir ‖|	......	5 0 0	54 0	2 53·2	54·6	0·500	29·04	41·2	43·0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 64·6	65·2	0·500	......	......	......	......	......	......	......	......

(a) Hazy. Definition bad. (b) Definition very bad.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist. Jan. 1, 1864.
1863.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Dec. 2	......	Nadir ǁ|	......	2 15 [illegible]	54 0	2 54·3	55·9	0·500	28·93	41·8	36·8	......	......	......	......	......
	......	Nadir |ǁ	......	......	54 0	2 65·0	68·0	0·500	......	......	......	......	......	......	......	......
	793	......	......	2 28 32	283 40	4 56·8	66·8	0·500	28·93	......	36·8	12, W.	0	7	+49 42 5·1	+19·9
	834	......	......	2 35 52	264 55	1 7·8	16·8	0·500	28·93	......	36·7	......	......	7	+30 53 13·9	+22·4
	891	......	9·0	2 45 23	284 0	4 10·0	18·8	0·151	28·93	......	36·6	......	......	5	+50 1 16·2	+18·2
	920	......	......	2 51 1	268 55	0 15·5	25·2	0·140	28·93	......	36·6	......	......	6	+34 52 20·4	+20·1
	962	ι Persei	......	2 59 10	240 50	4 35·7	45·0	0·527	28·92	......	36·5	......	......	7	+ 6 51 41·9	+22·1
	1055	......	......	3 16 35	268 25	1 13·9	22·1	0·500	28·92	......	36·5	......	......	6	+34 23 19·7	+17·1
	1166	η Tauri	......	3 39 19	266 15	3 39·5	48·3	0·640	28·91	......	36·8	......	......	8	+32 15 49·9	+14·3
	1318	......	......	4 10 43	233 45	4 43·7	52·2	0·666	28·91	......	37·3	......	......	7	− 0 13 6·9	+10·6
	1434	......	......	4 30 28	277 45	0 16·4	23·4	0·500	28·91	......	37·2	......	......	8	+43 42 22·0	+ 7·1
	1459	......	......	4 36 54	234 35	4 1·7	10·9	0·500	28·91	......	37·2	......	......	6	− 0 36 6·6	+ [illegible]
	1491	......	......	4 43 7	281 15	4 24·0	34·3	0·550	28·91	......	37·1	......	......	8	+47 16 33·6	+ [illegible]
	1626	......	......	5 9 5	249 40	1 15·8	25·4	0·410	28·91	......	36·9	......	......	7	+15 38 18·7	+ 1·0
	......	Nadir ǁ|	......	5 15 0	54 0	2 51·6	55·6	0·500	28·89	38·9	36·7	......	......	......	......	......
	......	Nadir |ǁ	......	......	54 0	2 65·3	67·3	0·500	......	......	......	......	......	......	......	......
Dec. 8	......	Nadir ǁ|	......	3 50 0	54 0	2 51·4	52·4	0·500	29·56	44·7	39·0	......	......	......	......	......
	......	Nadir |ǁ	......	......	54 0	2 63·6	65·6	0·500	......	......	......	......	......	......	......	......
	1282	......	......	4 3 38	241 15	0 40·9	50·3	0·500	29·56	......	39·0	5, W.	0	6	+ 7 12 45·2	+12·8
	1318	......	......	4 10 47	233 45	4 47·7	54·7	0·433	29·56	......	39·0	......	......	7	− 0 13 9·6	+11·9
	1361	......	......	4 17 1	271 15	[illegible] 54·6	62·8	0·629	29·56	......	39·0	......	......	9	+37 13 4·7	+ 9·0
	1434	......	......	4 30 32	277 45	0 15·9	26·1	0·484	29·56	......	39·0	......	......	8	+43 42 23·2	+ 6·9
	1463	......	......	4 37 29	266 35	2 9·7	20·0	0·500	29·56	......	39·0	......	......	8	+32 34 17·3	+ 6·4
	1501	......	......	4 45 35	234 20	4 10·6	18·3	0·689	29·56	......	39·0	......	......	7	+ 0 21 20·6	+ 5·6
	1626	......	......	5 9 9	249 40	1 9·7	17·8	0·611	29·57	......	38·9	......	......	7	+15 38 18·1	+ 1·6
	1683	......	......	5 17 47	255 40	3 46·9	53·7	0·667	29·57	......	38·9	......	......	8	+21 40 57·0	+ 0·4
	1730	δ Orionis	2·0	5 25 3	290 20	2 56·9	66·1	0·593	29·57	......	38·9	......	......	7	+56 20 7·8	− 0·2
	1772	......	......	5 30 38	260 50	1 53·9	62·4	0·500	29·57	......	38·9	......	......	7	+26 49 0·4	− 1·5
	......	Nadir ǁ|	......	5 42 0	54 0	2 52·4	54·6	0·500	29·57	40·9	38·9	......	......	......	......	......
	......	Nadir |ǁ	......	......	54 0	2 64·8	67·0	0·500	......	......	......	......	......	......	......	......
Dec. 9	......	Nadir ǁ|	......	2 25 0	54 0	2 53·4	54·6	0·500	29·45	43·4	43·8	......	......	......	......	......
	......	Nadir |ǁ	......	......	54 0	2 63·6	63·7	0·500	......	......	......	......	......	......	......	......
	834	(a)	......	2 35 58	264 55	1 9·0	16·4	0·438	29·45	......	44·0	30, W.	0	5	+30 53 13·2	+22·7
	949	α Ceti	......	2 55 11	286 25	0 46·6	54·9	0·410	29·45	......	44·0	......	......	6	+52 22 51·5	+16·2
	1055	(b)	......	3 16 40	268 25	1 13·9	21·4	0·467	29·45	......	44·0	......	......	5	+34 23 19·0	+17·2
Dec. 10	......	Nadir ǁ|	......	2 36 0	54 0	2 53·8	55·6	0·500	29·54	44·1	45·0	......	......	......	......	......
	......	Nadir |ǁ	......	......	54 0	2 63·8	66·0	0·500	......	......	......	......	......	......	......	......
	920	......	......	2 51 6	268 55	0 11·7	21·0	0·558	29·54	......	45·0	20, N.W.	2	6	+34 52 20·0	+20·9
	1055	......	......	3 16 42	268 25	1 12·7	21·9	0·500	29·54	......	45·0	......	......	7	+34 23 19·3	+17·2
	1166	η Tauri	......	3 39 26	266 15	3 40·7	49·4	0·544	29·55	......	44·8	......	......	8	+32 15 48·6	+14·5
	1282	......	......	4 3 40	241 15	[illegible] 39·8	50·3	0·500	29·55	......	44·8	......	......	8	+ 7 12 45·3	+13·2
	1318	......	......	4 10 49	233 45	4 46·1	55·1	0·529	29·55	......	44·8	......	......	7	− 0 13 7·8	+12·3
	1361	......	......	4 17 3	271 15	0 53·1	61·4	0·687	29·55	......	44·8	35, N.W.	......	6	+37 13 4·5	+ 9·4
	1463	......	......	4 37 31	266 35	2 11·9	22·0	0·500	29·55	......	44·8	......	......	7	+32 34 19·2	+ 6·5
	1491	......	......	4 43 14	281 15	4 24·6	33·9	0·533	29·55	......	44·8	......	......	7	+47 16 33·4	+ 5·0
	1626	......	......	5 9 13	249 40	1 10·7	18·3	0·562	29·61	......	43·8	......	......	9	+15 38 17·1	+ 1·9
	1683	......	......	5 17 50	255 40	3 50·8	58·8	0·500	29·61	......	43·0	......	......	8	+21 40 56·7	+ 0·5
	1766	......	......	5 29 27	280 45	1 29·9	39·5	0·469	29·61	43·5	43·0	......	......	7	+46 43 36·5	− 0·7

(a) Aurora in S. extending from horizon to zenith.

(b) Occasional showers.

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Date.	Star or other Object Observed. No. in British Assoc. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A	Microscopes. B	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1868.
1863.				h m s	° ′	′ ″	″	revols.	inches	°	°				° ′ ″	″
Dec. 10	......	Nadir ||	......	5 35 0	54 0	2 53·8	56·5	0·500	29·[illegible]	43·5	43·0	......	......	......	......	......
	......	Nadir ||	......	......	54 0	2 63·7	66·3	0·500	......	......	......	......	......	......	......	......
Dec. 15	......	Nadir ||	......	4 0 0	51 0	2 52·7	55·0	0·500	29·50	47·4	47·8	......	......	......	......	......
	......	Nadir ||	......	......	51 0	2 63·0	65·0	0·500	......	......	......	......	......	......	......	......
	1318	......	......	4 10 53	233 45	4 44·5	52·8	0·500	29·50	......	47·0	10, W.	0	6	− 0 13 10·3	+ 13·3
	1361	......	......	4 17 7	271 15	0 58·8	67·6	0·500	29·50	......	47·0	......	......	6	+ 37 13 5·7	+ 8·9
	1434	......	......	......	277 45	0 16·8	25·9	0·500	29·50	......	47·0	......	......	5	+ 43 42 24·1	+ 6·5
Dec. 16	......	Nadir ||	......	3 40 0	54 0	2 53·6	55·1	0·500	29·21	44·0	44·0	......	......	......	......	......
	......	Nadir ||	......	......	54 0	2 63·4	63·9	0·500	......	......	......	......	......	......	......	......
	2046	......	......	6 15 2	233 35	4 16·8	24·8	0·500	29·34	......	43·0	20, W.	5	6	− 0 23 38·3	− 9·2
Dec. 17	......	Nadir ||	......	3 21 0	51 0	2 56·2	56·8	0·500	30·10	41·7	37·0	......	......	......	......	......
	......	Nadir ||	......	......	51 0	2 64·9	65·3	0·500	......	......	......	......	......	......	......	......
	1282	......	......	4 3 41	241 15	0 38·4	48·6	0·590	30·10	......	35·7	......	......	6	+ 7 12 45·4	+ 14·3
	1434	......	......	4 30 39	277 45	0 15·0	22·7	0·500	30·10	......	35·5	......	......	6	+ 43 42 20·4	+ 6·4
	1463	......	9·0	......	266 35	2 9·8	19·4	0·500	30·10	......	35·5	......	......	5	+ 32 34 15·9	+ 6·5
	1772	......	......	5 30 46	260 50	1 50·8	60·0	0·540	30·11	......	35·0	......	......	6	+ 26 48 57·5	− 1·2
	1883	α Orionis	2·5	5 47 51	282 35	1 25·6	35·8	0·666	30·11	......	35·6	......	......	7	+ 48 33 37·3	− 3·7
	2022	......	......	6 9 42	279 55	4 59·8	68·9	0·520	30·10	......	35·8	......	......	6	+ 45 57 7·4	− 6·4
	......	Nadir ||	......	6 15 0	51 0	2 54·8	56·2	0·500	30·10	38·0	35·8	......	......	......	......	......
	......	Nadir ||	......	......	51 0	2 65·4	66·4	0·500	......	......	......	......	......	......	......	......
Dec. 23	......	Nadir ||	......	3 23 0	51 0	2 53·7	55·0	0·500	29·55	46·4	49·0	......	......	......	......	......
	......	Nadir ||	......	......	51 0	2 64·3	64·4	0·500	......	......	......	......	......	......	......	......
	1282	......	......	4 3 45	241 15	0 35·3	46·3	0·600	29·55	......	49·0	25, W.	5	5	+ 7 12 44·1	+ 15·2
	1501	......	......	4 45 43	231 20	4 10·9	19·1	0·500	29·58	......	48·4	......	......	6	+ 0 21 15·9	+ 8·8
	1626	......	......	5 9 17	249 40	1 8·9	18·7	0·500	29·58	......	48·3	......	......	7	+ 15 38 14·9	+ 3·3
	1683	......	......	5 17 51	255 40	3 47·2	56·0	0·557	29·58	......	48·3	......	......	7	+ 21 40 55·2	+ 1·4
	1826	......	......	5 39 31	280 30	1 15·1	24·3	0·326	29·58	......	48·3	......	......	6	+ 46 28 17·7	− 3·1
	2101	......	......	6 22 15	267 20	1 51·4	59·4	0·458	29·58	......	48·3	......	......	6	+ 33 18 56·8	− 8·8
	......	Nadir ||	......	6 35 0	51 0	2 54·0	55·4	0·500	29·60	48·0	49·0	......	......	......	......	......
	......	Nadir ||	......	......	51 0	2 62·1	64·4	0·500	......	......	......	......	......	......	......	......
Dec. 24	......	Nadir ||	......	4 50 0	51 0	2 54·2	57·4	0·500	29·65	46·8	47·0	......	......	......	......	......
	......	Nadir ||	......	......	54 0	2 63·3	66·4	0·500	......	......	......	......	......	......	......	......
	1626	......	......	5 9 18	249 40	1 12·3	21·0	0·500	29·65	......	47·0	40, S.W.	5	5	+ 15 38 17·7	+ 3·4
	1683 (a)	......	......	5 17 55	255 40	3 47·9	55·8	0·600	29·65	......	47·0	......	......	6	+ 21 40 56·6	+ 1·5
	......	Nadir ||	......	6 36 0	54 0	2 51·3	52·4	0·500	29·66	46·9	47·0	......	......	......	......	......
	......	Nadir ||	......	......	54 0	2 64·2	66·3	0·500	......	......	......	......	......	......	......	......
Dec. 30	......	Nadir ||	......	4 0 0	54 0	2 53·4	55·4	0·500	29·77	40·2	37·0	......	......	......	......	......
	......	Nadir ||	......	......	51 0	2 65·7	67·3	0·500	......	......	......	......	......	......	......	......
	1347	......	......	4 15 26	265 50	4 30·3	38·3	0·650	29·77	......	37·0	0	0	5	+ 31 51 40·2	+ 9·9
	1434	......	......	4 30 42	277 45	0 16·0	25·0	0·500	29·77	......	37·0	......	......	6	+ 43 42 22·1	+ 5·6
	1491	......	......	4 43 20	281 15	4 24·8	33·0	0·520	29·77	......	37·0	......	......	7	+ 47 16 31·9	+ 3·4
	1626	......	......	5 9 19	249 40	1 7·8	16·0	0·572	29·77	......	37·0	......	......	7	+ 15 38 14·0	+ 4·0
	1656	......	......	5 14 28	281 40	1 50·0	58·4	0·500	29·77	......	37·0	......	......	6	+ 47 38 56·3	− 0·6
	1730	δ Orionis	......	5 25 12	290 20	3 1·7	9·3	0·484	29·77	......	37·0	......	......	8	+ 56 20 7·7	+ 3·8
	1772	......	......	5 30 48	260 50	1 47·3	55·7	0·661	29·76	......	37·0	......	......	7	+ 26 48 57·0	− 0·7

(a) Becoming cloudy.

Date.	Star or other Object Observed. No. in British Assoc. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Microscopes. Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1 1863
1863.				h m s	° ′	′ ″	″	revols.	inches	°	°				° ′ ″	″
Dec. 30	1826	....	......	5 39 33	280 30	1 11·8	20·6	0·500	29·76	......	37·0	....	......	6	+46 28 18·0	− 3·7
	1932	....	......	5 55 26	251 25	1 3·6	14·0	0·320	29·76	......	37·0	....	......	7	+17 23 3·9	− 3·9
	2060	....	8·0	6 16 42	285 20	0 0·0	13·0	0·310	29·76	......	36·2	....	......	6	+51 17 8·7	− 8·6
	......	Nadir ‖|	......	6 38 0	54 0	2 54·4	56·0	0·500	29·76	39·3	36·2	....	......	......	....	......
	......	Nadir |‖	......	....	54 0	2 65·0	67·5	0·500	......	......	......	....	......	......	....	......

ROYAL OBSERVATORY, EDINBURGH.

Individual Observations of Mean North Polar Distances of Stars observed at the Royal Observatory, Edinburgh, in the Year 1863, reduced to January 1, 1863.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
B.A.C. 26, γ Pegasi.				
			h. m.	° ′ ″
Oct. 12	0·78	(a) (2)	0 6	75 34 42·6
B.A.C. 42.				
Sept. 23	0·73	(x)	0 9	86 30 37·6
B.A.C. 48.				
Oct. 23	0·81	(7·0)	0 10	76 50 42·7
B.A.C. 57.				
Sept. 21	0·72	(6·5)	0 11	89 4 25·6
B.A.C. 83.				
Sept. 21	0·72	(6·0)	0 18	37 42 47·3
23	0·72			46·6
Oct. 5	0·73			46·8
12	0·78			45·6
20	0·80			45·4
23	0·81			43·7
B.A.C. 96.				
Oct. 6	0·76	(7·0)	0 20	74 44 1·3
B.A.C. 120.				
Oct. 21	0·80	(6·0)	0 24	57 11 21·7
B.A.C. 133.				
Oct. 23	0·81	(8·0)	0 26	70 19 20·3
B.A.C. 149.				
			h. m.	° ′ ″
Oct. 28	0·82	(6)	0 29	77 32 29·1
30	0·83			30·7
B.A.C. 177.				
Oct. 5	0·76		0 34	81 23 39·5
12	0·78			37·7
21	0·80	7·0		41·2
23	0·81	7·0		37·1
30	0·83			38·0
B.A.C. 218, η Cassiopeæ.				
Oct. 2	0·75	(4·0)	0 41	32 54 43·6
B.A.C. 237.				
Oct. 12	0·78	(7·5)	0 44	87 21 32·1
B.A.C. 259.				
Oct. 23	0·81	(4·0)	0 49	52 14 40·5
B.A.C. 263.				
Oct. 30	0·83		0 50	63 44 33·5
Nov. 10	0·86	7·0		33·4
B.A.C. 290.				
Oct. 20	0·80	(7·0)	0 56	36 31 49·4
Nov. 11	0·86			50·3
B.A.C. 299.				
			h. m.	° ′ ″
Oct. 2	0·75	(6·0)	0 57	61 4 25·8
6	0·76			23·0
Nov. 2	0·84			23·0
5	0·84			23·3
B.A.C. 314, μ Cassiopeæ.				
Nov. 10	0·86	5·5	0 59	35 45 13·0
B.A.C. 357.				
Oct. 23	0·81	9·0	1 5	58 39 9·8
30	0·83	9·0		10·6
Nov. 2	0·84			6·6
10	0·86			9·5
11	0·86	9·0		10·4
B.A.C. 403.				
Nov. 10	0·86	(7·5)	1 13	17 52 17·2
11	0·86			18·0
B.A.C. 455.				
Oct. 12	0·78	8·0	1 24	73 45 8·3
20	0·80			9·8
21	0·80			9·7
23	0·81			8·8
30	0·83			10·5
Nov. 2	0·84			7·8
4	0·84			7·9
5	0·84			6·4
B.A.C. 457.				
Nov. 11	0·86	10·0	1 25	9 16 18·1

(a) Magnitudes in parenthesis are the tabular ones of the British Association Catalogue.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
			h m	° ′ ″
B.A.C. 459.				
Nov. 10	0·86	8·0	1 25	78 49 23·7
B.A.C. 514.				
Oct. 12	0·78		1 34	60 38 50·6
14	0·78			48·7
Nov. 4	0·84			49·0
5	0·84			48·3
9	0·85	6·5		50·0
10	0·86			49·6
B.A.C. 516.				
Oct. 21	0·80	(5·5)	1 34	55 26 52·0
Nov. 2	0·84			50·8
B.A.C. 538.				
Oct. 14	0·78	(6·5)	1 39	73 16 30·4
23	0·81			30·1
Nov. 4	0·84			30·1
11	0·86			30·7
B.A.C. 547.				
Nov. 9	0·85	6·0	1 41	42 47 14·1
B.A.C. 562.				
Nov. 2	0·84	(6·5)	1 44	39 12 15·4
5	0·84			13·2
6	0·85			16·1
10	0·86			15·0
11	0·86			15·6
B.A.C. 620.				
Nov. 10	0·86	(7·0)	1 54	25 33 27·0
11	0·86			28·1
B.A.C. 645.				
Oct. 23	0·81	(6·0)	1 59	64 49 30·3
Nov. 2	0·84			29·4
25	0·90			30·8
B.A.C. 694.				
Nov. 10	0·86	(7·5)	2 8	26 12 45·7
11	0·86			47·6
B.A.C. 718.				
Oct. 23	0·81	(7·0)	2 12	33 23 15·6
Nov. 5	0·84			15·6
25	0·90			15·0
B.A.C. 725.				
Nov. 10	0·86	8·0	2 13	33 14 28·3
B.A.C. 764.				
Oct. 23	0·81		2 22	81 2 54·4
Nov. 2	0·84			52·5
5	0·84			53·0
11	0·86			54·8
25	0·90	7·0		50·2
B.A.C. 776.				
Nov. 13	0·87	(6·0)	2 24	88 20 30·2
27	0·90			32·2
B.A.C. 793.				
Oct. 23	0·81	(6·5)	2 28	83 46 9·0
Nov. 25	0·90			6·9
Dec. 2	0·92			9·9
B.A.C. 834.				
Oct. 28	0·82	(6·5)	2 36	64 56 45·8
Nov. 2	0·84			49·0
5	0·84			46·4
25	0·90			46·8
26	0·90			45·8
Dec. 2	0·92			47·7
9	0·94			47·3
B.A.C. 891.				
Nov. 2	0·84		2 45	84 5 22·8
10	0·86			21·4
11	0·86	10·0		20·3
25	0·90			20·1
Dec. 2	0·92	9·0		20·0
B.A.C. 920.				
Nov. 5	0·84	(7·0)	2 51	68 55 56·8
26	0·90			54·7
Dec. 1	0·91			56·6
2	0·92			57·5
10	0·94			57·4
B.A.C. 949, α Ceti.				
Nov. 2	0·84	(2·5)	2 55	86 26 62·7
10	0·86			61·6
13	0·87			58·7
25	0·90			58·7
Dec. 9	0·94			59·6
B.A.C. 962, ι Persei.				
Dec. 2	0·92	(4·0)	2 59	40 54 47·8
B.A.C. 980.				
Nov. 2	0·84		3 2	63 37 51·9
5	0·84			50·0
10	0·86			51·8
25	0·90	6·5		48·6
B.A.C. 1055.				
Nov. 5	0·84	(7·5)	3 16	68 26 52·4
10	0·86			53·1
11	0·86			53·0
19	0·88			52·9
Dec. 2	0·92			53·1
9	0·94			52·6
10	0·94			53·0
B.A.C. 1101.				
Nov. 11	0·86	(6·5)	3 27	58 46 50·2
25	0·90			48·1
Dec. 1	0·91			47·7
B.A.C. 1166, η Tauri.				
Nov. 10	0·86	(3·0)	3 39	66 19 15·1
11	0·86			16·9
19	0·88			17·9
24	0·90			17·4
25	0·90			17·1

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
B.A.C. 1166, η Tauri.				
			h. m.	° ′ ″
Nov. 26	0·90	(3·0)	3 39	66 19 17·6
27	0·90			17·4
Dec. 1	0·91			19·0
2	0·92			17·4
10	0·94			16·5
B.A.C. 1282.				
Nov. 19	0·88	8·0	4 3	41 15 42·3
25	0·90			44·2
Dec. 8	0·93			43·2
10	0·94			42·6
17	0·96			44·1
23	0·97			43·4
B.A.C. 1318.				
Nov. 25	0·90	(6·0)	4 10	33 49 39·7
Dec. 1	0·91			37·2
2	0·92			40·3
8	0·93			38·9
10	0·94			41·1
15	0·95			39·6
B.A.C. 1347.				
Dec. 30	0·99	(8·0)	4 15	65 55 3·8
B.A.C. 1361.				
Nov. 25	0·90	(6·0)	4 17	71 16 32·9
Dec. 8	0·93			35·1
10	0·94			31·4
15	0·95			35·2
B.A.C. 1434.				
Nov. 25	0·90	(5·0)	4 31	77 46 0·6
26	0·90			3·8
27	0·90			3·2
30	0·91			2·1
Dec. 1	0·91			0·9
2	0·92			1·1
8	0·93			3·0
15	0·95			2·5
17	0·96			1·1
30	0·99			1·2
B.A.C. 1459.				
			h. m.	° ′ ″
Dec. 2	0·92	(6·5)	4 37	34 38 50·0
B.A.C. 1463.				
Dec. 8	0·93		4 37	66 37 38·0
10	0·94			39·6
17	0·96	9·0		37·7
B.A.C. 1491.				
Nov. 26	0·90	(5·0)	4 43	81 20 18·4
30	0·91			16·8
Dec. 2	0·92			18·4
10	0·94			18·0
30	0·99			16·4
B.A.C. 1501.				
Dec. 1	0·91	(6·0)	4 46	34 24 3·1
8	0·93			3·4
23	0·97			1·6
B.A.C. 1626.				
Nov. 30	0·91	(7·5)	5 9	49 41 12·5
Dec. 2	0·92			12·7
8	0·93			12·9
10	0·94			12·1
23	0·97			11·1
24	0·98			14·1
30	0·99			11·4
B.A.C. 1656.				
Dec. 30	0·99	(6·0)	5 14	81 42 37·6
B.A.C. 1683.				
Dec. 8	0·93	(6·0)	5 18	55 43 57·6
10	0·94			57·2
23	0·97			56·3
24	0·98			57·9
B.A.C. 1730, δ Orionis.				
Dec. 8	0·93	2·0	5 25	90 24 12·6
30	0·99			16·5
B.A.C. 1766.				
			h. m.	° ′ ″
Dec. 10	0·94	(4·5)	5 29	80 47 11·5
B.A.C. 1772.				
Dec. 8	0·93	(6·0)	5 30	60 52 5·4
17	0·96			3·6
30	0·99			3·1
B.A.C. 1826.				
Jan. 7	0·02	(6·0)	5 39	80 31 53·5
Dec. 23	0·97			52·0
30	0·99			53·5
B.A.C. 1883, α Orionis.				
Jan. 2	0·00	2·0	5 48	82 37 17·0
Dec. 17	0·96	2·5		18·6
B.A.C. 1907.				
Jan. 7	0·02	(6·0)	5 51	77 12 31·4
B.A.C. 1932. (a)				
Dec. 30	0·99	(7·5)	5 55	51 25 55·4
B.A.C. 2022.				
Dec. 17	0·96	(6·0)	6 9	80 0 40·0
B.A.C. 2046.				
Dec. 16	0·96	(7·0)	6 14	33 58 48·9
B.A.C. 2101.				
Jan. 5	0·01	(7·0)	6 22	67 22 6·3
7	0·02			5·8
Dec. 23	0·97			2·7
B.A.C. 2184.				
Jan. 2	0·00	(7·0)	6 33	73 28 43·3

(a) A large difference in the tabular N. P. D.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
B.A.C. 2238.				
Jan. 7	0·02	(6·0)	h. m. 6 44	° ' " 66 14 25·0
23	0·06			24·6
B.A.C. 2292.				
Jan. 27	0·07	6·5	6 53	79 11 7·2
B.A.C. 2329.				
Jan. 2	0·00	(7·0)	7 0	74 15 20·5
B.A.C. 2334.				
Jan. 7	0·02	(6·0)	7 1	39 59 28·6
B.A.C. 2363.				
Jan. 23	0·06	(7·5)	7 6	65 3 31·1
B.A.C. 2410. δ Geminorum.				
Jan. 7	0·02	(3·0)	7 12	67 46 7·8
23	0·06			8·8
B.A.C. 2463.				
Jan. 5	0·01	(7·0)	7 20	62 10 24·3
27	0·07			24·9
B.A.C. 2488.				
Jan. 7	0·02	(6·0)	7 26	43 31 20·3
B.A.C. 2522, α Canis Minoris.				
Jan. 5	0·01	(1·0)	7 32	84 25 39·0
23	0·06			38·1
27	0·07			35·6
30	0·08			40·9
Feb. 3	0·09			39·0
B.A.C. 2586.				
Jan. 7	0·02	(7·0)	7 41	61 27 44·6
23	0·06			43·3
27	0·07			43·1
B.A.C. 2683.				
Jan. 2	0·00	(6·0)	h. m. 7 57	° ' " 70 46 26·2
7	0·02			25·2
23	0·06			26·3
27	0·07			24·9
B.A.C. 2737.				
Jan. 7	0·02	(7·0)	8 3	74 58 7·3
Feb. 3	0·09			8·3
B.A.C. 2748.				
Jan. 30	0·08	(7·0)	8 4	75 35 24·9
B.A.C. 2867.				
Jan. 7	0·02	(6·5)	8 25	79 28 21·5
27	0·07			22·6
B.A.C. 2971, ι Hydræ. (a)				
Jan. 30	0·08	(4·0)	8 39	83 4 59·2
Feb. 3	0·09			54·3
B.A.C. 3053.				
Feb. 3	0·09	(6·0)	8 50	80 5 16·8
B.A.C. 3083.				
Jan. 30	0·08	(6·5)	8 55	38 37 59·5
Feb. 27	0·16			58·2
B.A.C. 3133.				
Jan. 23	0·06		9 5	85 34 26·4
Feb. 3	0·09			25·6
27	0·16	6·0		25·4
B.A.C. 3242, θ Ursæ Majoris.				
Jan. 23	0·06	3·0	9 23	37 42 2·4
30	0·08			2·0
Feb. 3	0·09			3·8
Mar. 6	0·18			2·6
B.A.C. 3331, ι Leonis.				
Feb. 9	0·11	(3·0)	h. m. 9 38	° ' " 65 35 48·7
23	0·14			50·3
27	0·16			49·4
Mar. 6	0·18			49·6
B.A.C. 3375.				
Jan. 30	0·08		9 45	54 22 24·0
Feb. 9	0·11			24·0
23	0·14	6·0		22·9
Mar. 6	0·18	6·0		19·9
B.A.C. 3380.				
Feb. 27	0·16	6·0	9 46	83 23 53·1
B.A.C. 3418.				
Feb. 9	0·11		9 54	80 23 28·3
27	0·16	8·0		25·0
B.A.C. 3420.				
Mar. 6	0·18	(7·0)	9 54	57 48 33·1
B.A.C. 3427.				
Jan. 30	0·08	(7·0)	9 56	56 41 33·4
B.A.C. 3464.				
Feb. 9	0·11	8·0	10 6	57 53 46·7
27	0·16			50·3
Mar. 6	0·18	7·0		49·5
B.A.C. 3529.				
Mar. 11	0·19	(6·0)	10 13	82 52 51·5
17	0·21			51·4
B.A.C. 3592.				
Feb. 27	0·16	(6·0)	10 23	87 46 16·3
Mar. 6	0·18			17·7
17	0·21			17·0

(a) Rather large difference in N. P. D.

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
B.A.C. 3662.				
			h m	° ′ ″
Feb. 27	0·16	(7·5)	10 34	78 32 44·0
Mar. 11	0·19			44·5
B.A.C. 3726.				
Feb. 27	0·16		10 45	88 14 53·6
Mar. 11	0·19	6·0		52·5
17	0·[illegible]			56·0
B.A.C. 3780.				
Feb. 27	0·16	(7·5)	10 57	81 40 48·7
Mar. 11	0·19			47·5
17	0·21			47·7
April 1	0·25			48·8
B.A.C. 3834, δ Leonis.				
Feb. 27	0·16	(2·5)	11 7	68 43 32·9
Mar. 11	0·19			35·0
16	0·20			34·5
17	0·21			35·[illegible]
April 1	0·25			35·1
B.A.C. 3869.				
Mar. 6	0·18	(6·0)	11 15	71 48 44·5
11	0·[illegible]			42·7
17	0·21			42·5
B.A.C. 3996.				
Mar. 11	0·19	(6·0)	11 42	84 2 60·5
17	0·21			59·1
April 6	0·26			58·7
8	0·27			60·6
B.A.C. 4153.				
Mar. 6	0·18	(6·0)	12 13	62 36 58·6
11	0·19			58·0
17	0·21			55·5
B.A.C. 4199.				
April 6	0·26	(7·0)	12 21	63 19 45·1
8	0·27			46·2
9	0·27			44·7
B.A.C. 4231.				
			h m	° ′ ″
Mar. 17	0·21		12 27	64 47 40·7
April 1	[illegible]·25			42·6
9	0·27	8·0		43·1
15	0·28			42·7
21	0·30			41·9
B.A.C. 4364.				
April 1	0·25	(6·0)	12 55	67 59 29·0
6	0·26			28·7
8	0·27			30·8
9	0·27			30·5
15	0·28			29·5
16	0·29			29·9
21	0·30			28·6
22	0·30			29·4
May 1	0·33			30·4
8	0·35			31·8
B.A.C. 4421, β Comæ.				
Mar. 20	0·21	(4·5)	13 5	61 25 36·5
April 1	0·25			35·4
6	0·26			39·3
9	0·27			35·6
13	0·28			36·6
15	0·28			36·8
16	0·29			37·9
17	0·29			37·4
May 8	0·35			36·0
B.A.C. 4457.				
Mar. 20	0·21	(6·5)	13 13	54 9 5·5
April 9	0·27			4·9
15	0·28			4·3
B.A.C. 4462.				
April 6	0·26	(7·0)	13 14	84 27 6·6
17	0·29			9·8
May 8	0·35			9·4
B.A.C. 4503.				
Mar. 20	0·21	(7·0)	13 22	85 25 6·9
April 6	0·26			4·8
8	0·27			6·3
B.A.C. 4503.				
			h m	° ′ ″
April 9	0·27	(7·0)	13 22	85 25 5·6
13	0·28			3·2
17	0·29			5·7
22	0·30			7·8
B.A.C. 4513.				
April 15	0·28	8·0	13 24	65 3 19·1
May 5	0·34			18·9
8	0·35	6·5		19·8
B.A.C. 4526.				
April 29	0·32	(6·5)	13 26	64 56 29·6
May 1	0·33			27·0
B.A.C. 4550.				
April 9	0·27	(7·5)	13 31	36 36 41·2
16	0·29			41·4
17	0·29			41·4
B.A.C. 4559.				
May 5	0·34	(6·0)	13 33	78 33 24·9
B.A.C. 4575.				
April 9	0·27	(6·0)	13 37	66 36 27·8
13	0·28			26·9
May 1	0·33			25·7
8	0·35			27·3
B.A.C. 4606.				
April 17	0·29	(7·0)	13 42	57 54 56·[illegible]
May 5	0·34			50·5
B.A.C. 4610.				
April 9	0·[illegible]	(6·0)	13 42	58 7 41·3
22	0·30			42·6
B.A.C. 4621.				
May 8	0·35	(6·0)	13 44	70 41 21·9

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1868.
B.A.C. 4628.				
April 13	0·28		h m 13 45	° ′ ″ 54 39 12·9
16	0·29	6·0		14·8
B.A.C. 4652.				
April 9	0·27	(7·0)	13 50	57 17 51·3
13	0·28			51·5
22	0·30			51·5
B.A.C. 4676.				
April 6	0·26	(7·0)	13 55	57 46 18·1
17	0·29			19·9
21	0·30			17·4
May 5	0·34			19·0
B.A.C. 4678.				
April 9	0·27	(7·0)	13 56	57 40 42·5
May 8	0·35			40·9
B.A.C. 4694.				
April 13	0·28	(7·0)	14 0	58 29 37·1
16	0·29			35·9
17	0·29			37·7
22	0·30			36·5
B.A.C. 4723.				
April 6	0·26	(7·0)	14 8	60 15 8·7
May 5	0·34			9·5
B.A.C. 4729, α Bootis.				
April 16	0·29	(1·0)	14 9	70 6 10·2
21	0·30			9·9
May 8	0·35			9·3
B.A.C. 4737.				
April 9	0·27	(6·5)	14 11	74 6 6·0
B.A.C. 4756.				
April 6	0·26	(6·0)	14 14	37 20 3·4
May 1	0·33			5·9
B.A.C. 4797.				
April 6	0·26	(6·0)	h m 14 23	° ′ ″ 53 11 20·2
8	0·27			19·5
9	0·27			20·0
21	0·30			18·0
May 5	0·34			19·8
8	0·35			20·7
B.A.C. 4820.				
April 9	0·27	(6·0)	14 28	56 51 47·9
13	0·28			46·6
16	0·29			47·9
May 5	0·34			47·6
8	0·35			47·0
B.A.C. 4863.				
April 17	0·29	(6·0)	14 37	52 39 27·2
May 1	0·33			30·4
5	0·34			31·0
8	0·35			29·5
B.A.C. 4876, ε Bootis.				
April 16	0·29	(3·0)	14 39	62 20 48·7
May 26	0·40			48·2
B.A.C. 4934.				
April 16	0·29	(6·5)	14 51	48 18 37·5
May 1	0·33			36·9
5	0·34			39·0
8	0·35			36·6
26	0·40			37·6
B.A.C. 4965.				
May 1	0·33	(5·5)	14 58	44 49 6·0
8	0·35			6·6
26	0·40			5·4
B.A.C. 5071. (a)				
April 29	0·32	(6·0)	15 16	37 32 48·1
May 1	0·33			48·4
5	0·34			47·6
26	0·40			48·3
B.A.C. 5091.				
May 8	0·35	(6·0)	h m 15 20	° ′ ″ 26 10 8·3
B.A.C. 5284, γ Serpentis.				
May 1	0·33	(3·0)	15 50	73 53 20·9
5	0·34			21·3
8	0·35			21·7
26	0·40			21·8
B.A.C. 5415. (b)				
May 8	0·35	(6·0)	16 6	31 42 17·4
26	0·40			15·8
B.A.C. 5452.				
May 8	0·35	(6·0)	16 14	68 32 5·7
26	0·40			4·9
B.A.C. 6245.				
July 9	0·52	(6·0)	18 17	72 14 24·0
B.A.C. 6302, χ Draconis.				
July 7	0·51	(4·5)	18 23	17 19 39·3
B.A.C. 6429, β Lyræ.				
July 7	0·51	(3·0)	18 45	56 47 39·5
9	0·52			40·4
14	0·53			39·1
15	0·53			36·9
21	0·55			37·5
B.A.C. 6468.				
July 6	0·51	(6·0)	18 50	56 12 16·9
B.A.C. 6460.				
July 7	0·51	(5·5)	18 52	57 16 23·1
B.A.C. 6528, ζ Aquilæ.				
July 14	0·53	(3·0)	18 59	76 20 14·1

(a) Differs from Tab. N. P. D. by 2′.

(b) Differs 7′ from the Tab. N. P. D.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
B.A.C. 6534.				
July 7	0·51	(6·0)	19 0 (h. m.)	58 27 29·6 (° ′ ″)
B.A.C. 6542.				
July 21	0·55	(6·5)	19 1	65 57 34·9
B.A.C. 6574.				
July 7	0·51	(6·0)	19 7	68 40 28·9
Aug. 18	0·63			24·4
B.A.C. 6602.				
July 3	0·50	(5·5)	19 12	67 13 8·2
10	0·52			10·6
21	0·55			9·1
Aug. 18	0·63			8·7
20	0·63			9·9
B.A.C. 6617.				
July 7	0·51	(7·0)	19 13	78 42 56·0
14	0·53			60·2
B.A.C. 6644.				
Aug. 18	0·63	(5·0)	19 18	78 20 46·0
B.A.C. 6652.				
July 7	0·51	(7·0)	19 19	69 59 46·7
B.A.C. 6729.				
July 10	0·52	(5·0)	19 32	84 54 44·5
21	0·55			41·3
31	0·58			44·0
Aug. 6	0·59			43·1
18	0·63			40·5
20	0·63			43·8
24	0·64			44·5
B.A.C. 6762.				
July 7	0·51	(6·0)	19 38	63 11 26·2
14	0·53			27·3
15	0·53			26·1
Aug. 18	0·63			25·5
24	0·64			25·0
B.A.C. 6772, γ Aquilæ.				
July 3	0·50	(3·0)	19 40	79 43 4·5
10	0·52			6·1
Aug. 6	0·59			5·9
B.A.C. 6791.				
July 21	0·55		19 42	78 30 16·4
Aug. 18	0·63	7·5		15·7
20	0·63			16·3
B.A.C. 6852.				
July 7	0·51	(5·5)	19 51	30 39 11·9
11	0·53			11·0
21	0·55			12·3
Aug. 4	0·59			10·6
18	0·63			9·2
20	0·63			10·9
24	0·64			10·6
26	0·65			11·4
B.A.C. 6855.				
July 3	0·50		19 52	73 52 25·0
15	0·53			25·2
Aug. 6	0·59	7·5		26·1
B.A.C. 6941.				
July 3	0·50	(7·0)	20 5	69 16 15·2
7	0·51			16·5
13	0·53			14·6
31	0·58			16·8
Aug. 4	0·59			17·1
20	0·63			15·6
24	0·64			15·9
26	0·65			15·8
B.A.C. 6966.				
July 31	0·58	(5·0)	20 9	64 49 28·1
Aug. 4	0·59			28·9
6	0·59			27·3
20	0·63			29·9
24	0·64			30·5
Sept. 2	0·67			29·9
B.A.C. 7006.				
July 7	0·51	(7·0)	20 15	53 17 52·4
13	0·53			50·4
14	0·53			52·2
15	0·53			51·0
Aug. 11	0·61			51·2
24	0·64			51·2
Sept. 4	0·67			51·6
B.A.C. 7014.				
July 31	0·58	(6·0)	20 16	85 5 32·3
Aug. 6	0·59			35·6
B.A.C. 7086.				
July 13	0·53	(6·0)	20 26	34 23 27·0
31	0·58			25·9
Aug. 4	0·59			26·3
6	0·59			26·0
13	0·61			26·9
20	0·63			26·9
24	0·64			26·2
Sept. 2	0·67			27·2
4	0·67			26·3
B.A.C. 7150.				
July 7	0·51	(7·0)	20 33	79 14 8·7
31	0·58			7·7
Aug. 21	0·64			9·9
B.A.C. 7161.				
July 13	0·53	(7·0)	20 35	44 48 59·1
Aug. 11	0·61			58·5
13	0·61			57·6
Sept. 10	0·69			58·6
B.A.C. 7220, η Cephei.				
Aug. 13	0·61	(3·5)	20 42	28 41 33·7
Sept. 4	0·67			32·4
10	0·69			32·7
11	0·69			34·0

B.A.C. 7268.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
			h. m.	° ′ ″
July 13	0·53		20 51	43 6 23·4
31	0·58			21·2
Aug. 13	0·61			22·1
19	0·63	5·5		21·4
20	0·63			23·4
24	0·64			23·4
Sept. 4	0·67			24·2
10	0·69			23·1

B.A.C. 7285.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
Aug. 11	0·61	(7·0)	20 53	83 0 59·5

B.A.C. 7290.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
Sept. 7	0·68		20 53	46 3 39·3
9	0·69	8·0		39·0

B.A.C. 7336, 61[1] Cygni.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
July 31	0·58	(5·5)	21 1	51 55 21·0
Aug. 11	0·61			21·0
13	0·61			20·2
19	0·63			20·3
24	0·64			21·4
Sept. 2	0·66			22·0
4	0·67			20·8
7	0·68			22·3
10	0·69			20·9
15	0·70			22·3

B.A.C. 7354.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
Sept. 9	0·69	8·5	21 4	68 6 6·5

B.A.C. 7356.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
Aug. 20	0·63	(8·0)	21 4	68 6 4·8

B.A.C. 7368, ζ Cygni.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
Aug. 12	0·61	(3·0)	21 7	60 20 2·7
13	0·61			0·2
Sept. 7	0·68			1·8
10	0·69			0·7

B.A.C. 7410.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
			h. m.	° ′ ″
July 31	0·58	(5·5)	21 15	66 43 10·2
Aug. 4	0·59			11·0
11	0·61			11·5
19	0·63			10·2
20	0·63			11·3
Sept. 2	0·67			12·9
4	0·67			11·1
7	0·68			10·7
15	0·70			11·0
16	0·71			12·3

B.A.C. 7417.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
Aug. 18	0·63	6·0	21 15	31 57 18·7
24	0·64			19·6

B.A.C. 7450.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
Aug. 12	0·61		21 20	71 12 57·3
Sept. 9	0·69	9·0		58·0
17	0·71			58·6

B.A.C. 7497.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
July 31	0·58	7·5	21 28	88 46 41·5
Aug. 4	0·59	7·0		41·9
13	0·61			41·7
19	0·63			41·7
20	0·63			41·9
Sept. 15	0·70			42·5
16	0·71			43·9

B.A.C. 7501.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
Aug. 6	0·59		21 28	44 45 10·3
18	0·63			11·1
24	0·64			11·5
Sept. 2	0·67	7·0		10·8

B.A.C. 7528.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
Aug. 11	0·61	(5·5)	21 33	70 21 7·2
19	0·63			3·9
20	0·63			4·3

B.A.C. 7561, ι Pegasi

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
			h. m.	° ′ ″
Aug. 13	0·61	(2·5)	21 37	80 45 6·4
18	0·63			5·0
24	0·64			7·5
Sept. 2	0·67			6·5
17	0·71			5·8

B.A.C. 7566.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
Aug. 20	0·63	(6·0)	21 38	52 20 31·4

B.A.C. 7569.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
Sept. 15	0·70	6·5	21 38	61 52 32·2

B.A.C. 7590.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
Aug. 11	0·61	(7·5)	21 40	73 26 15·7
19	0·63			16·7
Sept. 7	0·68			17·5
10	0·69			16·9

B.A.C. 7644.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
Aug. 6	0·59	(7·0)	21 50	18 9 22·3
13	0·61			23·4
18	0·63			23·6

B.A.C. 7688, α Aquarii.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
Aug. 24	0·64	(3·0)	21 59	90 59 5·7
Sept. 4	0·67			1·1
16	0·71			2·6

B.A.C. 7708.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
Aug. 6	0·59	5·0	22 1	28 23 3·9
13	0·61	5·0		6·2
18	0·63			9·3
Sept. 7	0·68			8·3
10	0·69			10·3
21	0·72			9·9
25	0·73			8·5
28	0·74			9·0

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1863.
B.A.C. 7759.				
			h. m.	° ′ ″
Aug. 19	0·63	(6·0)	22 7	29 55 5·0
24	0·64			3·9
Sept. 4	0·67			2·9
7	0·68			4·3
25	0·73			3·2
28	0·74			3·2
B.A.C. 7779.				
Aug. 6	0·59	10·0	22 10	17 21 54·0
13	0·61			53·6
B.A.C. 7908, ζ Pegasi.				
Aug. 13	0·61		22 35	79 52 59·1
Sept. 3	0·67	3·0		59·4
4	0·67			61·7
7	0·68			60·5
9	0·69			60·1
10	0·69			62·1
15	0·70			60·0
16	0·71			60·4
25	0·73			61·0
28	0·74			59·7
B.A.C. 7977.				
Sept. 3	0·67	(7·5)	22 47	88 53 6·0
4	0·67			4·3
7	0·68			6·5
10	0·69			3·8
15	0·70			6·0
21	0·72			3·1
28	0·74			5·1
B.A.C. 7996.				
Aug. 13	0·61	(6·0)	22 51	86 55 19·0
Sept. 9	0·69			24·2
B.A.C. 8024.				
Sept. 3	0·67	(6·5)	22 56	33 37 47·9
4	0·67			48·4
15	0·70			50·0
B.A.C. 8024.				
			h. m.	° ′ ″
Sept. 16	0·71	(6·5)	22 56	33 37 50·0
21	0·72			50·0
28	0·74			49·3
B.A.C. 8034, α Pegasi.				
Sept. 7	0·68	(2·0)	22 58	75 31 56·4
10	0·69			55·2
B.A.C. 8065.				
Sept. 4	0·67	8·0	23 2	88 35 53·6
B.A.C. 8083.				
Sept. 3	0·67	(6·0)	23 7	33 35 15·2
7	0·68			12·2
9	0·69			16·2
10	0·69			15·9
24	0·73			16·0
28	0·74			17·6
B.A.C. 8091.				
Sept. 4	0·67	(7·0)	23 8	62 40 28·4
15	0·70			30·4
21	0·72			30·4
B.A.C. 8135.				
Sept. 3	0·67	(6·0)	23 14	46 37 56·2
4	0·67			55·8
10	0·69			56·6
B.A.C. 8138.				
Sept. 7	0·68	(7·0)	23 15	28 32 14·4
24	0·73			14·0
B.A.C. 8147.				
Sept. 9	0·69	(6·5)	23 16	70 11 30·2
B.A.C. 8247.				
			h. m.	° ′ ″
Sept. 10	0·69	(7·5)	23 36	72 5 32·3
15	0·70			32·0
16	0·71			34·0
21	0·72			30·9
24	0·73			31·1
Oct. 20	0·80			32·9
B.A.C. 8252.				
Sept. 28	0·74	(7·0)	23 36	37 36 27·4
B.A.C. 8272.				
Oct. 5	0·76	(7·0)	23 41	82 30 51·7
B.A.C. 8260.				
Sept. 16	0·71		23 42	30 46 60·5
21	0·72			61·3
Oct. 20	0·80	7·0		59·7
B.A.C. 8315.				
Sept. 21	0·72	(7·0)	23 48	82 32 22·2
B.A.C. 8338.				
Sept. 28	0·74	(7·0)	23 54	28 35 10·2
Oct. 5	0·76			8·5
B.A.C. 8350, 85 Pegasi.				
Sept. 21	0·72	(6·0)	23 55	63 38 37·7
Oct. 12	0·78			34·8
B.A.C. 8364.				
Sept. 16	0·71	(7·0)	23 56	32 13 51·8
Oct. 20	0·80			50·5
B.A.C. 8372.				
Sept. 21	0·72	(6·5)	23 59	32 19 40·1

EXPLANATIONS OF THE MURAL CIRCLE OBSERVATIONS IN 1863.

The observations with the Mural Circle in 1863 were taken by Mr Peter Williamson, Second Assistant Astronomer, under the supervision of the Astronomer.

The subjects observed were chiefly stars remarkable for proper motion. They are designated as far as possible by the number in the British Association Catalogue in col. 2, and by proper name or description in col. 3, assisted if necessary by notes at the foot of the page, as well as by approximate estimate of the magnitude in col. 4, and time of transit past centre of field (by an uncorrected sidereal journeyman clock, but showing fairly differences from star to star) in col. 5.

In Polar distance the star was always carefully bisected when crossing the centre of the field, either at the precise instant if its motion was steady, or in its mean path through several seconds if unsteady or undulatory, as was too often the case. Such bisection being performed by bringing the stellar image between two parallel lines about 7 seconds of space apart: the lines being illuminated in a dark field.

The same general principles of observation as in former years have been kept up with improved details described in 1860. The completion of every observation therefore in Polar distance still depends largely on the Telescope micrometer, whose numbers are a necessary addition to the readings both of the Pointer on the Limb of the Circle and of the two horizontal Microscopes A, B; all which numerical particulars are given in columns 6, 7, 8, and 9.

In columns 10 and 12, the readings of the Barometer and exterior thermometer are noted for refraction purposes: the interior thermometer being assumed to be practically the same as the exterior, for all star-observations when a thorough draught was kept up through the observing room, as was always the case during star observations. During observations for the Nadir-point, on the contrary, all shutters and windows were closed to prevent disturbance to the mercury, and then a sensible difference between the thermometers usually occurred, and is shown by the figures in the narrow column 11, compared with those in column 12.

Columns 13, 14, and 15 contain various points connected with the meteorologic and other circumstances of the observations, as they appeared to the observer at the time; and column 16 contains the reduction of the angular observations in columns 6 to 9, to the stage of "Apparent Zenith Distance South."

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To this end, the readings of the Microscopes have been corrected for the error of their runs, as ascertained over 5′ spaces on the limb of the Circle, with the telescope directed first to the Zenith and then to the Nadir: also for the difference between the mean of two and the mean of six Microscopes as ascertained by examination in 1855 (see p. 76, vol. xii.); also for the Telescope micrometer readings converted into arc on the estimate of one revolution being equal to 27·704″, as ascertained by observations in the Mercury trough with the collimating eye-piece, combined with readings of all the six circumferential Microscopes. The Circle positions are then converted into Apparent Zenith Distances, by the application of a reading for the Zenith point derived from observation of the Nadir, as shown by making the bisecting wire cover its illuminated image in the Mercury trough, an observation made generally both at the beginning and conclusion of every series of star measures. The chief data of these several corrections are contained in the following Tables I., II., and III.

TABLE I.

CORRECTION FOR RUNS OF MICROSCOPES IN 1863.

Date.	Thermometer.		Runs Correction observed.				Adopted Runs Correction.	For Period.
	Interior.	Exterior.	Nadir.	Zenith.	Means of the.	Collected Means.		
1863.	°F.	°F.	″	″	″	″	″	1863.
Jan. 29	46·0	49·0	+ 1·8	+ 3·0	+ 2·4	+ 1·6	+ 1·6	Jan. 2 to Feb. 27.
			+ 1·1	+ 0·5	+ 0·8		+ 1·0	March 6 to April 29.
May 20	49·0	46·0	+ 0·9	− 0·1	+ 0·4	+ 0·4	+ 0·4	May 1 to May 29.
			+ 0·7	+ 0·1	+ 0·4			
Aug. 18	53·2	51·3	+ 1·0	− 0·1	+ 0·4	+ 0·6	+ 0·6	July 6 to Sept. 28.
			+ 0·8	+ 0·8	+ 0·8			
Nov. 9	42·0	41·0	+ 1·6	+ 0·5	+ 1·0	+ 1·0	+ 1·0	Oct. 2 to Dec. 30.
			+ 1·6	+ 0·2	+ 0·9			
Dec. 30	39·4	36·2	+ 0·5	+ 0·6	+ 0·6			

TABLE II.

CORRECTION TO REDUCE THE MEAN OF THE TWO HORIZONTAL, TO THE MEAN OF THE WHOLE SIX, MICROSCOPES FOR THE YEAR 1863.

Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.
0° & 180°	+1″·0	30° & 210°	+0″·2	60° & 240°	+0″·5	90° & 270°	+2″·4	120° & 300°	+3″·1	150° & 330°	+2″·4
1 181	+0·9	31 211	+0·2	61 241	+0·6	91 271	+2·4	121 301	+3·1	151 331	+2·4
2 182	+0·8	32 212	+0·1	62 242	+0·7	92 272	+2·5	122 302	+3·0	152 332	+2·3
3 183	+0·8	33 213	+0·1	63 243	+0·7	93 273	+2·5	123 303	+3·0	153 333	+2·3
4 184	+0·7	34 214	0·0	64 244	+0·8	94 274	+2·6	124 304	+2·9	154 334	+2·2
5 185	+0·6	35 215	0·0	65 245	+0·9	95 275	+2·6	125 305	+2·9	155 335	+2·2
6 186	+0·6	36 216	0·0	66 246	+0·9	96 276	+2·6	126 306	+2·9	156 336	+2·1
7 187	+0·6	37 217	+0·1	67 247	+1·0	97 277	+2·7	127 307	+2·9	157 337	+2·1
8 188	+0·5	38 218	+0·1	68 248	+1·0	98 278	+2·7	128 308	+2·8	158 338	+2·0
9 189	+0·5	39 219	+0·2	69 249	+1·1	99 279	+2·8	129 309	+2·8	159 339	+2·0
10 190	+0·5	40 220	+0·2	70 250	+1·1	100 280	+2·8	130 310	+2·8	160 340	+1·9
11 191	+0·4	41 221	+0·2	71 251	+1·2	101 281	+2·9	131 311	+2·8	161 341	+1·9
12 192	+0·4	42 222	+0·2	72 252	+1·2	102 282	+2·9	132 312	+2·6	162 342	+1·9
13 193	+0·3	43 223	+0·1	73 253	+1·3	103 283	+3·0	133 313	+2·7	163 343	+1·8
14 194	+0·3	44 224	+0·1	74 254	+1·3	104 284	+3·0	134 314	+2·7	164 344	+1·8
15 195	+0·2	45 225	+0·1	75 255	+1·4	105 285	+3·1	135 315	+2·7	165 345	+1·8
16 196	+0·2	46 226	+0·2	76 256	+1·5	106 286	+3·1	136 316	+2·7	166 346	+1·7
17 197	+0·2	47 227	+0·2	77 257	+1·6	107 287	+3·2	137 317	+2·7	167 347	+1·6
18 198	+0·2	48 228	+0·3	78 258	+1·7	108 288	+3·2	138 318	+2·8	168 348	+1·6
19 199	+0·2	49 229	+0·3	79 259	+1·8	109 289	+3·3	139 319	+2·8	169 349	+1·5
20 200	+0·2	50 230	+0·4	80 260	+1·9	110 290	+3·3	140 320	+2·8	170 350	+1·4
21 201	+0·2	51 231	+0·4	81 261	+1·9	111 291	+3·3	141 321	+2·8	171 351	+1·4
22 202	+0·2	52 232	+0·3	82 262	+2·0	112 292	+3·3	142 322	+2·8	172 352	+1·3
23 203	+0·2	53 233	+0·3	83 263	+2·0	113 293	+3·4	143 323	+2·7	173 353	+1·3
24 204	+0·2	54 234	+0·2	84 264	+2·1	114 294	+3·4	144 324	+2·7	174 354	+1·2
25 205	+0·2	55 235	+0·2	85 265	+2·1	115 295	+3·4	145 325	+2·7	175 355	+1·2
26 206	+0·2	56 236	+0·3	86 266	+2·2	116 296	+3·3	146 326	+2·6	176 356	+1·2
27 207	+0·2	57 237	+0·3	87 267	+2·2	117 297	+3·3	147 327	+2·6	177 357	+1·1
28 208	+0·2	58 238	+0·4	88 268	+2·3	118 298	+3·2	148 328	+2·5	178 358	+1·1
29 209	+0·2	59 239	+0·4	89 269	+2·3	119 299	+3·2	149 329	+2·5	179 359	+1·0

TABLE III.

NADIR AND ZENITH POINTS ON MURAL CIRCLE IN 1863.

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.	Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1863.					1863.				
Jan. 2	39·5	54 3 14·2 15·2	234 3 14·7	14·3	April 6	43·3	54 3 12·6 12·2	234 3 12·4	13·0
5	38·6	14·9 14·2	14·6	14·3	8	42·8	13·4 12·5	13·0	13·0
7	37·4	12·8 13·4	13·1	13·4	9	46·1	13·0 13·6	13·3	13·5
23	40·0	13·8 13·2	13·5	13·5	13	46·1	13·6 14·4	14·0	14·0
27	40·0	13·4 13·7	13·6	13·7	15	47·8	14·1 14·0	14·0	14·0
30	43·4	13·4 14·5	14·0	14·0	16	46·8	11·9 14·2	13·0	13·5
Feb. 3	39·0	14·2 14·9	14·6	14·4	17	45·6	13·3 15·4	14·4	14·2
9	41·0	13·8 15·4	14·6	14·5	21	45·2	13·9 14·0	14·0	14·0
23	45·0	14·0	14·0	14·1	22	43·8	13·8 13·8	13·8	13·8
27	45·0	14·2 14·0	14·1	14·0	29	45·7	13·9	13·9	13·7
Mar. 6	47·6	12·8 13·0	12·9	13·0	May 1	49·6	12·8 13·2	13·0	13·2
11	38·4	13·4 13·1	13·2	13·3	5	46·7	12·4 14·8	13·6	13·4
16	41·0	14·0 13·9	14·0	14·0	8	53·8	13·0 12·4	12·7	13·0
17	40·5	14·4 14·4	14·4	14·3	26	48·0	13·7 13·7	13·7	13·7
20	44·3	14·2 14·4	14·3	14·2	29	53·0	12·8	12·8	13·0
April 1	46·4	13·8 12·9	13·4	13·8	July 3	55·4	12·1 12·2	12·2	12·2

Date.	Mean [illegible]	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1863. July 6	62.0	54° 3′ 12.2″	234° 3′ 12.2″	12.2″
7	60.2	11.8 12.0	11.9	12.0
9	65.0	12.4	12.4	12.2
10	65.0	11.6	11.6	12.0
13	57.0	11.9 12.0	12.0	12.0
14	63.0	12.6 12.8	12.7	12.5
15	58.0	12.8 12.7	12.8	12.8
21	56.0	12.8 13.0	12.9	12.8
31	60.4	13.1 12.3	12.7	12.8
Aug. 4	60.8	13.0 13.0	13.0	13.0
6	61.4	13.0 12.4	12.7	12.8
11	59.0	13.2	13.2	13.1
12	56.4	13.3 13.7	13.5	13.5
13	56.3	13.4 13.8	13.6	13.6
18	55.4	13.6 13.5	13.6	13.6
19	53.7	13.3 14.6	14.0	13.8
20	56.0	14.0 13.3	13.6	13.8
24	55.2	13.8 14.1	14.0	13.8
26	57.5	13.2	13.2	13.5
Sept. 2	54.5	13.4 12.8	13.1	13.3
3	55.0	13.4 13.4	13.4	13.4

Date.	Mean [illegible]	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1863. Sept. 4	55.0	54° 3′ 13.4″ 13.4	234° 3′ 13.4″	13.6″
7	49.5	13.4 14.8	14.1	14.0
9	51.6	13.0 15.0	14.0	14.0
10	50.0	13.8 14.8	14.3	14.1
11	52.4	13.8	13.8	14.0
15	56.3	14.0 14.3	14.2	14.0
16	50.5	13.1 14.6	13.8	13.7
17	53.9	12.8	12.8	13.3
21	48.6	13.5 14.3	13.9	13.6
23	50.4	13.7	13.7	13.8
24	50.2	13.9 14.4	14.2	14.0
25	50.3	13.8	13.8	14.0
26	47.7	12.2 14.8	13.5	13.8
Oct. 2	50.4	13.4	13.4	13.8
5	48.0	15.0	15.0	14.2
6	46.4	14.6 13.8	14.2	14.2
12	52.5	13.8 13.8	13.8	14.0
14	52.3	14.4	14.4	14.2
20	48.7	14.0 15.8	14.9	14.5
21	47.6	14.0 14.0	14.0	14.3
23	46.8	15.1 14.6	14.8	14.4
28	45.1	13.2 13.4	13.3	13.8

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.	Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1863.					1863.				
Oct. 30	42°·8	54° 3′ 14″·5 14·6	234° 3′ 14″·6	14″·5	Nov. 27	51°·0	54° 3′ 15″·1 14·8	234° 3′ 15″·0	14″·8
Nov. 2	40·0	14·4 15·9	15·2	15·0	30	40·2	13·4 13·4	13·4	14·0
4	45·0	14·9 15·8	15·4	15·0	Dec. 1	42·6	13·8 14·1	14·0	14·0
5	45·4	13·1 14·0	13·6	14·2	2	40·4	15·5 14·6	15·0	14·6
6	39·4	13·1 13·2	13·2	14·0	8	42·8	13·0 14·4	13·7	14·0
9	42·2	15·4 15·3	15·4	15·0	9	43·4	13·5	13·5	14·0
10	41·2	14·8 14·9	14·8	15·0	10	44·0	14·2 14·8	14·5	14·3
11	39·0	14·3 16·8	15·6	15·2	15	47·4	13·6	13·6	14·0
13	46·0	14·9	14·9	14·8	16	44·0	13·7	13·7	14·0
19	51·0	14·6 14·0	14·3	14·4	17	39·8	15·8 15·4	15·6	15·2
24	46·6	14·0 15·0	14·5	14·3	23	47·2	14·1 13·6	13·8	14·1
25	51·0	13·4 12·8	13·1	13·5	24	46·8	15·0 13·2	14·1	14·3
26	52·0	13·1 13·8	13·4	13·7	30	39·8	15·2 15·4	15·3	15·1

For the remaining reductions, the refractions have been computed by Bessel's Table, as represented in the Rev. R. Sheepshank's compendious forms; the Latitude of the Observatory has been assumed as in former years $=55° \; 57' \; 23''{\cdot}2$; and the *Apparent* N. Polar Distances on the day of observation have been converted into *Mean* North Polar Distances for the beginning of the year of observation, by applying the corrections for precession, nutation, aberration, and proper motions, taken from the elements and subsidiary tables given in the Nautical Almanac and the British Association Catalogue; and whose sum is represented in the last column of each observation-page. The individual results for magnitude and place of each star are collected on pp. 305 to 313.

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ROYAL OBSERVATORY, EDINBURGH.

CATALOGUE

OF

THE MEAN PLACES OF ALL STARS

OBSERVED WITH

EITHER THE TRANSIT INSTRUMENT OR MURAL CIRCLE,

DURING

THE YEAR, AND

REDUCED TO JANUARY 1,

1863.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
4	α Andromedæ	(1·0)	......	0 1 18·70	0·75	61 38 ...	......	14	0
36	γ Pegasi	(2·0)	......	0 6 11·02	0·74	75 34 42·6	0·78	11	1
28	......	6·5	......	0 6 24·60	0·71	49 43 ...	......	1	0
42	......	x	x	0 8 55·49	0·71	86 30 37·6	0·73	1	1
48	......	......	(7·0)	0 10 ...	......	76 50 42·7	0·81	0	1
57	......	......	(6·5)	0 11 ...	......	89 4 25·6	0·72	0	1
83	......	......	(6·0)	0 18 ...	......	37 42 46·9	0·76	0	6
98	......	......	(7·0)	0 20 ...	......	74 44 1·3	0·76	0	1
112	12 Ceti	(6·0)	......	0 23 2·82	0·80	94 43 ...	......	2	0
120	......	......	(6·0)	0 24 ...	......	57 11 21·7	0·80	0	1
133	......	(8·0)	......	0 26 29·79	0·86	70 19 20·3	0·81	1	1
149	......	7·0	......	0 28 49·07	0·86	77 32 29·9	0·82	2	2
164	δ Andromedæ	4·0	......	0 31 19·34	0·86	61 26 ...	......	2	0
177	......	7·0	......	0 34 7·28	0·56	81 23 38·8	0·80	2	5
197	......	6·0	......	0 36 50·52	0·66	42 53 ...	......	2	0
218	η Cassiopeæ	......	(4·0)	0 41 ...	......	32 54 43·6	0·75	0	1
224	......	7·0	......	0 41 49·17	0·86	62 2 ...	......	2	0
237	......	6·8	......	0 44 15·14	0·86	87 21 32·1	0·78	2	1
259	μ Andromedæ	3·5	......	0 49 9·50	0·86	52 14 40·5	0·81	2	1
263	......	......	7·0	0 50 ...	......	63 44 33·4	0·84	0	2
288	ε Piscium	(4·0)	......	0 55 50·02	0·81	82 51 ...	......	9	0
290	......	......	(7·0)	0 56 ...	......	36 31 49·8	0·83	0	2
299	......	......	(6·0)	0 57 ...	......	61 4 23·8	0·80	0	4
314	μ Cassiopeæ	......	5·5	0 59 ...	......	35 45 13·0	0·86	0	1
357	......	......	9·0	1 5 ...	......	58 39 9·8	0·84	0	5
403	......	......	(7·5)	1 13 ...	......	17 52 17·6	0·86	0	2
420	θ Ceti	(3·0)	......	1 17 10·60	0·79	98 53 ...	......	2	0
453	η Piscium	(4·0)	......	1 24 9·34	0·83	75 22 ...	......	12	0
455	......	......	8·0	1 24 ...	......	73 45 8·6	0·82	0	8
457	......	......	10·0	1 25 ...	......	9 16 18·1	0·86	0	1
459	......	......	8·0	1 25 ...	......	78 49 23·7	0·86	0	1
514	......	......	6·5	1 34 ...	......	60 38 49·4	0·82	0	6
516	......	......	(5·5)	1 34 ...	......	55 26 51·4	0·82	0	2
518	ν Piscium	(5·0)	......	1 34 18·26	0·83	85 12 ...	......	11	0
538	......	7·0	......	1 39 9·49	0·85	73 16 30·3	0·82	1	4
547	......	......	6·0	1 40 46·26	0·85	42 47 14·1	0·85	1	1
562	......	......	6·5	1 44 6·42	0·85	39 12 15·1	0·85	1	5
577	β Arietis	(3·0)	......	1 47 4·62	0·85	69 52 ...	......	16	0
588	......	6·3	......	1 49 34·10	0·85	26 3 ...	......	3	0
620	......	7·5	......	1 54 24·42	0·85	25 33 27·6	0·86	2	2
645	......	7·2	......	1 58 57·08	0·88	64 49 30·2	0·85	3	3
649	α Arietis	(2·0)	......	1 59 27·38	0·85	67 11 ...	......	12	0
694	......	7·2	......	2 8 16·38	0·87	26 12 46·6	0·86	3	2
702	......	7·2	......	2 9 43·77	0·89	26 18 ...	......	3	0
704	67 Ceti	(6·0)	......	2 10 9·04	0·88	97 3 ...	......	3	0
718	......	......	(7·0)	2 12 ...	......	33 23 15·4	0·85	0	3
725	......	7·5	8·0	2 13 19·33	0·89	33 14 28·3	0·86	3	1
738	......	7·5	......	2 16 50·62	0·88	80 21 ...	......	4	0
760	ξ² Ceti	(4·0)	......	2 20 52·68	0·90	82 9 ...	......	5	0
764	......	6·8	7·0	2 22 16·61	0·89	81 2 53·0	0·85	3	5
776	......	6·0	......	2 24 25·09	0·89	88 20 31·2	0·88	3	2

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Stars. No. in B. A. C.	Stars. Name or Description.	Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place. R. A.	No. of Observations for Place. N. P. D.
				h. m. s.		° ′ ″			
793	....	6·5	......	2 28 34·38	0·89	53 46 5·6	0·88	3	3
822	(a)	8·0	......	2 33 25·94	0·91	47 53 ...	......	3	0
834	....	......	(6·5)	2 36 ...	......	64 56 47·0	0·88	0	7
837	γ Ceti........................	(3·0)	......	2 36 12·27	0·88	87 20 ...	......	13	0
881	τ Arietis........................	6·2	......	2 43 56·02	0·87	75 29 ...	......	3	0
891	....	......	9·5	2 45 25·05	0·88	84 5 20·9	0·88	2	5
920	....	7·0	......	2 51 2·29	0·88	68 55 56·6	0·90	4	5
949	α Ceti........................	(2·5)	......	2 55 7·21	0·88	86 27 0·3	0·88	14	5
962	ι Persei........................	4·7	......	2 59 11·95	0·89	40 54 47·8	0·92	3	1
980	....	6·8	6·5	3 2 19·33	0·89	63 37 50·6	0·86	3	4
986	δ Arietis........................	(4·0)	......	3 3 47·95	0·90	70 48 ...	......	6	0
985	....	7·0	......	3 4 28·07	0·94	15 16 ...	......	1	0
1055	....	7·8	......	3 16 37·14	0·90	68 26 53·4	0·89	3	7
1057	ο Tauri........................	4·0	......	3 17 26·66	0·94	81 27 ...	......	1	0
1067	f Tauri........................	5·0	......	3 23 18·72	0·89	77 30 ...	......	3	0
1101	....	7·5	......	3 27 7·02	0·89	58 46 48·7	0·89	3	3
1126	....	7·0	......	3 32 35·64	0·90	65 7 ...	......	3	0
1166	η Tauri........................	(3·0)	......	3 39 20·74	0·91	66 19 17·2	0·90	12	10
1282	....	7·5	8·0	4 3 34·29	0·92	41 15 43·3	0·93	3	6
1309	ο² Eridani........................	(4·5)	......	4 8 57·54	0·92	97 51 ...	......	3	0
1318	....	......	(6·0)	4 10 ...	......	33 49 39·5	0·92	0	6
1328	γ Tauri........................	3·8	......	4 12 0·00	0·92	74 42 ...	......	3	0
1347	....	7·8	......	4 15 13·98	0·92	65 55 3·8	0·99	2	1
1361	....	6·5	......	4 16 58·36	0·92	71 16 34·4	0·93	2	4
1376	ε Tauri........................	(3·5)	......	4 20 37·23	0·94	71 8 ...	......	10	0
1420	α Tauri........................	(1·0)	......	4 28 3·73	0·93	73 46 ...	......	13	0
1434	....	6·0	......	4 30 30·12	0·93	77 46 2·0	0·93	2	10
1459	....	6·7	......	4 36 53·79	0·92	34 38 50·0	0·92	3	1
1463	....	7·0	9·0	4 37 26·52	0·94	66 37 38·4	0·94	1	3
1491	....	6·0	......	4 43 8·77	0·92	81 20 17·6	0·93	3	5
1501	....	......	7·0	4 45 32·12	0·92	34 24 2·7	0·94	3	3
1520	ι Aurigæ........................	(4·0)	......	4 48 4·52	0·94	57 3 ...	......	13	0
1623	β Orionis........................	(1·0)	......	5 7 57·28	0·94	98 22 ...	......	5	0
1626	....	7·0	......	5 9 6·72	0·92	49 41 12·4	0·95	3	7
1656	....	6·7	......	5 14 16·15	0·92	81 42 37·6	0·99	3	1
1681	β Tauri........................	(2·0)	......	5 17 38·03	0·95	61 30 ...	......	12	0
1683	....	6·0	......	5 17 44·50	0·93	55 43 57·2	0·96	2	4
1703	....	8·0	......	5 20 15·60	0·94	73 41 ...	......	1	0
1730	δ Orionis........................	......	0·2	5 25 0·47	0·94	90 24 14·5	0·96	10	2
1765	ε Orionis........................	(2·5)	......	5 29 15·71	0·95	91 18 ...	......	9	0
1766	....	6·0	......	5 29 22·90	0·94	60 47 14·5	0·94	1	1
1772	....	......	(6·0)	5 30 ...	......	60 52 4·0	0·96	0	3
1826	....	7·0	......	2 39 20·69	0·94	60 31 53·0	0·66	1	3
1883	α Orionis........................	(1·0)	2·2	5 47 45·30	0·96	82 37 17·8	0·48	9	2
1907	....	......	(6·0)	5 51 ...	......	77 12 31·4	0·02	0	1
1932	....	......	(7·5)	5 55 ...	......	51 25 55·4	0·99	0	1
1958	ν Orionis........................	(4·5)	......	5 59 45·05	0·35	75 13 ...	......	3	0
2022	....	......	(6·0)	6 9 ...	......	80 0 40·0	0·96	0	1
2046	....	......	(7·0)	6 14 ...	......	33 38 48·9	0·96	0	1
2047	μ Geminorum........................	(3·0)	......	6 14 40·42	0·98	67 25 ...	......	2	0
2101	....	......	......	6 22 ...	......	67 22 4·9	0·33	0	3

(a) Called a Nebula in B.A.C.

Stars. No. in B. A. C.	Stars. Name or Description.	Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place. R. A.	No. of Observations for Place. N. P. D.
				h. m. s.		° ′ ″			
2163	γ Geminorum	(2·5)	......	6 29 47·82	0·59	73 29 ...	......	7	0
2184	......	......	(7·0)	6 33 ...	......	73 28 43·3	0·00	0	1
2238	......	......	(6·0)	6 44 ...	......	66 14 24·8	0·04	0	2
2292	......	......	6·5	6 53 ...	......	79 11 7·2	0·07	0	1
2329	......	......	(7·0)	7 0 ...	......	74 15 20·5	0·00	0	1
2334	......	......	(6·0)	7 1 ...	......	39 59 28·6	0·02	0	1
2363	......	......	(7·5)	7 6 ...	......	65 3 31·1	0·06	0	1
2410	δ Geminorum	(3·0)	......	7 11 56·35	0·06	67 46 8·3	0·04	11	2
2463	......	......	(7·0)	7 20 ...	......	62 10 24·6	0·04	0	2
2485	α² Geminorum	(1·5)	......	7 25 51·29	0·06	57 49 ...	......	12	0
2488	......	......	(6·0)	7 26 ...	......	43 31 20·3	0·02	0	1
2522	α Canis Minoris	(1·0)	......	7 32 7·70	0·06	84 25 38·5	0·06	14	5
2555	β Geminorum	(2·0)	......	7 36 55·73	0·06	61 39 ...	......	16	0
2586	......	......	(7·0)	7 41 ...	......	61 27 43·7	0·05	0	3
2672	6 Cancri	(5·5)	......	7 55 5·96	0·04	61 49 ...	......	8	0
2683	......	......	(6·0)	7 57 ...	......	70 46 25·6	0·04	0	4
2737	......	......	(7·0)	8 3 ...	......	74 58 7·8	0·06	0	2
2748	......	......	(7·0)	8 4 ...	......	75 35 24·9	0·08	0	1
2862	η Cancri	(6·0)	......	8 24 47·01	0·12	69 6 ...	......	6	0
2867	......	......	(6·5)	8 25 ...	......	79 28 22·0	0·04	0	2
2971	ε Hydræ	(4·0)	......	8 39 31·17	0·08	83 4 56·8	0·06	16	2
3053	......	......	(6·0)	8 50 ...	......	80 5 16·8	0·09	0	1
3083	......	......	(6·5)	8 55 ...	......	38 37 58·8	0·12	0	2
3133	......	......	6·0	9 5 ...	......	85 34 25·8	0·10	0	3
3171	83 Cancri	(6·0)	......	9 11 19·92	0·12	71 43 ...	......	12	0
3242	θ Ursæ Majoris	......	3·0	9 23 ...	......	37 42 2·7	0·08	0	4
3331	ε Leonis	(3·0)	......	9 38 4·18	0·12	65 35 49·5	0·15	14	4
3375	......	......	6·0	9 45 ...	......	54 22 22·4	0·13	0	4
3390	......	......	6·0	9 46 ...	......	83 23 53·1	0·16	0	1
3415	π Leonis	(4·5)	......	9 52 58·30	0·15	81 18 ...	......	13	0
3418	......	......	8·0	9 54 ...	......	80 23 28·2	0·14	0	2
3420	......	......	(7·0)	9 54 ...	......	57 48 33·1	0·18	0	1
3427	......	......	(7·0)	9 56 ...	......	56 41 33·4	0·06	0	1
3459	α Leonis	(1·0)	......	10 1 4·38	0·16	77 22 ...	......	13	0
3484	......	7·5	7·5	10 6 17·94	0·20	57 53 48·8	0·15	2	3
3523	γ¹ Leonis	......	......	10 12 24·87	0·13	69 28 ...	......	1	0
3529	......	6·5	......	10 13 21·96	0·20	82 52 52·6	0·20	2	2
3592	......	6·0	......	10 22 40·30	0·20	87 48 17·0	0·18	2	3
3609	ρ Leonis	(4·0)	......	10 25 35·67	0·16	79 59 ...	......	4	0
3662	......	7·5	......	10 34 27·92	0·20	78 32 44·2	0·18	2	2
3708	......	6·0	......	10 42 3·21	0·18	78 44 ...	......	5	0
3726	......	6·0	......	10 45 11·31	0·20	88 14 54·0	0·19	2	3
3768	......	5·0	......	10 53 29·06	0·20	85 39 ...	......	2	0
3780	......	7·0	......	10 56 33·88	0·21	81 40 48·2	0·20	1	4
3788	χ Leonis	(4·5)	......	10 57 56·90	0·22	81 55 ...	......	4	0
3821	......	5·7	......	11 3 23·65	0·20	20 58 ...	......	3	0
3834	δ Leonis	(2·5)	......	11 6 49·06	0·24	68 43 34·6	0·20	8	5
3836	......	6·5	......	11 6 51·10	0·19	87 0 ...	......	1	0
3869	......	6·3	......	11 15 18·63	0·20	71 48 43·2	0·19	3	3
3900	τ Leonis	4·3	......	11 20 53·46	0·20	86 23 ...	......	3	0
3946	υ Leonis	(4·5)	......	11 29 56·08	0·21	90 4 ...	......	9	0

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.			h. m. s.		° ′ ″		R. A.	N. P. D.
3995	β Leonis	(2·5)	......	11 42 4·17	0·26	74 40 ...	......	7	0
3996	......	......	(6·0)	11 42 5·81	0·21	84 2 59·7	0·23	1	4
4005	......	6·0	......	11 43 53·45	0·22	76 57 ...	......	3	0
4052	π Virginis	5·5	......	11 53 51·06	0·20	82 37 ...	......	3	0
4145	η Virginis	(3·4)	......	12 12 53·65	0·22	89 54 ...	......	7	0
4153	......	......	(6·0)	12 13 ...	......	62 36 57·4	0·19	0	3
4199	......	7·0	......	12 20 47·16	0·28	63 19 45·3	0·27	2	3
4205	......	6·0	......	12 21 47·41	0·26	63 1 ...	......	1	0
4231	......	7·2	8·0	12 26 42·48	0·28	64 47 42·2	0·26	3	5
4244	......	7·0	......	12 28 29·18	0·28	52 51 ...	......	2	0
4268	γ' Virginis	(4·0)	......	12 34 43·03	0·17	90 42 ...	......	1	0
4340	δ Virginis	3·0	......	12 48 42·21	0·29	85 51 ...	......	1	0
4364	......	6·0	......	12 54 52·82	0·32	67 59 29·9	0·29	2	10
4421	β Comæ	4·0	......	13 5 28·66	0·28	61 25 36·8	0·28	3	9
4457	......	6·0	......	13 12 46·08	0·28	54 9 4·9	0·25	3	3
4462	......	7·0	......	13 13 36·70	0·32	84 27 8·6	0·30	2	3
4468	......	7·2	......	13 14 37·20	0·28	75 8 ...	......	3	0
4470	......	6·0	......	13 14 43·78	0·32	87 11 ...	......	2	0
4480	α Virginis	(1·0)	......	13 17 58·60	0·23	100 27 ...	......	1	0
4503	......	7·0	......	13 22 17·68	0·28	85 25 5·8	0·27	3	7
4513	......	6·0	7·2	13 24 22·52	0·28	65 3 19·3	0·32	4	3
4526	......	5·5	......	13 26 18·68	0·28	64 56 25·3	0·32	3	2
4532	ζ Virginis	(4·0)	......	13 27 42·84	0·29	89 53 ...	......	17	0
4550	......	6·8	......	13 31 9·51	0·28	36 36 41·3	0·28	4	3
4552	......	6·0	......	13 31 22·45	0·35	53 0 ...	......	1	0
4559	......	6·0	......	13 32 49·43	0·32	78 33 24·9	0·34	2	1
4575	......	6·3	......	13 37 16·61	0·28	66 30 26·9	0·31	3	4
4597	τ Bootis	5·8	......	13 40 45·09	0·29	71 51 ...	......	2	0
4606	......	......	(7·0)	13 42 ...	......	57 54 53·2	0·31	0	2
4610	......	6·0	......	13 42 27·65	0·33	58 7 42·0	0·28	3	2
4621	......	7·0	......	13 43 34·08	0·29	70 41 21·9	0·35	1	1
4627	......	6·8	......	13 45 1·78	0·32	54 33 ...	......	2	0
4628	......	......	6·0	13 45 ...	......	54 39 13·8	0·28	0	2
4632	......	6·0	......	13 45 44·84	0·32	54 52 ...	......	2	0
4648	η Bootis	(3·0)	......	13 48 9·68	0·35	70 55 ...	......	16	0
4652	......	......	(7·0)	13 50 ...	......	57 17 51·4	0·28	0	3
4672	τ Virginis	(4·5)	......	13 54 40·56	0·29	87 47 ...	......	10	0
4676	......	7·0	......	13 55 17·86	0·34	57 46 18·6	0·30	2	4
4678	......	7·0	......	13 56 28·65	0·31	57 40 41·7	0·31	3	2
4694	......	7·0	......	14 0 21·74	0·31	58 29 36·8	0·29	3	4
4716	κ Virginis	3·3	......	14 5 35·52	0·29	99 38 ...	......	3	0
4723	......	6·5	......	14 7 49·19	0·29	60 15 9·1	0·30	3	2
4729	α Bootis	(1·0)	......	14 9 24·62	0·40	70 6 9·8	0·31	14	3
4737	......	6·2	......	14 10 55·66	0·32	74 6 6·0	0·27	2	1
4756	......	6·8	......	14 13 43·31	0·30	37 20 4·6	0·30	3	2
4797	......	6·0	......	14 22 36·15	0·30	53 11 19·7	0·30	3	6
4808	ρ Bootis	(4·0)	......	14 25 55·59	0·36	59 1 ...	......	11	0
4809	......	6·0	......	14 26 16·59	0·35	62 43 ...	......	1	0
4820	......	6·0	......	14 28 22·15	0·30	56 51 47·4	0·31	3	5
4863	......	7·1	......	14 37 7·13	0·31	52 39 29·5	0·33	4	4
4876	ε Bootis	(3·0)	......	14 39 0·25	0·41	62 20 48·4	0·34	16	2

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.			h. m. s.		° ′ ″		R. A.	N. P. D.
4934	....	7.0	......	14 50 49.91	0.36	48 18 37.5	0.34	3	5
4942	....	6.5	......	14 51 11.01	0.36	49 49 ...	......	3	0
4965	....	6.0	......	14 58 16.35	0.37	44 49 6.0	0.36	2	3
4969	φ Bootis........................	(5.0)	......	14 58 34.54	0.30	62 31 ...	......	3	0
4992	....	5.0	......	15 2 22.10	0.32	31 55 ...	......	3	0
5000	....	6.5	......	15 5 6.01	0.32	56 24 ...	......	3	0
5001	....	6.5	......	15 5 8.38	0.38	60 15 ...	......	2	0
5034	β Libræ........................	(2.5)	......	15 19 38.25	0.38	98 53 ...	......	6	0
5071	....	5.7	......	15 16 3.70	0.33	37 32 48.1	0.35	3	4
5091	....	5.3	......	15 20 22.06	0.36	26 10 8.3	0.35	3	1
5143	α Coronæ Borealis...........	(2.5)	......	15 28 53.31	0.36	62 49 ...	......	11	0
5196	α Serpentis........................	(2.5)	......	15 37 31.28	0.36	83 8 ...	......	13	0
5245	ε Serpentis........................	4.0	......	15 43 59.38	0.36	85 7 ...	......	3	0
5284	γ Serpentis........................	5.0	......	15 50 7.60	0.34	73 53 21.4	0.36	2	4
5415	(a)	5.8	......	16 6 22.22	0.36	31 49 16.7	0.38	3	2
5414	δ Ophiuchi	(3.0)	......	16 7 10.07	0.41	93 20 ...	......	6	0
5452	....	6.3	......	16 14 7.93	0.36	68 32 5.3	0.38	3	2
5466	γ Herculis........................	4.5	......	16 15 52.71	0.36	70 31 ...	......	3	0
5493	....	6.2	......	16 19 56.18	0.36	87 20 ...	......	3	0
5504	....	7.0	......	16 21 50.91	0.37	74 20 ...	......	3	0
5507	....	7.0	......	16 22 9.93	0.42	74 15 ...	......	1	0
5527	....	6.0	......	16 24 36.86	0.37	69 13 ...	......	3	0
5529	....	8.0	......	16 25 20.80	0.42	78 17 ...	......	1	0
5537	....	6.8	......	16 27 4.27	0.37	79 20 ...	......	3	0
5597	....	6.0	......	16 35 19.97	0.37	64 52 ...	......	3	0
5604	ζ Herculis........................	(3.0)	......	16 36 7.40	0.46	58 9 ...	......	4	0
5615	....	6.0	......	16 38 11.39	0.37	53 14 ...	......	3	0
5625	....	7.3	......	16 39 59.49	0.37	87 31 ...	......	3	0
5634	....	7.0	......	16 41 39.74	0.42	78 37 ...	......	2	0
5647	....	7.0	......	16 43 15.41	0.35	76 30 ...	......	1	0
5686	....	7.7	......	16 47 8.04	0.38	74 22 ...	......	4	0
5708	κ Ophiuchi........................	(4.0)	......	16 51 11.05	0.42	80 25 ...	......	7	0
5726	....	6.0	......	16 53 48.51	0.42	83 12 ...	......	1	0
5776	....	5.5	......	17 1 11.90	0.42	41 0 ...	......	2	0
5787	....	(6.0)	......	17 3 12.52	0.42	79 47 ...	......	1	0
5821	α Herculis........................	(3.5)	......	17 8 21.06	0.48	75 27 ...	......	8	0
5863	ω Herculis........................	(6.0)	......	17 15 32.07	0.42	57 21 ...	......	1	0
5891	....	6.0	......	17 19 42.29	0.51	82 17 ...	......	1	0
5893	ο Ophiuchi........................	4.0	......	17 19 42.92	0.42	55 44 ...	......	1	0
5917	....	5.8	......	17 23 55.60	0.42	29 51 ...	......	2	0
5941	α Ophiuchi........................	(2.0)	......	17 28 34.54	0.50	77 20 ...	......	8	0
5996	β Ophiuchi........................	(3.0)	......	17 36 42.23	0.51	85 22 ...	......	1	0
6021	μ Herculis........................	(4.0)	......	17 41 5.92	0.51	62 12 ...	......	7	0
6035	....	7.0	......	17 43 40.35	0.51	60 7 ...	......	1	0
6123	70 Ophiuchi........................	4.0	......	17 58 31.75	0.51	87 28 ...	......	1	0
6137	....	7.0	......	18 0 27.87	0.51	87 32 ...	......	1	0
6245	....	......	(6.0)	18 17 ...	......	72 14 24.0	0.52	0	1
6302	χ Draconis........................	......	(4.5)	18 23 ...	......	17 19 39.3	0.51	0	1
6355	α Lyræ........................	(1.0)	......	18 32 18.00	0.56	51 21 ...	......	9	0
6429	β Lyræ........................	(3.0)	......	18 45 1.36	0.53	56 47 38.7	0.53	9	5
6468	....	6.0	......	18 49 51.30	0.53	56 12 16.9	0.51	2	1

(a) Differs from Tables by 25 secs. in R. A. and 7′ in N. P. D.

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Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.			h. m. s.		° ′ ″		R. A.	N. P. D.
6480		5·5	......	18 51 53·47	0·53	57 16 22·1	0·51	2	1
6487	ε Aquilæ	3·5	......	18 53 24·31	0·53	75 7 ...	......	2	0
6527		7·8	......	18 58 52·50	0·53	71 4 ...	......	2	0
6528	ζ Aquilæ	(3·0)	......	18 59 6·78	0·54	76 20 14·1	0·53	5	1
6534		......	(6·0)	19 0 ...	......	58 27 29·6	0·51	0	1
6542		......	(6·5)	19 1 ...	......	65 57 34·0	0·55	0	1
6574		6·0	......	19 6 44·16	0·52	68 40 26·6	0·57	1	2
6602		6·2	......	19 11 55·86	0·54	67 13 9·3	0·57	2	5
6617		6·8	......	19 13 26·55	0·54	78 42 58·1	0·52	2	2
6644		6·0	......	19 18 26·25	0·54	78 20 46·0	0·63	2	1
6646	δ Aquilæ	(3·5)	......	19 18 35·44	0·56	87 9 ...	......	3	0
6652		......	(7·0)	19 19 ...	......	69 59 46·7	0·51	0	1
6674	α Vulpeculæ	(4·0)	......	19 23 0·37	0·54	65 37 ...	......	2	0
6701	μ Aquilæ	5·2	......	19 27 23·74	0·54	82 55 ...	......	2	0
6729		6·8	......	19 32 25·94	0·54	84 54 43·1	0·59	2	7
6762		6·8	......	19 38 19·25	0·53	63 11 26·0	0·57	3	5
6772	γ Aquilæ	(3·0)	......	19 39 44·75	0·60	79 43 5·6	0·54	10	3
6791		8·0	......	19 42 25·61	0·53	78 39 16·1	0·60	2	3
6802	α Aquilæ	(1·5)	......	19 44 5·88	0·60	81 30 ...	......	7	0
6833	β Aquilæ	(3·5)	......	19 48 34·97	0·60	83 56 ...	......	12	0
6852		5·5	......	19 51 6·38	0·63	30 39 11·0	0·59	1	8
6855		7·7	7·5	19 52 0·25	0·56	73 52 25·4	0·54	3	3
6931	θ Aquilæ	4·7	......	20 4 14·06	0·60	91 13 ...	......	3	0
6941		......	(7·0)	20 5 ...	......	69 16 15·9	0·58	0	8
6966		5·2	......	20 9 27·58	0·69	64 49 29·1	0·62	3	6
7000		6·0	......	20 12 40·36	0·65	12 35 ...	......	2	0
7006		7·5	......	20 14 40·86	0·58	53 17 51·4	0·57	2	7
7014		6·0	......	20 16 23·36	0·65	85 5 34·0	0·58	3	2
7086		5·7	......	20 26 1·68	0·65	34 23 26·5	0·61	3	9
7088	ε Delphini	4·0	......	20 26 40·08	0·52	79 10 ...	......	2	0
7149	α Delphini	5·5	......	20 33 16·49	0·58	74 34 ...	......	4	0
7150		......	(7·0)	20 33 ...	......	79 14 8·8	0·58	0	3
7161		......	(7·0)	20 35 ...	......	44 48 58·4	0·61	0	4
7171	α Cygni	(1·0)	......	20 36 45·72	0·76	45 12 ...	......	2	0
7220	ε Cygni	(3·5)	......	20 42 30·28	0·61	28 41 33·2	0·66	3	4
7256	32 Vulpeculæ	(4·5)	......	20 48 43·33	0·63	62 27 ...	......	9	0
7268	(a)	6·0	5·5	20 51 12·40	0·38	43 6 22·8	0·62	3	8
7285		6·5	......	20 53 19·21	0·63	83 0 59·5	0·61	3	1
7290		6·0	8·0	20 53 25·33	0·67	46 3 39·2	0·68	3	2
7336	61[1] Cygni	(5·5)	......	21 0 45·57	0·66	51 55 21·2	0·65	3	10
7354		8·3	8·5	21 4 20·77	0·67	68 6 6·5	0·69	3	1
7356		8·0	......	21 4 21·84	0·69	68 6 4·8	0·63	3	1
7368	ζ Cygni	(3·0)	......	21 7 6·38	0·70	60 20 1·4	0·65	12	4
7380	α Equulei	4·0	......	21 8 58·47	0·66	85 19 ...	......	3	0
7410		6·2	......	21 14 52·89	0·66	66 43 11·2	0·65	3	10
7417		5·7	6·0	21 15 28·24	0·70	31 57 19·2	0·64	3	2
7430		6·8	......	21 17 2·41	0·67	29 48 ...	......	2	0
7450		6·7	9·0	21 20 4·91	0·66	71 12 58·0	0·67	3	3
7478	β Aquarii	(3·0)	......	21 24 20·66	0·69	96 10 ...	......	10	0
7497		7·4	7·2	21 27 44·53	0·65	88 46 42·2	0·64	4	7
7501		6·7	7·0	21 28 10·07	0·70	44 45 10·9	0·63	3	4

(a) Tab. R. A. differs by 42 secs.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
7514	ξ Aquarii	5·0	......	21 30 27·33	0·65	98 28 ...	......	3	0
7528	......	6·3	......	21 32 38·11	0·65	70 21 5·1	0·62	3	3
7561	ε Pegasi	(2·5)	......	21 37 27·40	0·64	80 45 6·2	0·65	12	5
7566	......	6·3	......	21 37 45·91	0·68	52 20 31·4	0·63	3	1
7569	......	7·0	6·5	21 38 1·07	0·71	61 52 32·2	0·70	1	1
7590	......	7·0	......	21 40 33·91	0·65	73 26 16·7	0·65	3	4
7627	10 Pegasi	(5·5)	......	21 46 49·82	0·69	64 43 ...	......	12	0
7644	......	7·0	......	21 50 19·20	0·68	18 9 23·1	0·61	3	3
7688	α Aquarii	(3·0)	......	21 58 44·74	0·56	90 59 3·1	0·67	5	3
7706	ι Pegasi	4·3	......	22 0 38·17	0·65	65 19 ...	......	3	0
7708	......	5·8	5·0	22 0 55·84	0·70	28 23 8·6	0·67	3	5
7759	......	5·3	......	22 7 30·40	0·65	29 55 3·8	0·68	3	6
7773	θ Aquarii	(4·5)	......	22 9 36·10	0·67	98 28 ...	......	1	0
7779	......	......	10·0	22 10 ...	......	17 21 53·8	0·60	0	2
7795	γ Aquarii	5·0	......	22 14 34·73	0·65	92 5 ...	......	4	0
7868	η Aquarii	(4·0)	......	22 28 18·89	0·69	90 49 ...	......	8	0
7908	ζ Pegasi	......	3·0	22 34 37·78	0·68	79 53 0·4	0·69	14	10
7958	μ Pegasi	4·0	......	22 43 23·66	0·68	66 7 ...	......	3	0
7970	λ Aquarii	4·7	......	22 45 27·84	0·68	98 18 ...	......	3	0
7977	......	7·7	......	22 46 52·36	0·68	88 53 5·0	0·69	3	7
7996	......	7·3	......	22 50 34·25	0·68	86 55 21·6	0·65	3	2
8024	......	6·5	......	22 55 13·83	0·69	33 37 49·3	0·70	5	6
8034	α Pegasi	(2·0)	......	22 57 56·28	0·72	75 31 55·8	0·68	14	2
8065	......	7·8	8·0	23 2 22·58	0·70	88 35 53·6	0·67	3	1
8083	......	6·0	......	23 6 42·24	0·70	33 35 15·5	0·70	2	6
8091	......	......	(7·0)	23 8 ...	......	62 40 29·7	0·70	0	3
8105	γ Piscium	(4·5)	......	23 10 3·78	0·73	87 28 ...	......	8	6
8135	......	6·0	......	23 14 15·63	0·68	46 37 56·2	0·68	3	3
8137	......	6·0	......	23 14 16·39	0·74	28 47 ...	......	1	0
8138	......	......	(7·0)	23 15 ...	......	28 32 14·2	0·70	0	2
8147	......	6·7	......	23 15 56·51	0·68	70 11 30·2	0·69	3	1
8169	κ Piscium	(5·5)	......	23 19 54·55	0·71	89 30 ...	......	9	0
8204	......	6·7	......	23 26 42·01	0·69	[illegible] 45 ...	......	3	0
8233	ι Piscium	(4·5)	......	23 32 54·24	0·72	85 7 ...	......	17	0
8247	......	7·8	......	23 35 35·74	0·71	72 5 32·2	0·72	3	6
8252	......	......	(7·0)	23 36 ...	......	37 36 27·4	0·74	0	1
8269	Proceding	9·1	......	23 40 44·78	0·69	86 32 ...	......	4	0
8270	......	......	......	23 40 48·99	0·73	86 35 ...	......	1	0
8272	......	......	(7·0)	23 41 ...	......	82 30 51·7	0·76	0	1
8280	......	7·0	7·0	23 42 12·14	0·74	30 47 0·5	0·74	1	3
8298	......	6·0	......	23 46 25·92	0·72	13 10 ...	......	4	0
8315	......	7·3	7·0	23 48 37·46	0·69	82 32 22·2	0·72	3	1
8331	ω Piscium	(4·5)	......	23 52 16·64	0·77	83 54 ...	......	9	0
8338	......	......	(7·0)	23 54 ...	......	28 35 9·4	0·75	0	2
8350	......	(6·0)	......	23 55 1·29	0·74	63 38 36·2	0·75	1	2
8364	......	7·0	......	23 57 52·20	0·72	32 13 51·2	0·76	2	2
8372	......	......	......	23 59 7·02	0·71	32 19 40·1	0·72	1	1

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OBSERVATIONS

MADE WITH

THE TRANSIT INSTRUMENT,

AND

CALCULATION

OF

APPARENT RIGHT ASCENSIONS.

1864.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1864.
1864.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	
Jan. 2	1681	β Tauri	....	61 30	33·0	42·2	52·0	1·4	18 ...	5 17 51·65	− 0·04	− 7·37	− 7·47	− 2·62
	1730	δ Orionis	....	90 23	57·0	4·9	13·4	21·8	25 ...	5 25 13·41	− 0·08	− 7·57	− 7·47	− 2·23
	1765	ι Orionis	....	91 17	12·0	20·2	28·6	36·9	29 ...	5 29 28·55	− 0·08	− 7·51	− 7·47	− 2·30
	1883	α Orionis	....	82 37	41·7	50·0	58·3	6·8	48 ...	5 47 58·37	− 0·06	− 7·44	− 7·47	− 2·30
Jan. 4	1376	ε Tauri	....	71 6	32·5	41·1	50·3	58·9	20 ...	4 20 50·07	− 0·04	− 7·10	− 7·12	− 2·25
	1420	α Tauri	....	73 45	59·2	8·0	16·5	25·1	28 ...	4 28 16·50	− 0·05	− 7·04	− 7·12	− 2·24
	1681	β Tauri	....	61 30	32·9	42·1	51·7	1·1	18 ...	5 17 51·65	− 0·03	− 7·18	− 7·12	− 2·62
	1883	α Orionis	....	82 37	41·5	49·6	58·2	6·4	48 ...	5 47 55·09	− 0·05	− 7·16	− 7·12	− 2·31
	2163	γ Geminorum	....	73 29	43·6	52·4	1·1	9·6	30 ...	6 30 0·99	− 0·05	− 7·21	− 7·12	− 2·46
Jan. 5	837	γ Ceti	....	87 18	7·4	15·6	24·2	32·4	36 ...	2 36 24·04	− 0·09	− 7·04	− 7·03	− 1·57
	949	α Ceti	....	86 25	2·5	10·8	19·1	27·3	55 ...	2 55 19·06	− 0·08	− 6·98	− 7·03	− 1·66
	1347	....	8·0	65 55	9·0	17·9	27·2	36·1	15 ...	4 15 27·08	− 0·04	....	− 7·02	− 2·33
	1361	....	....	71 17	53·9	2·3	11·5	20·0	17 ...	4 17 11·28	− 0·05	....	− 7·02	− 2·24
	1420	α Tauri	....	73 45	59·1	7·7	16·7	25·3	28 ...	4 28 16·50	− 0·06	− 7·04	− 7·02	− 2·27
	1434	....	5·5	77 46	25·9	34·3	43·0	51·2	30 ...	4 30 42·83	− 0·06	....	− 7·02	− 2·19
	1463	....	7·5	66 38	21·8	30·6	39·9	48·7	37 ...	4 37 39·75	− 0·04	....	− 7·03	− 2·40
	1626	....	7·0	49 41	38·6	48·1	58·8	8·4	18 ...	5 17 58·97	− 0·03	....	− 7·04	− 2·95
	1703	....	7·0	73 40	11·2	19·8	28·6	37·1	20 ...	5 20 28·49	− 0·06	....	− 7·04	− 2·31
	1765	ι Orionis	....	91 17	11·4	19·6	28·2	36·5	29 ...	5 29 28·05	− 0·09	− 7·00	− 7·05	− 2·30
	1883	α Orionis	....	82 37	41·2	49·8	58·2	6·4	48 ...	5 47 58·07	− 0·08	− 7·11	− 7·06	− 2·31
	6281	δ Ursæ Minoris S. P.	....	3 24	......	30·5	49·5	13·0	20 31·0	6 15 51·00	+ 0·45	....	− 7·07	+ 28·14
	2163	γ Geminorum	....	73 29	43·8	52·1	1·0	9·5	30 ...	6 30 0·91	− 0·06	− 7·11	− 7·07	− 2·37
	2410	δ Geminorum	....	67 46	51·9	0·6	9·9	18·6	12 ...	7 12 9·71	− 0·05	− 7·21	− 7·10	− 2·52
	5941	α Ophiuchi	....	77 20	27·0	35·5	44·3	52·6	28 ...	17 28 44·08	− 0·06	− 7·12	− 7·18	+ 0·42
	6281	δ Ursæ Minoris	....	3 24	12·0	30·0	55·0	13·0	18 ...	18 15 52·26	− 0·48	....	− 7·[illegible]	+ 26·13
	6355	α Lyræ	....	51 20	5·0	15·5	26·4	37·0	32 ...	18 32 26·27	− 0·03	− 7·24	− 7·20	+ 1·04
Jan. 7	7171	α Cygni	....	45 15	31·0	42·4	54·3	6·0	37 ...	20 36 54·24	− 0·01	....	− 7·27	+ 0·85
	8034	α Pegasi	....	75 29	49·8	58·2	7·0	15·4	58 ...	22 58 6·87	− 0·04	− 7·25	− 7·28	− 0·32
	4	α Andromedæ	....	61 37	11·1	20·4	30·0	39·3	1 ...	0 1 29·90	− 0·03	− 7·31	− 7·30	− 0·78
	26	γ Pegasi	....	75 32	5·0	13·5	22·2	31·0	6 ...	0 6 22·19	− 0·04	− 7·30	− 7·30	− 0·74
	1623	β Orionis	....	98 21	52·9	1·1	9·6	17·8	8 ...	5 8 9·53	− 0·10	− 7·18	− 7·30	− 2·10
	1681	β Tauri	....	61 30	33·0	42·1	52·0	1·1	18 ...	5 17 51·75	− 0·03	− 7·28	− 7·30	− 2·67
	1730	δ Orionis	....	90 23	56·7	4·9	13·2	21·2	25 ...	5 25 13·13	− 0·09	− 7·28	− 7·30	− 2·20
	1765	ι Orionis	....	91 17	11·9	20·0	28·6	36·8	29 ...	5 29 28·45	− 0·09	− 7·40	− 7·30	− 2·30
	1883	α Orionis	....	82 37	41·6	49·9	58·4	6·5	48 ...	5 47 58·27	− 0·07	− 7·31	− 7·30	− 2·33
Jan. 14	7908	(a) ζ Pegasi	....	79 50	32·1	40·5	49·2	57·6	35 5·9	22 34 49·06	− 0·18	− 7·99	− 7·90	− 0·11
	8034	α Pegasi	....	75 29	50·5	59·0	7·8	16·3	58 24·8	22 58 7·68	− 0·16	− 8·00	− 7·90	− 0·36
	360	α Ursæ Minoris	....	1 25	22·0	57·5	37·0	15·0	20 48·5	1 9 36·00	+ 7·60	....	− 7·90	− 16·44
	420	θ Ceti	....	98 51	5·8	14·0	22·8	30·9	17 39·0	1 17 22·50	− 0·27	− 7·83	− 7·90	− 0·51
	453	η Piscium	....	75 19	4·7	13·0	21·9	30·2	24 38·9	1 24 21·74	− 0·16	− 7·67	− 7·90	− 1·11
Jan. 17	1681	β Tauri	....	61 30	33·9	43·1	52·9	2·2	18 11·6	5 17 52·74	− 0·07	− 8·25	− 8·21	− 2·50
	1730	δ Orionis	....	90 23	57·5	5·7	14·1	22·1	25 30·7	5 25 14·02	− 0·17	− 8·11	− 8·21	− 2·18
	1765	ι Orionis	....	91 17	12·8	21·0	29·5	37·7	29 46·0	5 29 29·40	− 0·17	− 8·29	− 8·21	− 2·18
	1883	α Orionis	....	82 37	42·5	50·8	59·4	7·5	48 16·0	5 47 59·24	− 0·15	− 8·20	− 8·21	− 2·33

(a) New Wire V. put in 12th January.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1864.
1864.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Jan. 18	8233	ι Piscium	....	85 4	49·8	58·0	6·4	14·7	33 23·0	23 33 6·38	− 0·14	− 8·53	− 8·37	− 0·38
	288	ε Piscium	....	82 48	45·7	54·0	2·6	10·9	56 19·3	0 56 2·50	− 0·13	− 8·28	− 8·38	− 0·86
	360	α Ursæ Minoris	....	1 25	20·0	55·0	38·5	13·0	20 46·0	1 9 34·40	+ 6·17	....	− 8·39	−13·18
	420	θ Ceti	....	98 51	6·1	14·4	23·0	31·2	17 39·5	1 17 22·84	− 0·19	− 8·30	− 8·39	− 0·84
	453	η Piscium	....	75 19	5·0	13·6	22·3	31·0	24 39·3	1 24 22·24	− 0·11	− 8·47	− 8·40	− 1·09
	1681	β Tauri	....	61 30	34·1	43·4	53·1	2·4	18 11·7	5 17 52·94	− 0·05	− 8·48	− 8·45	− 2·59
	2410	δ Geminorum	....	67 46	53·3	2·0	11·2	20·0	12 29·0	7 12 11·10	− 0·07	− 8·46	− 8·47	− 2·64
	2462	β Canis Minoris	....	81 27	40·9	49·0	57·6	6·0	20 14·2	7 19 57·54	− 0·13	....	− 8·47	− 2·48
	2522	α Canis Minoris	....	84 26	5·2	13·5	22·1	30·3	32 38·4	7 32 21·90	− 0·13	− 8·40	− 8·48	− 2·45
	2555	β Geminorum	....	61 39	51·8	1·3	11·0	20·1	37 29·4	7 37 10·72	− 0·06	− 8·52	− 8·48	− 2·74
	2672	6 Cancri	....	61 50	2·1	11·4	21·0	30·4	55 39·6	7 55 20·90	− 0·06	− 8·49	− 8·48	− 2·71
Jan. 19	8233	ι Piscium	....	85 4	50·0	58·2	6·5	15·0	33 23·3	23 33 6·60	− 0·10	− 8·80	− 8·72	− 0·37
	4	α Andromedæ	....	61 37	12·3	21·6	31·3	40·6	1 50·0	0 1 31·16	− 0·03	− 8·74	− 8·72	− 0·61
	26	γ Pegasi	....	75 32	6·4	15·0	23·8	32·2	6 40·5	0 5 23·58	− 0·08	− 8·79	− 8·72	− 0·60
	288	ε Piscium	....	82 48	46·0	54·4	2·9	11·1	56 19·5	0 56 2·78	− 0·10	− 8·81	− 8·72	− 0·84
	360	α Ursæ Minoris	....	1 25	19·0	54·5	38·0	13·0	20 49·5	1 9 34·80	+ 5·28	....	− 8·72	−12·32
	420	θ^1 Ceti	....	98 51	6·5	14·8	23·2	31·5	17 40·0	1 17 23·20	− 0·16	− 8·70	− 8·72	− 0·83
	453	η Piscium	....	75 19	5·1	13·8	22·6	31·0	24 39·5	1 24 22·46	− 0·09	− 8·73	− 8·72	− 1·08
	1883	α Orionis	....	82 37	43·0	51·2	59·8	8·0	48 16·4	5 47 59·68	− 0·10	− 8·70	− 8·74	− 2·31
	1907	(a)	....	44 5	8·4	16·6	25·4	34·0	51 42·3	5 51 25·34	+ 0·04	....	− 8·74	− 2·40
	1958	ν Orionis	....	75 13	42·6	51·0	59·9	8·3	0 16·8	5 59 59·72	− 0·08	− 8·79	− 8·74	− 2·44
	2485	α^2 Geminorum	....	57 49	47·1	57·0	6·8	16·1	26 26·2	7 26 6·70	− 0·02	− 8·73	− 8·74	− 2·85
	2522	α Canis Minoris	....	84 26	5·5	13·8	22·4	30·5	32 38·9	7 32 22·22	− 0·10	− 8·75	− 8·74	− 2·45
	2555	β Geminorum	....	61 39	52·1	1·4	11·0	20·2	37 29·8	7 37 10·90	− 0·03	− 8·72	− 8·74	− 2·75
Jan. 20	2410	δ Geminorum	....	67 46	53·8	2·8	11·9	20·8	12 29·6	7 12 11·78	− 0·05	− 9·15	− 9·00	− 2·65
	2485	(b) α^2 Geminorum	....	57 49	47·5	57·0	6·9	16·4	26 26·3	7 26 5·82	− 0·02	− 8·81	− 9·00	− 2·86
	2862	η Cancri	....	69 7	44·4	53·1	2·1	10·9	25 19·6	8 25 2·02	− 0·07	− 8·97	− 9·00	− 2·58
	2971	ι Hydræ	....	83 6	29·2	37·4	45·9	54·2	40 2·4	8 39 45·82	− 0·11	− 8·96	− 9·00	− 2·44
Jan. 23	1883	α Orionis	....	82 37	44·4	52·6	1·0	9·4	48 17·7	5 48 1·02	− 0·15	−10·00	−10·04	− 2·30
	1958	ν Orionis	....	75 13	44·0	52·3	1·0	9·7	0 18·0	6 0 1·00	− 0·12	−10·04	−10·04	− 2·43
	6281	δ Ursæ Minoris S. P.	....	3 24	20·0	39·0	58·5	20·5	20 37·0	6 15 59·00	− 2·87	....	−10·04	+26·71
	2163	γ Geminorum	....	73 29	46·8	55·2	4·1	12·6	30 21·2	6 30 3·98	− 0·11	−10·07	−10·04	− 2·53
	2410	δ Geminorum	....	67 46	54·9	3·7	12·9	21·8	12 30·4	7 12 12·74	− 0·08	−10·07	−10·04	− 2·66
Jan. 27	1958	ν Orionis	....	75 13	44·8	53·2	1·9	10·4	0 18·9	6 0 1·81	− 0·11	−10·91	−10·91	− 2·41
	6281	δ Ursæ Minoris S. P.	....	3 24	21·5	40·0	59·0	21·0	20 40·0	6 16 0·30	− 2·63	....	−10·91	+26·06
	2163	γ Geminorum	....	73 29	47·5	56·1	5·0	13·4	30 22·1	6 30 4·82	− 0·11	−10·92	−10·91	− 2·52
	2410	δ Geminorum	....	67 46	55·8	4·6	13·8	22·6	12 31·1	7 12 13·64	− 0·09	−10·95	−10·91	− 2·67
	2485	α^2 Geminorum	....	57 49	49·1	59·0	9·1	18·8	26 28·1	7 26 8·94	− 0·05	−10·90	−10·91	− 2·89
	2522	α Canis Minoris	....	84 26	7·8	16·0	24·6	32·7	32 41·0	7 32 24·42	− 0·15	−10·86	−10·91	− 2·49
	2555	β Geminorum	....	61 39	54·3	3·7	13·3	22·6	37 32·0	7 37 13·18	− 0·07	−10·92	−10·91	− 2·79
Jan. 28	2410	δ Geminorum	....	67 46	56·1	4·9	14·0	22·9	12 31·8	7 12 13·91	− 0·09	−11·25	−11·16	− 2·67
	2485	α^2 Geminorum	....	57 49	49·6	59·2	9·4	19·0	26 28·7	7 26 9·18	− 0·05	−11·14	−11·16	− 2·89
	2522	α Canis Minoris	....	84 26	8·0	16·3	24·8	33·0	32 41·3	7 32 24·68	− 0·15	−11·12	−11·16	− 2·49
	2555	β Geminorum	....	61 39	54·8	4·0	13·4	23·0	37 32·2	7 37 13·48	− 0·07	−11·21	−11·16	− 2·80
	2672	6 Cancri	....	61 50	4·8	14·1	23·7	33·0	55 42·3	7 55 23·58	− 0·07	−11·08	−11·16	− 2·79
	2862	η Cancri	....	69 7	46·7	55·3	4·5	13·0	25 21·9	8 25 4·28	− 0·09	−11·14	−11·16	− 2·65
	2971	ι Hydræ	....	83 6	31·5	39·6	48·2	56·5	40 4·9	8 39 48·14	− 0·15	−11·17	−11·16	− 2·51

(a) Faint. (b) Very faint.

Date.	No. in British Association Catalogue.		Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1864.
1864					° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Feb. 2	1520		ι Aurigæ	....	57 2	3·4	13·1	22·9	33·0	48 42·9	4 48 23·06	− 0·04	− 12·17	− 12·12	− 2·41
	1623		β Orionis	....	98 21	57·5	5·7	14·2	22·6	8 31·0	5 9 14·20	− 0·19	− 11·96	− 12·12	− 1·90
	1681		β Tauri	....	61 30	37·6	47·0	56·5	5·9	18 15·3	5 17 56·46	− 0·06	− 12·12	− 12·12	− 2·46
	2163		γ Geminorum	....	73 29	48·9	57·4	6·0	14·6	30 23·2	6 30 6·02	− 0·10	− 12·15	− 12·12	− 2·50
	2465		α² Geminorum	....	57 49	50·5	0·2	10·1	20·0	26 29·8	7 26 10·12	− 0·04	− 12·09	− 12·12	− 2·69
	2522		α Canis Minoris	....	84 26	9·0	17·2	25·8	34·1	32 42·3	7 32 25·68	− 0·14	− 12·13	− 12·12	− 2·49
	2555		β Geminorum	....	61 39	55·5	5·0	14·5	23·9	37 33·2	7 37 14·42	− 0·07	− 12·14	− 12·13	− 2·61
	2586		....	7·0	61 29	27·5	36·9	46·4	55·9	42 5·2	7 41 46·38	− 0·06	....	− 12·13	− 2·62
	2672		6 Cancri	....	61 50	5·9	15·2	24·9	34·0	55 43·4	7 55 24·68	− 0·07	− 12·16	− 12·13	− 2·61
	2688	(a)	....	8·0	62 6	13·0	22·1	32·0	41·0	57 50·3	7 57 31·68	− 0·07	....	− 12·13	− 2·62
	2737		....	7·0	74 59	18·0	26·4	35·3	43·9	3 52·2	8 3 35·16	− 0·11	....	− 12·14	− 2·62
	2748		....	6·5	75 37	43·2	51·6	0·5	9·0	5 17·3	8 5 0·32	− 0·12	....	− 12·14	− 2·61
	2761		....	7·0	76 34	45·0	53·5	2·2	10·4	7 19·1	8 7 2·04	− 0·12	....	− 12·14	− 2·60
	2778		β Cancri	3·0	80 25	6·2	14·6	23·2	31·6	9 39·9	8 9 23·10	− 0·13	....	− 12·14	− 2·57
Feb. 4	1623		β Orionis	....	98 21	57·7	6·0	14·5	23·0	8 31·1	5 8 14·46	− 0·20	− 12·23	− 12·30	− 1·96
	1681		β Tauri	....	61 30	37·6	47·1	56·9	6·1	18 15·4	5 17 56·62	− 0·07	− 12·30	− 12·30	− 2·40
	2586		....	7·0	61 29	27·9	37·0	46·7	56·1	42 5·4	7 41 46·62	− 0·07	....	− 12·34	− 2·42
	2672		6 Cancri	....	61 50	6·0	15·2	25·0	34·3	55 43·7	7 55 24·84	− 0·08	− 12·31	− 12·34	− 2·51
	2683		....	6·0	70 48	51·1	59·9	8·6	17·4	57 26·0	7 57 8·60	− 0·11	....	− 12·34	− 2·47
	2737		....	6·0	74 59	18·2	26·6	35·4	44·0	3 52·4	8 3 35·32	− 0·12	....	− 12·34	− 2·42
	2748		....	7·0	75 37	43·5	51·9	0·7	9·2	5 17·6	8 5 0·58	− 0·12	....	− 12·35	− 2·42
	2761		....	7·0	76 34	45·3	53·7	2·3	10·9	7 19·4	8 7 2·32	− 0·12	....	− 12·35	− 2·41
	2778		β Cancri	3·0	80 25	6·4	14·8	23·4	31·7	9 40·1	8 9 23·26	− 0·14	....	− 12·35	− 2·56
	2862		η Cancri	....	69 7	47·9	56·5	5·6	14·5	25 23·4	8 25 5·58	− 0·09	− 12·40	− 12·35	− 2·49
	2882		....	6·0	29 36	47·0	4·2	21·1	37·8	28 54·1	8 28 20·84	+ 0·11	....	− 12·36	− 4·21
	2937		γ Cancri	6·0	68 4	22·0	30·9	40·0	48·8	35 57·6	8 35 39·86	− 0·09	....	− 12·36	− 2·71
	2971		ι Hydræ	....	83 6	32·7	40·9	49·4	57·8	40 6·8	8 39 49·36	− 0·14	− 12·35	− 12·36	− 2·56
	2988		....	7·5	34 34	42·0	56·6	11·5	26·0	43 40·7	8 43 11·36	+ 0·06	....	− 12·37	− 3·78
	3013		....	6·0	84 10	11·4	19·8	28·2	36·4	45 44·8	8 45 28·12	− 0·15	....	− 12·37	− 2·56
	3053		....	6·0	80 7	20·0	28·4	37·0	45·3	50 53·7	8 50 36·88	− 0·14	....	− 12·37	− 2·56
	3083		....	7·0	38 40	32·9	46·0	59·3	12·5	56 25·9	8 55 59·32	+ 0·03	....	− 12·38	− 3·59
	3103		....	7·0	72 22	35·7	44·3	53·0	1·7	59 10·3	8 58 53·00	− 0·11	....	− 12·38	− 2·44
	3171		83 Cancri	....	71 44	21·0	29·8	38·4	47·0	11 55·7	9 11 38·38	− 0·11	− 12·45	− 12·38	− 2·62
Feb. 5	1958		ν Orionis	....	75 13	46·0	51·4	3·2	11·6	0 20·2	6 [illegible] 3·08	− 0·1[illegible]	− 12·20	− 12·22	− 2·31
	6281	(b)	δ Ursæ Minoris S.P.	....	3 24	24·0	44·0	1·0	24·0	20 43·0	6 16 3·20	− 2·39	....	− 12·22	+ 24·29
	2163		γ Geminorum	....	73 29	49·0	57·2	6·0	14·8	30 23·4	6 30 6·08	− 0·11	− 12·23	− 12·22	− 2·47
	2410		δ Geminorum	....	67 46	57·0	6·0	15·1	24·0	12 32·9	7 12 15·00	− 0·09	− 12·32	− 12·22	− 2·66
	2462		β Canis Minoris	3·0	81 27	44·5	53·0	1·3	9·8	20 18·0	7 20 1·32	− 0·14	....	− 12·[illegible]	− 2·50
	2522		α Canis Minoris	....	84 26	9·0	17·2	25·9	34·1	32 42·3	7 32 25·70	− 0·15	− 12·15	− 12·22	− 2·48
	2555		β Geminorum	....	61 39	55·9	5·0	14·7	24·0	37 33·2	7 37 14·56	− 0·08	− 12·28	− 12·22	− 2·60
	2586		....	8·0	61 29	27·8	37·0	46·6	56·0	42 5·4	7 41 46·56	− 0·07	....	− 12·22	− 2·62
	2672		6 Cancri	....	61 50	6·0	15·2	25·0	34·1	55 43·6	7 55 24·78	− 0·08	− 12·25	− 12·22	− 2·61
	2683		....	....	70 48	51·0	59·8	8·6	17·4	57 26·0	7 57 8·56	− 0·10	....	− 12·[illegible]	− 2·68
	2737		....	7·0	74 59	18·0	26·6	35·3	44·0	3 52·3	8 3 35·24	− 0·12	....	− 12·22	− 2·63
	2748		....	....	75 37	43·5	51·9	0·3	9·0	5 17·6	8 5 0·50	− 0·12	....	− 12·22	− 2·62
	2761		....	6·0	76 34	45·2	53·7	2·2	10·7	7 19·2	8 7 2·20	− 0·12	....	− 12·22	− 2·61
	2778		β Cancri	4·0	80 25	6·4	14·8	23·2	31·6	9 40·0	8 9 23·20	− 0·14	....	− 12·22	− 2·56
	2882		....	6·0	29 36	47·2	4·0	21·0	37·7	28 54·2	8 28 20·82	+ 0·11	....	− 12·22	− 4·21
	2937		γ Cancri	5·0	68 4	21·8	30·9	40·0	48·9	35 57·7	8 35 39·86	− 0·09	....	− 12·23	− 2·72

(a) Double. 8th and 9th mags. Observed larger and following.

(b) Very unsteady.

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1864.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Feb. 5	2971	ι Hydræ	....	83 6	32·5	40·8	49·3	57·6	40 5·8	8 39 49·20	− 0·14	−12·19	−12·22	− 2·56
	3013	....	7·0	84 10	11·4	19·9	28·2	36·4	45 44·8	8 45 28·14	− 0·15	....	−12·22	− 2·56
	3053	....	7·0	80 7	20·0	28·3	37·0	45·2	50 53·6	8 50 36·82	− 0·14	....	−12·22	− 2·59
	3083	....	7·0	38 40	32·8	45·9	59·3	12·5	56 25·8	8 55 59·26	+ 0·03	....	−12·22	− 3·50
	3103	....	7·5	72 22	35·4	44·1	53·0	1·7	59 10·4	8 58 52·92	− 0·11	....	−12·22	− 2·65
	3331	ι Leonis	....	65 37	4·4	13·2	22·7	31·5	38 40·8	9 38 22·52	− 0·10	−12·17	−12·22	− 2·65
Feb. 8	2971	ι Hydræ	....	83 6	32·8	41·0	49·4	57·8	40 6·0	8 39 49·40	− 0·15	−12·37	−12·35	− 2·57
	3171	83 Cancri	....	71 44	21·1	29·6	38·5	47·2	11 56·0	9 11 38·48	− 0·12	−12·51	−12·35	− 2·65
	3223	α Hydræ	....	98 5	52·4	0·8	9·4	17·8	21 26·0	9 21 9·28	− 0·21	−12·29	−12·35	− 2·55
	3331	ι Leonis	....	65 37	4·5	13·6	22·9	31·6	38 40·9	9 38 22·70	− 0·10	−12·31	−12·35	− 2·69
	3415	τ Leonis	....	81 20	59·6	8·0	16·6	24·9	53 33·1	9 53 16·44	− 0·15	−12·29	−12·35	− 2·54
Feb. 12	4	α Andromedæ	....	61 37	16·5	26·0	35·4	44·8	1 54·1	0 1 35·36	− 0·09	−13·14	−13·12	− 0·35
	26	γ Pegasi	....	75 32	10·6	19·1	27·8	36·2	6 44·8	0 6 27·70	− 0·13	−13·08	−13·12	− 0·38
	2485	α² Geminorum	....	57 49	51·6	1·4	11·4	21·0	26 30·6	7 26 11·20	− 0·07	−13·18	−13·15	− 2·85
	2522	α Canis Minoris	....	84 26	10·0	18·3	26·6	35·0	32 43·1	7 32 26·60	− 0·17	−13·05	−13·15	− 2·46
	2555	β Geminorum	....	61 39	56·5	6·0	15·5	25·0	37 34·2	7 37 15·44	− 0·09	−13·17	−13·15	− 2·78
	2586	....	7·0	61 29	28·5	37·9	47·4	56·9	42 6·1	7 41 47·36	− 0·08	....	−13·16	− 2·80
	2672	6 Cancri	....	81 50	6·9	16·2	25·9	35·0	55 44·4	7 55 25·68	− 0·09	−13·14	−13·16	− 2·81
	2688	....	....	62 6	14·0	23·3	32·9	42·1	57 51·4	7 57 32·74	− 0·09	....	−13·16	− 2·81
	2882	....	7·5	29 36	48·3	4·9	21·7	38·5	28 55·0	8 28 21·68	+ 0·11	....	−13·17	− 4·24
	2937	γ Cancri	....	68 4	22·8	31·7	40·9	49·8	35 58·5	8 35 40·71	− 0·10	....	−13·17	− 2·74
	2988	....	8·0	34 34	43·0	57·5	12·3	27·0	43 41·6	8 43 12·28	+ 0·06	....	−13·18	− 3·81
	3013	....	....	84 10	12·5	20·9	29·2	37·3	45 45·8	8 45 29·14	− 0·17	....	−13·18	− 2·58
	3053	....	....	80 7	21·1	29·4	37·9	46·2	50 54·4	8 50 37·80	− 0·15	....	−13·18	− 2·61
	3083	....	....	38 40	33·9	47·0	0·3	13·5	56 26·9	8 56 0·32	+ 0·03	....	−13·19	− 3·54
	3103	....	....	72 22	36·7	45·2	54·0	2·8	59 11·4	8 58 54·02	− 0·12	....	−13·19	− 2·68
	3133	....	....	85 36	6·0	14·2	22·5	30·6	5 39·0	9 5 22·46	− 0·17	....	−13·20	− 2·59
	3223	α Hydræ	....	98 5	53·5	1·7	10·3	18·5	21 26·9	9 21 10·18	− 0·22	−13·15	−13·20	− 2·56
	3331	ι Leonis	....	65 37	5·7	14·4	23·9	32·9	38 41·9	9 38 23·76	− 0·11	−13·33	−13·21	− 2·72
	3415	τ Leonis	....	81 20	0·7	9·0	17·6	25·9	53 34·2	9 53 17·48	− 0·15	−13·30	−13·23	− 2·57
Feb. 14	2410	δ Geminorum	....	67 46	58·1	7·0	16·2	25·0	12 34·0	7 12 16·06	− 0·11	−13·41	−13·40	− 2·61
	2485	α² Geminorum	....	57 49	52·0	1·5	11·4	21·1	26 31·0	7 26 11·40	− 0·07	−13·39	−13·40	− 2·84
	2522	α Canis Minoris	....	84 26	10·2	18·4	27·0	35·2	32 43·6	7 32 26·88	− 0·18	−13·33	−13·40	− 2·45
	2555	β Geminorum	....	61 39	57·0	6·2	15·9	25·1	37 34·5	7 37 15·74	− 0·09	−13·49	−13·40	− 2·76
Feb. 15	2485	(a) α² Geminorum	....	57 49	52·1	1·7	11·6	21·3	26 31·0	7 26 11·54	− 0·08	−13·53	−13·58	− 2·83
	2522	α Canis Minoris	....	84 26	10·3	18·8	27·4	35·5	32 43·6	7 32 27·12	− 0·18	−13·58	−13·58	− 2·44
	2555	β Geminorum	....	61 39	57·0	6·3	16·0	25·4	37 34·6	7 37 15·86	− 0·10	−13·60	−13·59	− 2·76
	2867	....	7·0	79 30	15·1	23·5	32·1	40·5	25 48·9	8 25 32·02	− 0·17	....	−13·60	− 2·60
	2971	ι Hydræ	....	83 6	34·0	42·2	50·9	59·0	40 7·3	8 39 50·68	− 0·17	−13·62	−13·60	− 2·58
	2988	....	7·0	34 34	43·5	58·0	12·9	27·3	43 42·0	8 43 12·74	+ 0·06	....	−13·61	− 3·81
	3055	α Cancri	5·0	77 38	2·3	10·8	19·3	27·9	51 36·1	8 51 19·28	− 0·16	....	−13·61	− 2·64
	3086	....	6·0	30 8	52·2	8·6	25·4	42·0	56 28·4	8 56 25·32	+ 0·11	....	−13·62	− 4·12
	3111	κ Cancri	5·5	78 49	22·3	30·4	39·4	47·4	0 56·0	9 0 39·10	− 0·17	....	−13·62	− 2·63
	3133	....	8·0	85 36	6·2	14·5	23·0	31·3	5 39·4	9 5 22·88	− 0·19	....	−13·62	− 2·60
	3157	....	7·5	29 40	47·4	4·0	21·2	37·7	10 54·4	9 10 20·94	+ 0·11	....	−13·62	− 4·12
	3331	ι Leonis	....	65 37	6·0	15·0	24·2	33·2	38 42·2	9 38 24·12	− 0·12	−13·66	−13·63	− 2·74

(a) Very boisterous S.W. wind.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1864.
1864.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Feb. 16	2410	(a) δ Geminorum	....	67 46	58·8	7·4	16·5	25·6	12 34·4	7 12 16·54	− 0·12	−13·90	−13·81	− 2·59
	2485	α² Geminorum	....	57 49	52·3	2·0	12·0	21·7	26 31·3	7 26 11·86	− 0·08	−13·86	−13·81	− 2·52
	2522	α Canis Minoris	....	84 26	10·5	18·8	27·3	35·5	32 44·0	7 32 27·22	− 0·19	−13·68	−13·81	− 2·43
	2555	β Geminorum	....	61 39	57·1	6·5	16·1	25·5	37 35·0	7 37 16·04	− 0·10	−13·79	−13·81	− 2·75
	2683	....	6·5	70 48	52·5	1·3	10·1	18·9	57 27·8	7 57 10·12	− 0·14	....	−13·81	− 2·65
	3331	ε Leonis	....	65 37	6·0	15·1	24·4	33·3	38 42·4	9 38 24·24	− 0·11	−13·78	−13·81	− 2·75
	3371	μ Leonis	....	63 21	59·5	8·8	18·1	27·3	45 36·6	9 45 18·06	− 0·11	....	−13·81	− 2·77
	3380	....	6·0	83 26	34·4	42·6	51·0	59·3	47 7·5	9 46 50·96	− 0·18	....	−13·81	− 2·61
	3415	π Leonis	5·0	81 20	1·4	9·6	18·2	26·4	53 34·8	9 53 18·08	− 0·17	−13·85	−13·81	− 2·40
	3459	α Leonis	....	77 23	7·2	15·5	24·4	32·8	1 41·0	10 1 24·18	− 0·16	−13·81	−13·81	− 2·42
	3484	....	....	57 56	18·5	28·2	38·1	48·0	6 57·8	10 6 38·12	− 0·08	....	−13·81	− 2·41
	3523	γ¹ Leonis	....	69 30	27·2	35·9	44·9	53·8	13 2·5	10 12 44·86	− 0·13	....	−13·81	− 2·45
Feb. 17	3331	ε Leonis	....	65 37	6·0	15·1	24·4	33·3	38 42·3	9 38 24·22	− 0·12	−13·75	−13·74	− 2·75
	3415	π Leonis	....	81 20	1·2	9·6	18·2	26·4	53 34·7	9 53 18·02	− 0·17	−13·78	−13·74	− 2·61
	3459	α Leonis	....	77 23	7·0	15·6	24·2	32·6	1 41·0	10 1 24·08	− 0·16	−13·70	−13·74	− 2·63
	3523	γ¹ Leonis	....	69 30	27·0	35·8	45·0	53·5	13 2·4	10 12 44·74	− 0·13	....	−13·74	− 2·66
Feb. 18	648	α Arietis	....	67 9	27·5	36·3	45·8	54·5	0 3·4	1 59 45·50	− 0·13	−13·69	−13·65	− 0·94
	2410	(b) δ Geminorum	....	67 46	58·2	7·3	16·6	25·5	12 34·0	7 12 16·32	− 0·13	−13·68	−13·65	− 3·56
	2485	α² Geminorum	....	57 49	52·3	2·0	11·9	21·5	26 31·3	7 26 11·80	− 0·08	−13·81	−13·65	− 2·41
	2522	α Canis Minoris	....	84 26	10·5	18·8	27·2	35·4	32 43·7	7 32 27·12	− 0·20	−13·58	−13·65	− 2·42
	2555	β Geminorum	....	61 39	57·2	6·2	16·0	25·4	37 34·2	7 37 15·80	− 0·11	−13·56	−13·65	− 2·71
	2971	ε Hydræ	....	83 6	34·0	42·2	50·8	59·1	40 7·3	8 39 50·68	− 0·19	−13·60	−13·65	− 2·55
	3331	ε Leonis	....	65 37	6·0	15·0	24·5	33·1	38 42·3	9 38 24·18	− 0·11	−13·69	−13·65	− 2·76
	3415	π Leonis	....	81 20	1·0	9·3	17·9	26·3	53 34·8	9 53 17·86	− [illegible]	−13·60	−13·65	− 2·42
	3459	α Leonis	....	77 23	7·1	15·4	24·2	32·5	1 40·9	10 1 24·02	− 0·16	−13·64	−13·65	− 2·41
Feb. 19	2971	ε Hydræ	....	83 6	33·9	42·1	50·6	59·0	40 7·2	8 39 50·56	− 0·20	−13·47	−13·44	− 2·55
	3004	....	7·0	23 10	37·0	57·5	18·5	38·5	45 58·9	8 45 18·08	+ 0·21	....	−13·44	− 4·61
	3048	ι Ursæ Majoris	....	41 27	45·0	57·4	10·0	22·3	50 35·0	8 50 9·94	− 0·00	....	−13·44	− 3·40
	3086	....	7·0	30 8	52·5	8·7	25·6	42·0	56 58·5	8 56 25·46	+ 0·12	....	−13·44	− 4·11
	3111	κ Cancri	6·0	78 49	22·2	30·4	39·1	47·4	0 56·0	9 0 39·02	− 0·18	....	−13·44	− 2·63
	3133	....	7·0	85 36	6·1	14·4	22·9	31·1	5 39·3	9 5 22·76	− 0·21	....	−13·44	− 2·60
	3171	83 Cancri	6·0	71 44	22·0	30·8	39·6	48·4	11 57·0	9 11 39·56	− 0·16	−13·50	−13·44	− 2·70
	3223	α Hydræ	....	98 5	53·8	2·0	10·4	18·8	21 27·0	9 21 10·40	− 0·27	−13·30	−13·44	− 2·60
	3242	θ Ursæ Majoris	....	37 43	34·4	47·9	1·7	15·2	24 28·8	9 24 1·60	+ 0·03	....	−13·44	− 3·51
	3331	ε Leonis	....	65 37	5·6	14·9	24·0	33·0	38 42·1	9 38 23·90	− 0·14	−13·40	−13·44	− 2·76
	3371	μ Leonis	4·0	63 23	59·4	8·4	18·0	27·2	45 36·4	9 45 17·88	− 0·12	....	−13·44	− 2·78
	3415	π Leonis	....	81 20	0·9	9·2	17·8	26·2	53 34·4	9 53 17·70	− 0·19	−13·43	−13·44	− 2·43
	3430	....	8·0	81 9	5·2	13·5	22·0	30·4	56 38·5	9 56 21·92	− 0·19	....	−13·44	− 2·43
	3438	....	8·0	84 22	41·1	49·3	57·8	6·0	58 14·2	9 57 57·68	− 0·21	....	−13·44	− 2·42
	3459	α Leonis	....	77 23	7·0	15·4	24·0	32·5	1 40·9	10 1 23·96	− 0·17	−13·56	−13·44	− 2·44
	3609	ρ Leonis	....	80 1	38·2	46·5	55·3	3·5	26 11·9	10 25 55·08	− 0·19	−13·39	−13·44	− 2·41
Feb. 23	1376	ε Tauri	....	71 6	38·4	47·0	56·1	4·7	21 13·2	4 20 55·88	− 0·17	−13·37	−13·[illegible]	− 1·66
	1420	α Tauri	....	73 45	5·1	13·4	22·4	31·1	28 39·5	4 28 22·30	− 0·18	−13·29	−13·30	− 1·66
	2672	6 Cancri	....	61 50	7·0	16·4	26·0	35·4	55 44·4	7 55 25·84	− 0·13	−13·[illegible]	−13·[illegible]	− 2·74
	2867	....	6·0	79 30	14·9	23·3	32·0	40·2	25 48·5	8 25 31·78	− 0·21	....	−13·29	− 2·57
	2971	ε Hydræ	....	83 6	33·8	42·0	50·6	58·9	40 7·1	8 39 50·48	− 0·22	−13·38	−13·29	− 2·43
	3055	α Cancri	4·0	77 38	2·0	10·3	19·1	27·4	51 36·0	8 51 18·96	− 0·20	....	−13·29	− 2·63

(a) Faint. (b) Definition very bad all night.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1864.
1864.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
	3093	....	6·0	64 53	52·2	1·2	10·9	19·9	57 29·0	8 57 10·64	− 0·15	....	−13·29	− 2·78
	3111	κ Cancri	5·0	78 49	22·0	30·2	39·0	47·3	0 55·8	9 0 38·66	− 0·21	....	−13·29	− 2·63
	3312	ο Leonis	4·0	79 31	52·6	1·0	9·5	18·0	34 26·2	9 34 9·46	− 0·21	....	−13·29	− 2·65
	3331	ε Leonis	....	65 37	5·4	14·5	23·9	32·9	38 42·0	9 38 23·74	− 0·16	−13·21	−13·28	− 2·77
	3371	μ Leonis	3·5	63 23	59·0	8·3	17·9	27·0	45 36·1	9 45 17·66	− 0·14	....	−13·28	− 2·80
	3380	....	6·0	83 26	33·8	42·1	50·8	58·9	47 7·0	9 46 50·52	− 0·22	....	−13·28	− 2·64
	3415	π Leonis	....	81 20	0·8	9·1	17·7	26·0	53 34·2	9 53 17·56	− 0·21	−13·25	−13·27	− 2·64
	3430	....	8·0	81 9	5·0	13·2	21·9	30·2	56 38·4	9 56 21·74	− 0·21	....	−13·27	− 2·64
	3438	....	7·0	84 22	41·0	49·1	57·7	5·8	58 14·1	9 57 57·54	− 0·22	....	−13·27	− 2·64
	3459	α Leonis	....	77 23	6·8	15·1	23·9	32·1	1 40·6	10 1 23·70	− 0·19	−13·26	−13·27	− 2·66
	3484	....	7·5	57 56	18·0	27·8	37·9	47·4	6 57·3	10 6 37·68	− 0·11	....	−13·26	− 2·85
	3529	....	7·0	82 55	24·7	33·0	41·3	49·6	13 58·0	10 13 41·32	− 0·22	....	−13·26	− 2·64
	3592	....	6·0	87 50	43·0	50·9	59·6	7·8	23 16·2	10 22 59·50	− 0·24	....	−13·26	− 2·63
	3609	ζ Leonis	....	80 1	38·2	46·4	55·0	3·4	26 11·7	10 25 54·94	− 0·21	−13·21	−13·26	− 2·63
	3667	34 Sextantis	6·0	85 44	35·4	44·0	52·4	0·7	36 8·9	10 35 52·28	− 0·23	....	−13·26	− 2·62
	3708	l Leonis	5·0	78 46	5·8	14·0	22·6	31·0	42 39·6	10 42 22·60	− 0·21	....	−13·26	− 2·62
	3726	....	6·0	88 17	14·1	22·2	30·9	39·0	45 47·1	10 45 30·66	− 0·24	....	−13·26	− 2·62
	3768	d Leonis	5·5	85 41	31·8	39·9	48·4	56·6	54 4·9	10 53 48·32	− 0·23	....	−13·26	− 2·60
	3780	....	6·0	81 43	36·5	44·8	53·2	1·6	57 9·8	10 56 53·18	− 0·22	....	−13·25	− 2·60
	3788	....	....	81 57	59·4	7·8	16·2	24·4	58 32·6	10 58 16·12	− 0·22	−13·32	−13·25	− 2·58
Feb. 24	3171	83 Cancri	....	71 44	22·0	30·6	39·5	48·2	11 56·7	9 11 39·40	− 0·19	−13·32	−13·26	− 2·69
	3223	α Hydræ	....	98 5	53·6	2·0	10·3	18·5	21 27·0	9 21 10·28	− 0·29	−13·17	−13·26	− 2·59
	3312	ο Leonis	4·0	79 31	52·6	1·0	9·4	18·0	34 26·2	9 34 9·44	− 0·22	....	−13·26	− 2·65
	3331	ε Leonis	....	65 37	5·5	14·5	23·9	32·9	38 42·0	9 38 23·78	− 0·16	−13·25	−13·26	− 2·77
	3371	μ Leonis	4·0	63 23	59·0	8·3	17·9	26·9	45 36·0	9 45 17·62	− 0·14	....	−13·26	− 2·80
	3380	....	6·0	83 26	33·6	42·0	50·5	58·9	47 7·1	9 46 50·42	− 0·23	....	−13·26	− 2·64
	3418	....	8·0	80 25	47·7	56·0	4·5	12·9	54 21·1	9 54 4·44	− 0·22	....	−13·26	− 2·65
	3427	....	8·0	56 43	59·1	8·7	19·1	29·0	56 38·9	9 56 18·96	− 0·11	....	−13·26	− 2·89
	3438	....	7·0	84 22	40·7	49·1	57·5	5·5	58 14·0	9 57 57·36	− 0·23	....	−13·26	− 2·64
	3459	α Leonis	....	77 23	6·6	15·1	23·8	32·2	1 40·6	10 1 23·66	− 0·20	−13·21	−13·26	− 2·66
	3484	....	7·5	57 56	17·9	27·9	37·6	47·5	6 57·2	10 6 37·62	− 0·11	....	−13·26	− 2·85
	3523	γ^1 Leonis	....	69 30	26·6	35·4	44·2	53·1	13 2·1	10 12 44·28	− 0·16	....	−13·26	− 2·71
	3662	....	8·0	78 35	30·4	38·6	47·4	55·7	35 4·0	10 34 47·22	− 0·22	....	−13·26	− 2·64
	3708	l Leonis	....	78 46	5·6	14·0	22·6	31·0	42 39·4	10 42 22·52	− 0·22	−13·31	−13·26	− 2·63
	3788	χ Leonis	....	81 57	59·4	7·5	16·4	24·4	58 32·8	10 58 16·10	− 0·22	−13·29	−13·26	− 2·59
Feb. 25	3171	83 Cancri	....	71 44	22·0	30·6	39·4	48·2	11 57·0	9 11 39·44	− 0·19	−13·36	−13·25	− 2·69
	3223	α Hydræ	....	98 5	53·5	1·9	10·4	18·7	21 27·0	9 21 10·30	− 0·29	−13·19	−13·25	− 2·59
	3331	ε Leonis	....	65 37	5·7	14·6	24·0	33·0	38 42·0	9 38 23·86	− 0·16	−13·33	−13·25	− 2·77
	3375	....	8·0	54 24	25·9	36·1	46·6	56·6	46 6·8	9 45 46·40	− 0·10	....	−13·25	− 2·95
	3418	....	8·0	80 25	47·5	56·0	4·6	13·0	54 21·2	9 54 4·46	− 0·22	....	−13·25	− 2·66
	3427	....	8·0	56 43	59·2	9·0	19·0	29·0	56 38·9	9 56 19·02	− 0·11	....	−13·25	− 2·89
	3439	....	7·0	54 22	43·8	53·7	4·2	14·4	58 24·4	9 58 4·10	− 0·10	....	−13·25	− 2·93
	3459	α Leonis	....	77 23	6·6	15·1	23·8	32·0	1 40·6	10 1 23·62	− 0·20	−13·17	−13·25	− 2·66
	3529	....	7·0	82 55	24·6	32·8	41·2	49·4	13 57·9	10 13 41·18	− 0·23	....	−13·25	− 2·64
	3592	....	6·0	87 50	43·0	51·2	59·5	7·8	23 16·0	10 22 59·50	− 0·25	....	−13·25	− 2·64
	3609	ζ Leonis	....	80 1	38·1	46·4	55·2	3·4	26 11·8	10 25 54·94	− 0·22	−13·22	−13·25	− 2·65
	3662	....	8·0	78 35	30·5	38·8	47·4	55·7	35 4·0	10 34 47·28	− 0·22	....	−13·25	− 2·64
	3708	l Leonis	....	78 46	5·7	14·0	22·6	31·0	42 39·4	10 42 22·54	− 0·22	−13·32	−13·25	− 2·64
	3726	....	6·0	88 17	13·9	22·4	30·9	39·0	45 47·1	10 45 30·66	− 0·25	....	−13·25	− 2·63

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1864.
1864.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Feb. 25	3768	d Leonis	4·0	85 41	31·6	40·0	48·4	56·5	54 4·9	10 53 48·28	− 0·24	....	−13·25	− 2·42
	3780	....	7·0	81 43	36·4	44·7	53·3	1·5	57 9·8	10 56 53·14	− 0·22	....	−13·25	− 2·41
	3788	χ Leonis	....	81 57	59·4	7·4	16·0	24·4	58 33·0	10 58 16·04	− 0·22	−13·22	−13·25	− 2·60
	3834	δ Leonis	....	68 45	50·6	59·4	8·3	17·2	7 26·0	11 7 8·30	− 0·16	−13·21	−13·25	− 2·62
Feb. 26	648	α Arietis	....	67 9	27·1	36·0	45·3	54·2	0 3·0	1 59 45·12	− 0·17	−13·38	−13·25	− 0·83
	2971	ι Hydræ	....	83 6	33·5	41·9	50·4	58·5	40 7·0	8 39 50·26	− 0·25	−13·17	−13·25	− 2·55
	3004	....	7·5	23 59	37·0	57·5	18·1	38·4	45 58·8	8 45 17·96	+ 0·20	....	−13·25	− 4·72
	3048	ι Ursæ Majoris	3·0	41 27	44·6	57·0	9·9	22·2	50 34·6	8 50 9·46	− 0·01	....	−13·25	− 3·35
	3086	....	7·0	30 8	52·1	8·6	25·4	41·9	56 58·2	8 56 25·24	+ 0·10	....	−13·25	− 4·06
	3788	χ Leonis	....	81 57	59·4	7·4	16·2	24·5	58 32·9	10 58 16·08	− 0·22	−13·25	−13·25	− 2·61
	3834	δ Leonis	....	68 45	50·6	59·4	8·4	17·2	7 26·1	10 7 8·34	− 0·16	−13·24	−13·25	− 2·63
Mar. 8	2672	(a) 6 Cancri	....	61 50	9·1	18·5	28·1	37·4	55 47·0	7 55 28·02	− 0·17	−15·64	−15·55	− 2·37
	2683	....	....	70 46	54·4	3·0	11·8	20·4	57 29·2	7 57 11·76	− 0·20	....	−15·55	− 2·45
	2971	ι Hydræ	....	83 6	35·9	44·1	52·6	1·0	40 9·2	8 39 52·56	− 0·25	−15·53	−15·55	− 2·47
	3055	α Cancri	....	77 38	4·0	12·5	21·2	29·6	51 38·0	8 51 21·06	− 0·21	....	−15·55	− 2·34
	3093	....	....	64 53	54·7	3·5	13·0	22·0	57 31·2	8 57 12·88	− 0·18	....	−15·55	− 2·45
	3171	83 Cancri	....	71 44	24·4	32·9	41·8	50·4	11 59·2	9 11 41·74	− 0·21	−15·69	−15·55	− 2·64
	3331	ι Leonis	....	65 37	7·7	17·0	26·2	35·1	38 44·2	9 38 26·04	− 0·19	−15·51	−15·55	− 2·74
	3415	π Leonis	....	81 20	3·1	11·4	20·0	28·2	53 36·4	9 53 19·82	− 0·25	−15·47	−15·55	− 2·44
	3459	α Leonis	....	77 23	9·0	17·4	26·0	34·4	1 42·9	10 1 25·94	− 0·23	−15·45	−15·55	− 2·47
	3834	δ Leonis	....	68 45	53·0	1·8	11·0	19·5	7 28·7	11 7 10·80	− 0·20	−15·58	−15·55	− 2·70
Mar. 9	3171	(b) 83 Cancri	....	71 44	24·4	33·0	42·0	50·6	11 59·3	9 11 41·86	− 0·25	−15·80	−15·71	− 2·43
	3331	ι Leonis	....	65 37	8·0	17·2	26·4	35·4	38 44·4	9 38 26·28	− 0·21	−15·73	−15·71	− 2·74
	3375	....	6·5	54 24	28·4	38·5	49·0	59·0	46 9·2	9 45 11·82	− 0·14	....	−15·71	− 2·48
	3418	....	7·5	80 25	50·2	58·5	7·0	15·4	54 23·9	9 54 7·00	− 0·27	....	−15·71	− 2·61
	3427	....	7·0	56 43	1·6	11·5	21·8	31·4	56 41·2	9 56 21·50	− 0·15	....	−15·71	− 2·63
	3439	....	7·0	54 22	46·0	56·2	6·4	16·9	58 27·[illegible]	9 58 6·50	− 0·14	....	−15·71	− 2·92
	3459	α Leonis	....	77 23	9·2	17·4	26·2	34·6	1 43·0	10 1 26·08	− 0·26	−15·57	−15·71	− 2·65
	3529	....	7·0	82 55	27·0	35·2	44·0	52·1	14 0·4	10 13 43·74	− 0·28	....	−15·71	− 2·66
	3592	....	6·0	87 50	45·2	53·8	2·0	10·3	23 18·5	10 23 1·92	− 0·29	....	−15·71	− 2·66
	3609	ρ Leonis	....	80 1	40·6	49·2	57·5	6·0	26 14·4	10 26 57·54	− 0·27	−15·70	−15·71	− 2·68
	3662	....	8·0	78 35	32·9	41·2	49·9	58·2	35 6·4	10 34 49·72	− 0·26	....	−15·71	− 2·69
	3726	....	6·0	88 17	16·5	24·9	33·2	41·4	45 49·7	10 45 33·14	− 0·29	....	−15·71	− 2·69
	3768	d Leonis	5·0	85 41	34·3	42·4	51·0	59·2	54 7·4	10 53 50·86	− 0·28	....	−15·71	− 2·68
	3780	....	8·0	81 43	39·0	47·3	55·9	4·1	57 12·4	10 56 55·74	− 0·27	....	−15·71	− 2·66
	3788	χ Leonis	....	81 57	2·1	10·4	18·9	27·1	58 35·4	10 58 18·78	− 0·27	−15·84	−15·71	− 2·67
	3836	....	7·0	87 2	56·1	4·4	13·0	21·1	7 29·4	11 7 12·80	− 0·29	....	−15·71	− 2·63
	3900	τ Leonis	5·5	86 26	58·5	6·8	15·4	23·5	21 31·9	11 21 15·22	− 0·28	....	−15·71	− 2·49
	3946	υ Leonis	....	90 6	1·2	9·4	18·0	26·1	30 34·2	11 30 17·78	− 0·31	−15·66	−15·71	− 2·74
	3995	β Leonis	....	74 42	8·5	17·1	26·0	34·4	42 43·0	11 42 25·80	− 0·24	−15·67	−15·71	− 2·45
Mar. 10	3415	π Leonis	....	81 20	3·8	12·0	20·6	28·8	53 37·0	9 53 20·44	− 0·27	−16·08	−16·11	− 2·43
	3459	α Leonis	....	77 23	9·7	18·0	26·9	35·0	1 43·6	10 1 26·64	− 0·26	−16·13	−16·12	− 2·66
	3523	γ¹ Leonis	....	69 30	29·6	38·4	47·4	56·1	13 5·0	10 12 47·30	− 0·23	....	−16·12	− 2·73
	3609	ρ Leonis	....	80 1	41·0	49·6	58·0	6·4	26 14·7	10 25 57·94	− 0·27	−16·10	−16·13	− 2·66
	3834	δ Leonis	....	68 45	53·8	2·5	11·5	20·2	7 29·0	11 7 11·40	− 0·22	−16·16	−16·14	− 2·71

(a) Definition bad.

(b) An apparent inversion of the clock-rate during the time of observation.

Date.	No. in British Association Catalogue.	OBJECT OBSERVED.	Magnitude observed.	North Polar Distance set to.	Wires observed.					Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock		Correction to Mean R.A. Jan. 1, 1864.
					I.	II.	III.	IV.	V.			observed.	interpolated.	
1864.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Mar. 11	3609	ρ Leonis	....	80 1	41·5	49·9	58·4	6·6	26 15·1	10 25 58·30	− 0·27	− 16·46	− 16·51	− 2·68
	3667	34 Sextantis	6·0	85 44	39·0	47·2	55·6	4·0	36 12·1	10 35 55·58	− 0·29	....	− 16·51	− 2·68
	3708	l Leonis	....	78 46	9·1	17·4	26·0	34·3	42 42·8	10 42 25·92	− 0·27	− 16·59	− 16·52	− 2·69
	3788	χ Leonis	....	81 57	2·9	11·1	19·5	27·8	58 36·2	10 58 19·50	− 0·28	− 16·54	− 16·53	− 2·68
	3821	....	6·0	21 0	2·3	25·2	48·9	11·7	4 34·6	11 3 48·54	− 0·21	....	− 16·54	− 4·49
	3834	δ Leonis	....	68 45	54·1	2·8	12·0	20·6	7 29·5	11 7 11·80	− 0·22	− 16·55	− 16·54	− 2·72
	3869	....	6·5	71 51	24·0	32·4	41·4	50·1	15 58·7	11 15 41·32	− 0·23	....	− 16·55	− 2·70
	3900	τ Leonis	5·0	86 26	59·4	7·8	16·3	24·4	21 32·7	11 21 16·12	− 0·29	....	− 16·55	− 2·70
	3946	υ Leonis	....	90 6	2·1	10·3	18·9	27·0	30 35·2	11 30 18·70	− 0·31	− 16·57	− 16·56	− 2·71
	3995	β Leonis	....	74 42	9·5	18·0	26·8	35·3	42 43·9	11 42 26·70	− 0·24	− 16·55	− 16·57	− 2·67
	4005	....	6·0	77 0	59·1	7·4	16·2	24·4	44 33·0	11 44 16·02	− 0·26	....	− 16·57	− 2·67
	4052	π Virginis	5·0	82 40	57·0	5·2	13·8	22·2	54 30·2	11 54 13·68	− 0·28	....	− 16·57	− 2·66
Mar. 12	3331	ι Leonis	....	65 37	9·0	18·0	27·2	36·2	38 45·2	9 38 27·12	− 0·21	− 16·59	− 16·60	− 2·72
	3415	σ Leonis	....	81 20	4·1	12·6	21·1	29·3	53 37·6	9 53 20·94	− 0·28	− 16·58	− 16·61	− 2·62
	3459	α Leonis	....	77 23	10·2	18·5	27·3	35·6	1 44·0	10 1 27·12	− 0·26	− 16·62	− 16·61	− 2·65
	3523	γ^1 Leonis	....	69 30	30·0	39·0	47·9	56·7	13 5·4	10 12 47·80	− 0·23	....	− 16·62	− 2·72
	3609	ρ Leonis	....	80 1	41·7	50·0	58·7	7·0	26 15·2	10 25 58·52	− 0·28	− 16·67	− 16·62	− 2·63
Mar. 15	3609	ρ Leonis	....	80 1	42·4	51·0	59·1	7·9	26 16·0	10 25 59·34	− 0·27	− 17·51	− 17·61	− 2·67
	3667	34 Sextantis	6·0	85 44	40·0	48·2	56·6	4·9	36 13·1	10 35 56·56	− 0·31	....	− 17·61	− 2·67
	3708	l Leonis	....	78 46	10·0	18·4	27·1	35·5	42 44·0	10 42 27·00	− 0·27	− 17·66	− 17·61	− 2·68
	3780	....	7·0	81 43	41·0	49·4	57·8	6·0	57 14·2	10 56 57·68	− 0·29	....	− 17·62	− 2·70
	3821	....	6·5	21 0	3·4	26·0	49·9	12·8	4 35·8	11 3 49·58	+ 0·19	....	− 17·62	− 4·47
	3834	δ Leonis	....	68 45	55·1	3·9	13·0	21·6	7 30·5	11 7 12·82	− 0·23	− 17·56	− 17·62	− 2·72
	3869	....	7·0	71 51	25·0	33·5	42·4	51·2	15 59·5	11 15 42·32	− 0·24	....	− 17·63	− 2·71
	3900	τ Leonis	....	86 26	0·6	8·9	17·3	25·5	21 33·8	11 21 17·22	− 0·31	....	− 17·63	− 2·71
	3946	υ Leonis	....	90 6	3·1	11·4	20·0	28·1	30 36·3	11 30 19·76	− 0·32	− 17·63	− 17·63	− 2·72
	3995	β Leonis	....	74 42	10·8	19·1	26·0	36·4	42 45·0	11 42 27·86	− 0·25	− 17·68	− 17·63	− 2·69
	4052	π Virginis	6·0	82 40	58·0	6·4	15·0	23·2	54 31·6	11 54 14·84	− 0·30	....	− 17·64	− 2·69
	4145	η Virginis	....	89 56	1·0	9·2	17·8	26·0	13 34·1	12 13 17·62	− 0·32	− 17·70	− 17·64	− 2·70
Mar. 17	3375	....	7·0	54 21	30·7	40·9	51·2	1·1	46 11·1	9 45 51·06	− 0·17	....	− 17·87	− 2·86
	3415	σ Leonis	....	81 20	5·4	13·5	22·3	30·6	53 39·0	9 53 22·16	− 0·30	− 17·81	− 17·88	− 2·59
	3430	....	8·0	91 9	9·8	18·0	26·6	35·0	56 43·3	9 56 26·54	− 0·30	....	− 17·88	− 2·60
	3439	....	7·0	54 22	48·1	58·3	8·4	18·9	58 29·1	9 58 8·56	− 0·17	....	− 17·88	− 2·67
	3459	α Leonis	....	77 23	11·4	19·6	28·5	36·9	1 45·3	10 1 28·34	− 0·28	− 17·85	− 17·89	− 2·62
	3528	....	5·0	6 47	17·0	28·0	39·5	49·0	16 59·0	10 14 38·50	+ 1·31	....	− 17·89	− 11·14
	3609	ρ Leonis	....	80 1	43·0	51·2	59·9	8·1	26 16·6	10 25 59·76	− 0·29	− 17·92	− 17·89	− 2·66
	3788	χ Leonis	....	81 57	4·1	12·4	21·0	29·4	58 37·5	10 58 20·86	− 0·30	− 17·90	− 17·90	− 2·68
	3821	....	6·0	21 0	3·6	26·7	50·2	13·0	4 35·8	11 3 49·86	+ 0·20	....	− 17·90	− 4·46
	3836	....	7·5	87 2	58·4	6·7	15·1	23·3	7 31·5	11 7 15·00	− 0·32	....	− 17·90	− 2·71
	3869	....	8·0	71 51	25·2	33·8	42·9	51·5	16 0·0	11 15 42·68	− 0·26	....	− 17·90	− 2·72
	3946	υ Leonis	....	90 6	3·5	11·8	20·3	28·4	30 36·7	11 30 20·14	− 0·33	− 17·97	− 17·91	− 2·73
	3996	....	7·0	84 5	13·0	21·4	30·0	38·1	42 46·4	11 42 29·78	− 0·31	....	− 17·91	− 2·71
	4005	....	7·0	77 0	0·3	8·9	17·4	26·0	44 34·3	11 44 17·38	− 0·28	....	− 17·91	− 2·70
	4052	π Virginis	5·0	82 40	58·5	6·7	15·3	23·6	54 31·8	11 54 15·18	− 0·31	....	− 17·92	− 2·71
	4153	....	6·0	62 39	32·0	41·0	50·3	59·5	14 8·7	12 13 50·30	− 0·22	....	− 17·92	− 2·69
	4205	....	7·0	63 3	52·7	2·0	11·4	20·5	22 30·0	12 22 11·32	− 0·22	....	− 17·93	− 2·67

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1864.
1864.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Mar. 18	3331	ι Leonis	....	65 37	10.4	19.1	28.7	37.8	38 46.0	9 38 28.64	− 0.24	− 18.13	− 18.15	− 2.47
	3439	....	7.0	51 22	48.8	58.6	9.1	19.2	58 29.1	9 58 9.02	− 0.16	....	− 18.16	− 2.86
	3459	α Leonis	....	77 23	11.8	20.0	28.6	37.0	1 45.4	10 1 28.56	− 0.29	− 18.06	− 18.16	− 2.62
	3528	....	5.5	6 17	17.5	28.0	40.0	49.2	17 0.0	10 14 39.94	+ 1.35	....	− 18.16	− 11.06
	3609	ρ Leonis	....	80 1	43.1	51.6	0.1	8.4	26 16.8	10 26 0.00	− 0.30	− 18.15	− 18.17	− 2.66
	3821	....	6.0	21 0	4.0	26.8	50.3	13.4	4 36.0	11 3 50.10	+ 0.21	....	− 18.17	− 4.45
	3834	δ Leonis	....	68 45	55.8	4.4	13.6	22.5	7 31.2	11 7 13.50	− 0.25	− 18.21	− 18.18	− 2.73
	3946	ν Leonis	....	90 6	4.0	12.0	20.4	28.6	30 36.9	11 30 20.38	− 0.35	− 18.19	− 18.18	− 2.73
	3995	β Leonis	....	74 42	11.4	19.9	28.6	37.1	42 45.6	11 42 28.52	− 0.28	− 18.30	− 18.19	− 2.70
Mar. 23	3946	ν Leonis	....	90 6	5.2	13.4	21.9	30.0	30 38.2	11 30 21.74	− 0.36	− 19.53	− 19.53	− 2.74
	3995	β Leonis	....	74 42	12.6	21.1	30.0	38.4	42 46.9	11 42 29.50	− 0.29	− 19.56	− 19.54	− 2.71
	4010	....	....	51 19	9.5	19.9	30.8	41.1	45 51.7	11 45 30.60	− 0.18	....	− 19.54	− 2.86
	4111	(a)	6.5	11 50	25.7	5.9	47.5	27.3	7 7.8	12 5 46.84	+ 0.62	....	− 19.54	− 5.92
	4145	η Virginis	....	89 56	3.0	11.2	19.6	27.9	13 36.0	12 13 19.54	− 0.36	− 19.52	− 19.55	− 2.76
	4199	....	7.0	63 22	54.0	3.2	12.9	22.0	21 31.1	12 21 12.64	− 0.24	....	− 19.55	− 2.71
	4231	....	8.0	61 50	49.7	58.9	8.2	17.2	27 26.3	12 27 8.06	− 0.25	....	− 19.56	− 2.70
	4244	....	7.0	52 49	33.8	44.1	55.0	5.2	29 15.4	12 28 54.70	− 0.19	....	− 19.56	− 2.76
	4268	γ¹ Virginis	....	90 44	52.2	0.4	9.0	17.2	35 25.3	12 35 8.82	− 0.37	....	− 19.56	− 2.76
Mar. 24	3834	δ Leonis	....	68 45	57.4	6.1	15.3	24.0	7 32.0	11 7 15.14	− 0.28	− 19.83	− 19.84	− 2.72
	3946	ν Leonis	....	90 6	5.5	13.8	22.2	30.4	30 38.6	11 30 22.10	− 0.37	− 19.88	− 19.84	− 2.74
	3995	β Leonis	....	74 42	13.0	21.4	30.1	38.8	42 47.2	11 42 30.10	− 0.30	− 19.85	− 19.85	− 2.71
	4005	....	6.0	77 0	2.5	11.0	19.4	28.0	44 36.4	11 44 19.46	− 0.31	....	− 19.85	− 2.73
	4111	....	6.5	11 50	26.0	6.0	47.8	27.8	7 8.0	12 5 47.12	+ 0.62	....	− 19.86	− 5.9[illegible]
	4145	η Virginis	....	89 56	3.4	11.5	20.0	28.1	13 36.4	12 13 19.88	− 9.37	− 19.85	− 19.86	− 2.7[illegible]
	4231	....	....	64 50	50.0	59.0	8.4	17.4	27 26.5	12 27 8.26	− 0.25	....	− 19.86	− 2.71
Mar. 28	3788	χ Leonis	....	81 57	7.9	16.2	24.7	33.0	58 41.4	10 58 24.61	− 0.34	− 21.64	− 21.69	− 2.66
	3834	δ Leonis	....	68 45	59.0	8.0	17.1	26.9	7 34.7	11 7 17.11	− 0.28	− 21.84	− 21.70	− 2.71
	3946	ν Leonis	....	90 6	7.4	15.5	24.0	32.2	30 40.4	11 30 23.90	− 0.37	− 21.68	− 21.71	− 2.74
	3995	β Leonis	....	74 42	14.8	23.1	32.0	40.6	42 49.0	11 42 31.90	− 0.32	− 21.63	− 21.71	− 2.71
	4111	....	7.0	11 50	27.8	8.0	49.4	29.5	7 9.6	12 5 48.86	+ 0.60	....	− 21.72	− 5.9[illegible]
Mar. 30	4268	γ¹ Virginis	....	90 41	55.0	3.1	11.8	20.0	35 28.1	12 35 11.60	− 0.38	....	− 22.17	− 2.[illegible]
	4401	θ Virginis	....	94 50	3.5	11.6	20.3	28.4	3 36.4	13 3 20.04	− 0.40	− 22.18	− 22.18	− 2.[illegible]
	360	α Ursæ Minoris S. P.	....	1 25	.....	.....	18.0	2.5	20 37.0	13 [illegible] 22.04	− 8.36	....	− 22.18	+ 27.6[illegible]
	4480	α Virginis	....	100 28	10.6	18.9	27.4	35.7	18 44.1	13 18 27.34	− 0.43	− 22.13	− 22.16	− 2.[illegible]
	4532	ζ Virginis	....	89 55	51.8	3.0	11.3	19.5	26 27.8	13 26 11.28	− 0.37	− 22.22	− 22.19	− 2.7[illegible]
	4616	η Bootis	....	70 56	20.2	28.8	37.9	46.4	48 55.1	13 48 37.68	− 0.29	− 22.21	− 22.20	− 2.6[illegible]
	4672	τ Virginis	....	87 49	52.3	0.5	9.0	17.2	55 25.5	13 55 8.90	− 0.37	− 22.19	− 22.21	− 2.7[illegible]
Mar. 31	3459	α Leonis	....	77 23	16.0	24.4	33.0	41.4	1 50.0	10 1 32.96	− 0.32	− 22.54	− 22.62	− 2.[illegible]
	3788	χ Leonis	....	81 57	9.0	17.3	25.9	34.1	58 42.2	10 58 25.70	− 0.34	− 22.71	− 22.63	− 2.6[illegible]
	3834	δ Leonis	....	68 45	0.1	8.9	18.0	27.0	7 35.5	11 7 17.90	− 0.28	− 22.61	− 22.63	− 2.7[illegible]
	3946	ν Leonis	....	90 6	8.3	16.5	24.9	33.0	30 41.3	11 30 24.80	− 0.37	− 22.58	− 22.63	− 2.7[illegible]
	3996	....	6.0	84 5	18.0	26.2	34.7	43.0	42 51.2	11 42 34.62	− 0.35	....	− 22.64	− 2.7[illegible]
	4010	....	6.0	51 19	12.5	22.9	34.0	44.3	45 54.8	11 45 33.70	− 0.20	....	− 22.64	− 2.8[illegible]
	4111	....	6.0	11 50	28.6	9.0	50.5	30.5	7 10.4	12 5 49.60	− 0.60	....	− 22.65	− 5.9[illegible]
	4145	η Virginis	....	89 56	6.1	14.5	22.9	31.0	13 39.3	12 13 22.76	− 0.37	− 22.70	− 22.65	− 2.7[illegible]
	4199	....	7.0	63 22	57.3	6.5	16.0	25.1	21 34.3	12 21 15.84	− 0.26	....	− 22.65	− 2.71

(a) One of three stars in field. This agrees best with Tab. R. A. and N. P. D., but not Mag.

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Date.	No. in British Association Catalogue	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations	Correction of Clock observed.	interpolated.	Correction to Mean R.A., Jan. 1, 1864.
1864.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Mar. 31	360	α Ursæ Minoris S. P.	....	1 25	11·5	44·5	19·0	2·0	20 36·0	13 9 22·60	− 8·36	....	− 22·66	+ 27·13
	4532	ζ Virginis	....	89 55	55·1	3·4	12·0	20·0	28 28·2	13 28 11·74	− 0·37	− 22·67	− 22·66	− 2·79
April 1	3788	χ Leonis	....	81 57	9·4	17·9	26·2	34·5	58 42·9	10 58 26·18	− 0·43	− 23·11	− 23·09	− 2·64
	3834	δ Leonis	....	68 45	0·6	9·5	18·5	27·2	7 36·1	11 7 18·38	− 0·35	− 23·03	− 23·09	− 2·69
	3946	υ Leonis	....	90 6	8·9	17·0	25·5	33·8	30 42·0	11 30 25·44	− 0·47	− 23·12	− 23·09	− 2·74
	3996	....	6·0	84 5	18·4	26·8	35·1	43·3	42 51·8	11 42 35·08	− 0·44	....	− 23·09	− 2·73
	4010	....	6·0	51 19	13·0	23·5	34·2	45·0	45 55·3	11 45 34·20	− 0·21	....	− 23·09	− 2·85
	4145	η Virginis	....	89 56	6·8	15·0	23·2	31·4	13 39·9	12 13 23·26	− 0·47	− 23·10	− 23·09	− 2·79
	4231	....	7·5	61 50	53·0	2·5	11·9	20·9	27 30·0	12 27 11·66	− 0·33	....	− 23·09	− 2·74
	4244	....	7·0	52 49	37·7	48·0	58·4	8·9	29 19·2	12 28 58·44	− 0·25	....	− 23·09	− 2·80
	4340	δ Virginis	....	85 51	55·0	3·2	11·7	20·0	49 28·0	12 49 11·58	− 0·45	....	− 23·09	− 2·79
	4364	....	8·0	68 2	4·0	13·0	21·9	30·9	55 39·6	12 55 21·88	− 0·34	....	− 23·09	− 2·72
	4421	β Comæ	....	61 28	38·9	48·1	57·0	7·0	6 16·4	13 5 57·68	− 0·31	....	− 23·09	− 2·70
	360	α Ursæ Minoris S. P.	....	1 25	14·5	46·5	19·0	4·5	20 38·5	13 9 24·60	− 11·00	....	− 23·09	+ 27·17
	4457	....	....	54 11	54·8	4·0	15·2	25·4	13 35·5	13 13 15·16	− 0·26	....	− 23·09	− 2·71
	4503	....	....	85 27	30·4	38·7	47·2	55·4	23 3·7	13 22 47·08	− 0·45	....	− 23·09	− 2·77
	4513	....	7·0	65 5	33·3	42·2	51·4	0·5	25 9·8	13 24 51·44	− 0·33	....	− 23·10	− 2·67
	4526	....	6·0	64 58	29·2	38·4	47·8	57·0	27 6·0	13 26 47·68	− 0·33	....	− 23·10	− 2·67
	4532	ζ Virginis	....	89 55	55·8	4·0	12·2	20·5	28 28·8	13 28 12·26	− 0·47	− 23·08	− 23·10	− 2·80
April 10	3705	l Leonis	....	78 46	17·1	25·6	34·2	42·4	42 50·9	10 42 34·04	− 0·47	− 24·66	− 24·56	− 2·54
	3788	χ Leonis	....	81 57	11·0	19·3	27·8	36·0	58 44·3	10 58 27·68	− 0·49	− 24·60	− 24·57	− 2·59
	3834	δ Leonis	....	68 45	2·0	11·0	19·9	28·9	7 37·6	11 7 19·88	− 0·41	− 24·53	− 24·57	− 2·63
	3946	υ Leonis	....	90 6	10·4	18·5	27·0	35·1	30 43·4	11 30 26·88	− 0·53	− 24·53	− 24·57	− 2·71
	3995	(a) β Leonis	....	74 42	17·8	26·2	35·0	43·4	42 52·1	11 42 34·90	− 0·44	− 24·53	− 24·58	− 2·69
April 11	4268	γ^1 Virginis	....	90 44	58·0	6·1	14·4	22·8	35 31·0	12 35 14·46	− 0·56	....	− 24·98	− 2·84
	360	α Ursæ Minoris S. P.	....	1 25	19·0	52·0	26·5	7·5	20 42·0	13 9 29·40	− 12·49	....	− 24·99	+ 26·58
	4480	α Virginis	....	100 28	13·6	21·9	30·6	39·0	18 47·2	13 18 30·46	− 0·63	− 24·96	− 24·99	− 3·00
	4532	ζ Virginis	....	89 55	57·9	6·0	14·4	22·5	28 31·0	13 28 14·38	− 0·56	− 25·01	− 25·00	− 2·88
	4648	η Bootis	....	70 56	23·3	31·9	40·8	49·4	48 58·2	13 48 40·72	− 0·41	− 24·98	− 25·00	− 2·74
	4672	τ Virginis	....	87 49	55·4	3·5	12·1	20·2	55 28·4	13 55 11·92	− 0·54	− 24·91	− 25·00	− 2·86
	4729	α Bootis	....	70 8	38·1	46·6	55·8	4·5	10 13·2	14 9 55·64	− 0·43	− 24·97	− 25·01	− 2·68
April 13	4480	α Virginis	....	100 28	14·2	22·5	31·1	39·6	18 48·0	13 18 31·08	− 0·60	....	− 25·67	− 3·02
	4532	ζ Virginis	....	89 55	58·1	6·5	15·0	23·2	28 31·4	13 28 14·84	− 0·53	− 25·50	− 25·68	− 2·90
	4648	η Bootis	....	70 56	23·9	32·6	41·6	50·3	48 59·0	13 48 41·48	− 0·42	− 25·75	− 25·68	− 2·75
	4672	τ Virginis	....	87 49	56·1	4·3	12·9	21·0	55 29·2	13 55 12·70	− 0·52	− 25·70	− 25·68	− 2·87
	4729	α Bootis	....	70 8	38·9	47·5	56·4	5·2	10 14·1	14 9 56·42	− 0·41	− 25·75	− 25·69	− 2·70
April 19	3834	δ Leonis	....	68 45	5·8	14·3	23·4	32·1	7 41·0	11 7 23·32	− 0·39	− 28·07	− 28·10	− 2·55
	3946	υ Leonis	....	90 6	13·9	22·0	30·6	38·8	30 46·9	11 30 30·44	− 0·50	− 28·17	− 28·11	− 2·66
	3995	β Leonis	....	74 42	21·2	29·9	38·5	47·0	42 55·6	11 42 38·44	− 0·42	− 28·14	− 28·12	− 2·64
	4153	....	....	62 39	42·0	51·0	0·6	10·0	14 19·2	12 14 0·56	− 0·36	....	− 28·12	− 2·71
	4532	ζ Virginis	....	89 55	1·0	9·0	17·6	25·6	28 34·0	13 28 17·44	− 0·50	− 28·11	− 28·13	− 2·92
April 20	4532	ζ Virginis	....	89 55	1·4	9·6	18·0	26·2	28 34·1	13 28 17·92	− 0·49	− 28·59	− 28·60	− 2·93
	4648	η Bootis	....	70 56	27·0	35·4	44·6	53·0	49 1·9	13 48 44·38	− 0·39	− 28·63	− 28·61	− 2·60
	4672	τ Virginis	....	87 49	59·0	7·2	15·8	23·9	55 32·1	13 55 15·60	− 0·48	− 28·58	− 28·62	− 2·93
	4729	α Bootis	....	70 8	41·8	50·5	59·5	8·2	10 17·0	14 9 59·40	− 0·39	− 28·69	− 28·63	− 2·76

(a) The inequalities in the beats of the Clock were so great as to make observing very unsatisfactory.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1864.
1864.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
April 22	3836	(a)	....	87 2	10·1	18·2	26·9	35·0	7 43·3	11 7 26·70	− 0·44	....	−29·47	− 2·33
	3946	υ Leonis..................	....	90 6	15·1	23·4	31·9	40·0	30 48·2	11 30 31·72	− 0·45	−29·53	−29·48	− 2·43
	3995	β Leonis..................	....	74 42	22·3	31·0	39·7	48·3	42 56·8	11 42 39·62	− 0·37	−29·40	−29·48	− 2·41
	4010	....	....	51 19	19·0	30·0	40·6	50·8	46 1·8	11 45 40·44	− 0·26	....	−29·48	− 2·70
	4145	η Virginis................	....	89 56	13·0	21·2	29·9	38·0	13 46·1	12 13 29·64	− 0·45	−29·51	−29·49	− 2·75
	4199	....	....	63 22	4·0	13·4	22·8	32·0	21 41·0	12 21 22·64	− 0·32	....	−29·49	− 2·71
	4421	β Comæ....................	....	61 28	45·0	54·6	4·1	14·6	6 23·0	13 6 4·26	− 0·32	....	−29·50	− 2·76
	360	α Ursæ Minoris S. P....	....	1 25	......	56·5	31·0	11·0	20 46·0	13 9 33·13	− 9·03	....	−29·50	+21·45
	4532	ζ Virginis................	....	89 55	2·3	10·5	19·0	27·2	28 35·4	13 28 18·88	− 0·45	−29·59	−29·51	− 2·91
	4648	η Bootis..................	....	70 56	27·7	36·2	45·2	54·0	49 2·7	13 48 45·16	− 0·35	−29·44	−29·51	− 2·81
	4672	τ Virginis................	....	87 49	59·9	8·1	16·5	24·8	55 33·0	13 55 16·46	− 0·44	−29·47	−29·52	− 2·94
April 29	3331	ε Leonis..................	....	65 37	23·8	32·9	42·1	51·2	39 0·0	9 38 42·00	− 0·44	−31·86	−31·87	− 2·10
	3459	α Leonis..................	....	77 23	25·0	33·1	42·2	50·6	1 59·0	10 1 42·01	− 0·51	−31·79	−31·88	− 2·15
	4401	θ Virginis................	....	94 50	13·4	21·7	30·1	38·4	4 46·6	13 4 30·01	− 0·61	−31·86	−31·90	− 2·95
	360	α Ursæ Minoris S. P....	....	1 25	31·5	......	37·0	......	20 54·5	13 9 40·61	−11·48	....	−31·90	+21·45
	4457	....	7·0	54 11	3·5	13·5	24·0	34·1	13 44·3	13 13 23·88	− 0·35	....	−31·90	− 2·75
	4468	....	8·0	75 10	58·2	6·7	15·4	24·0	15 32·6	13 15 15·38	− 0·49	....	−31·90	− 2·80
	4513	(b)	....	65 5	42·0	51·2	0·4	9·8	25 18·9	13 25 0·46	− 0·44	....	−31·91	− 2·77
	4532	(c) ζ Virginis............	....	89 55	5·0	13·0	21·5	29·8	28 38·0	13 28 21·46	− 0·58	−32·02	−31·91	− 2·95
	4550	....	7·0	36 39	19·0	32·8	47·0	0·9	32 14·7	13 31 46·88	− 0·17	....	−31·91	− 2·91
	4575	....	6·0	66 39	36·8	45·7	55·0	3·9	38 12·9	13 37 54·86	− 0·45	....	−31·92	− 2·79
	4597	τ Bootis..................	5·0	71 54	5·9	14·3	23·3	31·9	41 40·5	13 41 23·18	− 0·47	....	−31·92	− 2·82
	4610	....	6·0	58 5	46·0	55·8	5·7	15·1	43 25·0	13 43 5·52	− 0·38	....	−31·92	− 2·73
	4627	....	7·5	54 35	19·0	29·0	39·6	49·5	45 59·8	13 45 39·38	− 0·36	....	−31·93	− 2·78
	4648	η Bootis..................	....	70 56	30·1	39·0	48·0	56·6	49 5·3	13 48 47·80	− 0·47	−31·94	−31·93	− 2·83
	4676	....	8·0	57 48	36·0	45·8	55·6	5·2	56 15·0	13 55 55·52	− 0·38	....	−31·93	− 2·73
	4729	α Bootis..................	....	70 8	45·2	53·8	3·0	11·5	10 20·2	14 10 2·74	− 0·46	−31·91	−31·94	− 2·80
May 3	4532	ζ Virginis................	....	89 55	7·2	15·4	23·8	32·0	28 40·3	13 28 23·74	− 0·60	−34·28	−34·23	− 2·95
	4648	η Bootis..................	....	70 56	32·4	41·2	50·2	58·8	49 7·5	13 48 50·02	− 0·49	−34·14	−34·24	− 2·83
	4672	τ Virginis................	....	87 49	4·9	13·1	21·5	29·8	55 37·9	13 55 21·44	− 0·59	−34·25	−34·25	− 2·99
	4729	α Bootis..................	....	70 8	47·5	56·2	5·1	14·0	10 22·6	14 10 5·08	− 0·48	−34·22	−34·26	− 2·82
	4808	ρ Bootis..................	....	59 3	16·3	26·0	35·8	45·4	26 55·0	14 26 35·70	− 0·41	−34·36	−34·27	− 2·80
May 7	4648	η Bootis..................	....	70 56	35·0	43·7	52·9	1·3	49 10·0	13 48 52·88	− 0·50	−36·69	−36·70	− 2·83
	4672	τ Virginis................	....	87 49	7·1	15·5	24·0	32·2	55 40·4	13 55 23·84	− 0·60	−36·64	−36·70	− 2·99
	4729	α Bootis..................	....	70 8	50·0	58·8	7·6	16·3	10 25·0	14 10 7·54	− 0·49	−36·67	−36·71	− 2·82
	4808	ρ Bootis..................	....	59 3	19·0	28·3	38·2	47·9	26 57·5	14 26 38·18	− 0·41	−36·83	−36·71	− 2·81
	4876	ι Bootis..................	....	62 22	24·1	33·4	43·0	52·2	40 1·5	14 39 42·84	− 0·44	−36·71	−36·72	− 2·81
May 9	4969	ψ Bootis..................	....	62 32	59·7	9·0	18·6	27·9	59 37·2	14 59 18·48	− 0·46	−38·06	−37·96	− 2·93
	5034	β Libræ...................	....	98 54	6·5	15·0	23·7	31·9	10 40·0	15 10 23·42	− 0·68	−37·99	−37·96	− 3·27
	5143	α Coronæ Borealis.......	....	62 50	18·4	27·4	37·1	46·2	29 55·8	15 29 36·98	− 0·46	−37·83	−37·97	− 2·85
	5196	α Serpentis...............	....	83 9	59·2	7·3	16·0	24·2	38 32·4	15 38 15·82	− 0·58	−37·97	−37·97	− 3·04
	5414	δ Ophiuchi................	....	93 21	38·5	46·3	55·0	3·5	8 11·9	16 7 55·04	− 0·64	−38·01	−37·96	− 3·17
May 10	4808	ρ Bootis..................	....	59 3	20·8	30·1	40·0	49·4	26 59·0	14 26 39·86	− 0·43	−38·48	−38·44	− 2·81
	4876	ι Bootis..................	....	62 22	26·0	35·0	44·9	54·0	40 3·1	14 39 44·60	− 0·46	−38·43	−38·45	− 2·84
	5143	α Coronæ Borealis.......	....	62 50	19·0	28·2	37·6	47·0	29 56·2	15 29 37·60	− 0·47	−38·43	−38·46	− 2·86
	5196	α Serpentis...............	....	83 9	59·7	8·0	16·3	24·7	38 33·0	15 38 16·34	− 0·59	−38·47	−38·46	− 3·05
	5414	δ Ophiuchi................	....	93 21	38·9	47·1	55·6	3·9	8 12·2	16 7 55·54	− 0·65	−38·49	−38·48	− 3·16

(a) Hazy. Bad definition.

(b) Two stars in field observed following. Difference R. A. 5 secs.

(c) Very faint.

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1864.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
May 16	360	α Ursæ Minoris S. P.	....	1 25	51·5	24·5	54·0	38·0	21 10·0	13 9 59·60	− 11·90	....	− 41·60	+ 12·43
	4457	....	....	54 11	13·0	23·3	33·8	44·0	13 54·0	13 13 33·62	− 0·41	....	− 41·60	− 2·65
	4532	ζ Virginis	....	89 55	14·5	22·7	31·2	39·3	28 47·5	13 28 31·04	− 0·65	− 41·55	− 41·61	− 2·93
	4550	....	....	36 39	28·7	42·5	56·6	10·2	32 24·1	13 31 56·42	− 0·23	....	− 41·61	− 2·73
	4575	....	....	66 39	46·5	55·1	4·6	13·5	38 22·7	13 38 4·54	− 0·52	....	− 41·61	− 2·76
	4597	....	....	71 54	15·5	24·1	33·0	41·5	41 50·2	13 41 32·86	− 0·53	....	− 41·61	− 2·80
	4621	....	....	70 43	4·3	13·0	22·0	30·6	44 39·3	13 44 21·84	− 0·53	....	− 41·62	− 2·80
	4632	....	....	54 54	12·0	22·0	32·3	42·4	46 52·5	13 46 32·21	− 0·42	....	− 41·62	− 2·73
	4618	η Bootis	....	70 56	40·0	48·5	57·5	6·3	49 15·1	13 48 57·46	− 0·53	− 41·57	− 41·62	− 2·82
	4676	....	....	57 48	45·7	55·3	5·4	15·0	56 24·8	13 56 5·24	− 0·44	....	− 41·62	− 2·76
	4716	κ Virginis	....	99 40	7·4	15·8	24·0	32·5	6 41·0	14 6 24·14	− 0·70	....	− 41·62	− 3·08
	4723	....	....	60 17	17·7	27·1	36·9	46·4	8 55·8	14 8 36·76	− 0·46	....	− 41·62	− 2·79
	4729	α Bootis	....	70 8	55·0	3·5	12·4	21·2	10 30·1	14 10 12·44	− 0·52	− 41·54	− 41·62	− 2·62
	4756	....	....	37 22	3·0	16·2	30·4	43·9	14 57·2	14 14 30·14	− 0·25	....	− 41·63	− 2·81
	4797	....	....	53 13	2·8	13·0	23·5	33·8	23 44·0	14 23 23·42	− 0·41	....	− 41·63	− 2·79
	4809	....	....	62 45	45·5	54·6	4·2	13·1	27 22·7	14 27 4·08	− 0·48	....	− 41·63	− 2·83
	4820	....	....	56 54	49·8	59·5	9·5	19·3	29 29·2	14 29 9·46	− 0·44	....	− 41·63	− 2·81
	4863	....	....	52 41	33·5	43·9	51·6	4·9	38 15·2	14 37 54·42	− 0·41	....	− 41·64	− 2·71
	4876	ι Bootis	....	62 22	29·0	38·4	48·0	57·2	40 6·5	14 39 47·82	− 0·48	− 41·62	− 41·64	− 2·85
	4969	υ Botois	....	62 32	3·4	12·8	22·4	31·4	59 40·8	14 59 22·16	− 0·48	− 41·69	− 41·64	− 2·86
	4992	....	....	31 57	39·5	53·9	8·7	22·9	3 37·4	15 3 8·48	− 0·21	....	− 41·65	− 2·88
	5034	β Libræ	....	98 54	10·5	18·7	27·3	35·6	10 44·0	15 10 27·22	− 0·69	− 41·73	− 41·65	− 3·32
	5071	....	....	37 36	23·0	36·4	50·1	3·8	17 17·2	15 16 50·10	− 0·25	....	− 41·66	− 2·86
May 17	360	α Ursæ Minoris S. P.	....	1 25	51·5	24·0	55·0	38·0	21 11·0	13 9 59·80	− 10·95	....	− 42·12	+ 11·79
	4457	....	....	54 11	13·5	23·9	34·2	44·3	13 54·4	13 13 34·06	− 0·40	....	− 42·12	− 2·64
	4532	ζ Virginis	....	89 55	15·0	23·0	31·6	40·0	28 48·0	13 28 31·52	− 0·61	− 42·07	− 42·12	− 2·93
	4550	....	....	36 39	29·2	42·9	57·1	11·0	32 24·8	13 31 57·00	− 0·23	....	− 42·12	− 2·72
	4575	....	....	66 39	47·0	56·0	5·1	14·0	38 23·0	13 38 5·02	− 0·49	....	− 42·13	− 2·99
	4597	....	....	71 54	16·0	24·7	33·5	42·2	41 50·8	13 41 33·41	− 0·51	....	− 42·13	− 2·80
	4621	....	....	70 43	4·8	13·4	22·3	31·0	44 39·8	13 44 22·26	− 0·50	....	− 42·13	− 2·80
	4632	....	....	54 54	12·4	22·3	32·9	43·0	46 53·0	13 46 32·72	− 0·40	....	− 42·13	− 2·72
	4618	η Bootis	....	70 56	40·4	49·0	58·0	6·8	49 15·5	13 48 57·94	− 0·50	− 42·06	− 42·13	− 2·82
	4676	....	....	57 48	46·1	55·9	6·0	15·5	56 25·4	13 56 5·78	− 0·42	....	− 42·14	− 2·75
	4737	....	....	71 8	26·6	35·4	44·2	52·8	12 1·2	14 11 44·04	− 0·52	....	− 42·14	− 2·89
	4756	....	....	37 22	13·3	16·8	30·9	44·3	14 58·0	14 14 30·66	− 0·24	....	− 42·14	− 2·60
	4808	....	....	59 3	24·3	33·8	43·6	53·4	27 2·8	14 26 43·58	− 0·43	− 42·21	− 42·14	− 2·81
	4820	....	....	56 54	50·3	0·1	10·2	20·0	29 29·8	14 29 10·08	− 0·42	....	− 42·14	− 2·81
	4863	....	....	52 41	34·0	44·4	55·0	5·4	38 15·8	14 37 54·92	− 0·40	....	− 42·14	− 2·81
	4876	ι Bootis	....	62 22	29·8	39·0	48·4	57·6	40 7·0	14 39 48·36	− 0·45	− 42·19	− 42·15	− 2·85
	4931	....	....	48 20	15·4	26·3	37·5	48·6	51 59·8	14 51 37·52	− 0·36	....	− 42·15	− 2·82
	4942	....	....	49 50	36·7	47·5	58·8	9·4	55 20·2	14 54 58·52	− 0·38	....	− 42·15	− 2·82
	4965	....	....	44 51	40·4	52·0	4·0	15·6	59 27·0	14 59 3·80	− 0·33	....	− 42·15	− 2·82
	4992	....	....	31 57	40·0	54·4	9·2	23·5	3 38·0	15 3 9·02	− 0·21	....	− 42·15	− 2·58
	5000	....	....	56 25	34·0	43·8	54·0	3·8	6 13·6	15 5 53·68	− 0·41	....	− 42·15	− 2·85
	5034	β Libræ	....	98 54	10·9	19·1	27·7	36·0	10 44·3	15 10 27·60	− 0·66	− 42·13	− 42·15	− 3·33
	5143	α Coronæ Borealis	....	62 50	22·8	32·0	41·4	50·8	30 0·0	15 29 41·40	− 0·46	− 42·19	− 42·15	− 2·91
	5196	α Serpentis	....	83 9	3·5	11·6	20·2	28·4	38 36·6	15 38 20·06	− 0·57	− 42·15	− 42·16	− 3·11
	5245	ε Serpentis	....	85 8	31·7	39·9	48·4	56·5	45 4·8	15 44 48·26	− 0·58	....	− 42·16	− 3·14
	5284	γ Serpentis	....	73 54	38·9	47·4	56·2	4·8	51 13·3	15 50 56·12	− 0·52	....	− 42·16	− 3·00
	5414	δ Ophiuchi	....	93 21	42·6	50·8	59·4	7·5	8 15·7	16 7 59·20	− 0·63	− 42·08	− 42·16	− 3·27

(a) Beats of Clock unequal.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1864.
1864				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
May 17	5452	....	....	68 33	38·4	47·0	56·0	5·0	15 13·9	16 11 56·06	− 0·49	....	−42·16	− 2·95
	5493	....	....	87 21	25·6	36·0	45·3	43·4	21 1·8	16 20 45·02	− 0·59	....	−42·16	− 3·17
May 21	4532	ζ Virginis	....	89 55	17·1	25·3	33·7	42·0	28 50·1	13 28 33·64	− 0·63	−44·18	−44·17	− 2·92
	4648	η Bootis	....	70 56	42·5	51·1	0·0	8·9	49 17·6	13 49 0·02	− 0·52	−44·14	−44·16	− 2·50
	4672	τ Virginis	....	87 49	14·0	23·0	31·5	39·6	55 48·0	13 55 31·40	− 0·63	−44·17	−44·19	− [illegible]
	4808	ρ Bootis	....	59 3	26·3	35·9	45·7	55·2	27 4·9	14 26 45·60	− 0·45	−44·21	−44·20	− 2·81
	4876	ι Bootis	....	62 22	31·8	41·0	50·4	59·9	40 9·1	14 39 50·44	− 0·48	−44·24	−44·21	− 2·65
May 22	4532	ζ Virginis	....	89 55	17·9	25·9	34·4	42·6	28 50·9	13 28 34·34	− 0·64	−44·88	−44·88	− 2·91
	4648	η Bootis	....	70 56	43·2	52·0	1·0	9·8	49 18·3	13 49 0·86	− 0·53	−44·97	−44·88	− 2·50
	4672	τ Virginis	....	87 49	15·6	23·8	32·1	40·3	55 48·6	13 55 32·08	− 0·63	−44·85	−44·88	− 2·99
	4729	α Bootis	....	70 8	58·1	6·8	15·9	24·6	10 33·1	14 10 15·70	− 0·52	−44·81	−44·88	− 2·61
May 23	4672	(a) τ Virginis	....	87 49	16·0	24·3	32·9	41·0	55 49·1	13 55 32·66	− 0·63	−45·44	−45·48	− 2·38
	4729	α Bootis	....	70 8	58·8	7·4	16·4	25·0	10 34·0	14 10 16·32	− 0·53	−45·12	−45·48	− 2·51
	4797	....	6·0	53 13	6·8	16·9	27·5	37·8	23 48·0	14 23 27·40	− 0·43	....	−45·48	− 2·76
	4809	....	6·0	62 45	49·3	58·6	8·0	17·3	27 26·4	14 27 7·92	− 0·50	....	−45·46	− 2·52
	4820	....	6·0	56 54	53·6	3·3	13·5	23·2	29 33·1	14 29 13·34	− 0·46	....	−45·48	− 2·79
	4876	ι Bootis	....	62 22	33·0	42·2	52·0	1·1	40 10·4	14 39 51·74	− 0·49	−45·54	−45·46	− 2·84
	4969	ψ Bootis	....	62 32	7·4	16·7	26·2	35·4	59 41·7	14 59 26·08	− 0·50	−45·57	−45·48	− 2·88
	4992	....	....	34 57	43·8	58·0	12·8	27·0	3 41·4	15 3 12·60	− 0·24	....	−45·48	− 2·85
	5034	β Libræ	....	98 54	14·4	22·6	31·0	39·4	10 47·8	15 10 31·04	− 0·70	−45·49	−45·48	− 3·37
	5071	....	6·0	37 36	27·0	40·3	54·2	7·7	17 21·2	15 16 54·08	− 0·28	....	−45·48	− 2·85
	5091	....	6·0	26 11	34·0	52·8	12·0	30·8	21 49·2	15 21 11·76	− 0·10	....	−45·48	− 2·90
	5143	α Coronæ Borealis	....	62 50	26·1	35·4	45·0	54·1	30 3·2	15 29 44·76	− 0·50	−45·48	−45·48	− 2·94
	5196	α Serpentis	....	83 9	6·6	15·0	23·6	31·8	38 40·1	15 38 23·46	− 0·61	−45·46	−45·48	− 3·16
	5245	ι Serpentis	....	85 8	35·0	43·2	51·7	0·0	45 8·2	15 44 51·62	− 0·61	....	−45·48	− 3·19
	5284	γ Serpentis	....	73 54	42·4	50·9	59·8	8·2	51 16·5	15 50 59·56	− 0·56	....	−45·48	− 3·05
	5452	....	6·0	68 33	41·8	50·5	59·8	8·4	15 17·3	16 14 59·56	− 0·53	....	−45·48	− 3·01
	5466	γ Herculis	....	70 32	26·8	35·5	44·4	53·2	17 2·0	16 16 44·38	− 0·54	....	−45·48	− 3·02
	5493	....	....	87 21	32·0	40·2	48·7	57·0	21 5·2	16 20 48·62	− 0·63	....	−45·48	− 3·24
	5504	....	8·0	74 21	25·5	34·1	43·0	51·4	23 0·0	16 22 42·80	− 0·56	....	−45·48	− 3·07
	5527	....	....	69 14	10·7	19·5	28·6	37·3	25 46·2	16 25 28·46	− 0·53	....	−45·48	− 3·01
	5537	....	....	79 21	39·6	47·9	56·4	5·0	28 13·2	16 27 56·12	− 0·59	....	−45·48	− 3·12
	5597	....	....	61 53	53·1	2·2	11·5	20·6	36 29·7	16 36 11·42	− 0·51	....	−45·48	− 2·97
	5615	....	....	53 14	41·8	52·0	2·6	12·8	39 23·0	16 39 2·44	− 0·43	....	−45·48	− 2·90
	5625	....	....	87 31	35·5	43·7	52·0	0·1	41 8·4	16 40 51·94	− 0·63	....	−45·48	− 3·23
	5647	....	....	78 31	50·0	58·7	7·4	15·7	44 24·2	16 44 7·20	− 0·57	....	−45·48	− 3·08
	5708	κ Ophiuchi	....	80 25	46·2	54·5	3·1	11·5	52 19·9	16 52 3·04	− 0·59	−45·44	−45·48	− 3·12
May 25	4876	ι Bootis	....	62 22	34·2	43·4	53·0	2·4	40 11·7	14 39 52·94	− 0·50	−46·73	−46·80	− 2·81
	4934	....	6·5	48 20	20·9	31·0	42·4	53·3	52 4·3	14 51 42·38	− 0·39	....	−46·80	− 2·91
	4965	....	....	44 51	45·0	56·6	8·6	20·1	59 31·8	14 59 8·42	− 0·37	....	−46·81	− 2·51
	5000	....	7·0	56 25	38·7	48·3	58·7	8·4	6 18·3	15 5 58·48	− 0·45	....	−46·81	− 2·86
	5034	β Libræ	....	98 54	15·4	23·8	32·3	40·7	10 49·8	15 10 32·40	− 0·70	−46·85	−46·82	− 3·37
	5071	....	6·0	37 36	28·0	41·7	55·4	9·0	17 22·5	15 16 55·32	− 0·28	....	−46·82	− 2·85
	5091	....	6·0	26 11	35·3	53·9	13·2	31·9	21 50·4	15 21 12·94	− 0·10	....	−46·83	− 2·98
	5143	α Coronæ Borealis	....	62 50	27·6	36·8	46·2	55·4	30 5·2	15 29 46·21	− 0·50	−46·96	−46·83	− 2·94
	5196	α Serpentis	....	83 9	8·1	16·4	24·9	33·0	38 41·2	15 38 24·72	− 0·62	−46·70	−46·83	− 3·17

(a) An apparent inversion of the Clock's rate during the period of observation, arising probably from the swerving of the piers through temperature.

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Date.	No. in British Association Catalogue.	OBJECT OBSERVED.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1864.
1864.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
May 26	5414	δ Ophiuchi	....	93 21	48·0	56·2	4·7	13·0	8 21·1	16 8 4·60	− 0·69	−47·33	−47·36	− 3·36
	5604	ζ Herculis	....	58 9	40·9	50·5	0·4	10·1	37 20·0	16 37 0·38	− 0·48	−47·35	−47·37	− 2·94
	5708	κ Ophiuchi	....	80 25	48·3	56·5	5·2	13·5	52 21·9	16 52 5·08	− 0·61	−47·43	−47·38	− 3·15
	5821	α Herculis	....	75 27	1·0	9·2	18·0	26·4	9 35·0	17 9 17·92	− 0·59	−47·39	−47·39	− 3·10
May 30	4401	θ Virginis	....	94 50	31·7	39·9	48·4	56·6	4 4·9	13 3 48·30	− 0·71	−50·15	−50·06	− 2·82
	360	α Ursæ Minoris	....	1 25	11·0	......	15·5	55·0	21 26·0	13 10 17·52	−11·62	....	−50·06	+12·57
	4532	ζ Virginis	....	89 53	22·9	31·1	39·5	47·9	28 56·0	13 28 39·48	− 0·69	−50·00	−50·06	− 2·88
	4621	....	6·8	70 43	12·8	21·2	30·2	39·0	44 47·9	13 44 30·22	− 0·57	....	−50·06	− 2·73
	4632	....	....	54 54	20·2	30·5	40·9	51·0	47 1·0	13 46 40·72	− 0·46	....	−50·06	− 2·62
	5034	β Libræ	....	98 54	18·9	27·0	35·8	44·0	10 52·2	15 10 35·58	− 0·74	−49·96	−50·07	− 3·40
	5143	α Coronæ Borealis	....	62 50	30·7	40·0	49·6	59·0	30 8·1	15 29 49·46	− 0·53	−50·15	−50·07	− 2·96
	5196	α Serpentis	....	83 9	11·5	19·8	28·2	36·4	38 44·6	15 38 28·10	− 0·64	−50·03	−50·08	− 3·20
	5245	ε Serpentis	....	85 8	39·6	48·0	56·3	4·4	45 12·8	15 44 56·22	− 0·65	....	−50·08	− 3·23
	5284	γ Serpentis	....	73 51	47·0	55·4	4·2	12·8	51 21·4	15 51 4·16	− 0·59	....	−50·08	− 3·09
	5414	δ Ophiuchi	....	93 21	50·8	59·0	7·4	15·6	8 23·8	16 8 7·32	− 0·70	−50·00	−50·08	− 3·40
	5466	γ Herculis	....	70 32	31·5	40·0	49·1	57·9	17 6·6	16 16 49·02	− 0·57	....	−50·09	− 3·08
	5493	....	6·0	87 21	36·5	44·9	53·3	1·6	21 9·9	16 20 53·21	− 0·67	....	−50·09	− 3·30
	5504	....	8·0	74 21	30·1	38·5	47·9	56·1	23 4·6	16 22 47·44	− 0·59	....	−50·09	− 3·12
	5527	....	....	69 14	15·4	24·2	33·4	42·0	25 51·0	16 25 33·20	− 0·56	....	−50·09	− 3·07
	5615	....	7·0	53 14	46·4	56·6	7·2	17·3	39 27·6	16 39 7·02	− 0·45	....	−50·10	− 2·96
	5708	κ Ophiuchi	....	80 25	51·1	59·3	8·0	16·3	52 24·5	16 52 7·84	− 0·63	−50·12	−50·10	− 3·20
	5726	....	7·0	83 13	26·8	37·0	45·7	53·9	55 2·3	16 54 45·54	− 0·64	....	−50·10	− 3·25
	5776	....	....	41 1	41·5	54·1	7·0	19·5	2 32·1	17 2 6·64	− 0·34	....	−50·11	− 3·96
	5787	....	7·0	79 47	52·6	0·9	9·5	17·7	4 26·1	17 4 9·36	− 0·63	....	−50·11	− 3·20
	5821	α Herculis	....	75 27	3·9	12·1	20·8	29·4	9 37·9	17 9 20·82	− 0·60	−50·23	−50·12	− 3·15
May 31	4934	....	6·0	46 20	24·0	35·1	46·5	57·2	52 8·4	14 51 46·24	− 0·41	....	−50·83	− 2·77
	4942	....	6·0	49 50	45·6	56·2	7·3	18·2	55 29·0	14 55 7·26	− 0·43	....	−50·83	− 2·78
	4969	ψ Bootis	....	62 32	12·7	22·0	31·4	40·8	59 50·0	14 59 31·38	− 0·53	−50·84	−50·84	− 2·88
	5000	....	6·5	56 25	42·8	52·5	2·9	12·9	6 22·3	15 6 2·68	− 0·48	....	−50·84	− 2·85
	5034	β Libræ	....	98 54	19·8	28·0	36·5	44·8	10 53·1	15 10 36·41	− 0·73	−50·83	−50·84	− 3·40
	5091	....	6·0	26 11	39·4	58·0	17·0	35·5	21 54·2	15 21 16·76	− 0·12	....	−50·85	− 2·00
	5143	α Coronæ Borealis	....	62 50	31·5	40·8	50·2	59·4	30 8·9	15 29 50·18	− 0·53	−50·83	−50·85	− 2·96
	5196	α Serpentis	....	83 9	12·1	20·5	29·0	37·2	38 45·6	15 38 28·88	− 0·64	−50·81	−50·85	− 3·20
	5245	ε Serpentis	....	85 8	40·4	48·7	57·3	5·4	45 13·6	15 44 57·08	− 0·65	....	−50·85	− 3·23
	5284	γ Serpentis	....	73 51	47·7	56·2	5·1	13·7	51 22·2	15 51 4·98	− 0·59	....	−50·86	− 3·09
	5452	....	6·0	68 33	17·1	56·0	5·0	13·8	15 22·8	16 15 4·94	− 0·56	....	−50·86	− 3·06
	5466	γ Herculis	....	70 32	32·4	41·0	50·0	58·6	17 7·3	16 16 49·86	− 0·57	....	−50·86	− 3·08
	5493	....	6·5	87 21	37·5	45·7	54·0	2·3	21 10·5	16 20 54·00	− 0·67	....	−50·86	− 3·31
	5504	....	7·0	74 21	31·2	39·6	48·4	57·0	23 5·5	16 22 48·34	− 0·59	....	−50·87	− 3·13
	5527	....	5·0	69 14	16·2	25·0	34·0	43·0	25 51·8	16 25 34·00	− 0·56	....	−50·87	− 3·08
	5537	....	7·0	73 21	45·0	53·4	1·9	10·2	28 18·7	16 28 1·84	− 0·62	....	−50·87	− 3·20
	5597	....	6·0	64 53	58·9	7·8	17·1	26·0	36 35·0	16 36 16·96	− 0·55	....	−50·87	− 3·04
	5615	....	....	53 14	47·3	57·5	8·0	18·4	39 28·5	16 39 7·94	− 0·46	....	−50·88	− 2·97
	5625	....	....	87 31	40·9	49·0	57·6	5·9	41 14·0	16 40 57·48	− 0·68	....	−50·88	− 3·32
	5634	....	7·0	79 38	20·4	28·7	37·3	45·7	42 54·1	16 42 37·24	− 0·62	....	−50·88	− 3·20
	5647	....	6·0	76 31	55·8	4·2	13·0	21·3	44 29·7	16 44 12·80	− 0·61	....	−50·89	− 3·17
	5686	....	7·5	74 23	48·9	57·4	6·1	14·8	48 23·2	16 48 6·08	− 0·59	....	−50·89	− 3·15
	5708	κ Ophiuchi	....	80 25	52·0	0·2	8·9	17·0	52 25·4	16 52 8·70	− 0·63	−50·97	−50·90	− 3·21
	5726	....	7·0	83 13	29·8	38·0	46·6	54·9	55 3·0	16 54 46·16	− 0·64	....	−50·90	− 3·26
	5821	α Herculis	....	75 27	4·4	12·8	21·7	30·0	9 38·6	17 9 21·50	− 0·60	−50·90	−50·91	− 3·16

Date.	No. in British Association Catalogue.	OBJECT OBSERVED.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1864.
1864.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
June 1	5414	δ Ophiuchi	....	93 21	52·0	0·4	8·9	17·0	9 25·2	16 8 8·70	− 0·71	−51·36	−51·36	− 3·41
	5604	ζ Herculis	....	58 9	45·0	54·5	4·6	14·0	37 24·0	16 37 4·42	− 0·51	−51·31	−51·36	− 2·99
	5708	κ Ophiuchi	....	80 25	52·5	0·4	9·1	17·5	52 25·9	16 52 9·08	− 0·63	−51·34	−51·36	− 3·22
	5821	α Herculis	....	75 27	5·0	13·4	22·1	30·5	9 39·0	17 9 22·00	− 0·61	−51·38	−51·36	− 3·17
	5941	α Ophiuchi	....	77 20	15·7	24·0	32·6	41·0	29 49·4	17 29 32·54	− 0·62	−51·41	−51·36	− 3·19
June 21	4808	(a) ρ Bootis	....	59 3	2·8	12·2	22·2	31·9	26 41·4	14 26 22·10	− 0·55	−20·83	−20·78	− 2·59
	4876	ε Bootis	....	62 22	8·2	17·4	27·1	36·4	39 45·6	14 39 26·91	− 0·58	−20·81	−20·78	− 2·48
	5143	α Coronæ Borealis	....	62 50	1·4	10·7	20·2	29·4	29 38·9	15 29 20·12	− 0·58	−20·80	−20·78	− 2·90
	5196	α Serpentis	....	83 9	42·1	50·4	59·0	7·2	38 15·5	15 37 56·84	− 0·69	−20·71	−20·78	− 3·21
	5821	α Herculis	....	75 27	34·2	43·0	51·8	0·2	9 8·6	17 8 51·56	− 0·64	−20·75	−20·78	− 3·31
	5941	α Ophiuchi	....	77 20	45·1	53·5	2·2	10·8	29 19·1	17 29 2·14	− 0·65	−20·79	−20·79	− 3·36
	6355	α Lyræ	....	51 20	23·3	34·0	41·8	55·1	33 5·9	18 32 44·62	− 0·50	−20·83	−20·79	− 3·25
	6429	β Lyræ	....	56 47	8·2	18·1	28·2	38·0	45 48·0	18 45 28·10	− 0·53	−20·75	−20·79	− 3·26
June 23	5941	α Ophiuchi	....	77 20	45·6	54·0	2·7	11·1	29 19·4	17 29 2·56	− 0·65	−21·20	−21·21	− 3·39
	6021	μ Herculis	....	62 12	14·5	23·9	33·3	42·6	41 52·0	17 41 33·26	− 0·58	−21·23	−21·22	− 3·23
	6355	α Lyræ	....	51 20	24·0	34·5	45·2	55·5	33 6·1	18 32 45·06	− 0·50	−21·25	−21·24	− 3·27
	6429	β Lyræ	....	56 47	8·9	18·6	28·8	38·5	45 46·3	18 45 28·62	− 0·53	−21·25	−21·25	− 3·25
June 30	5414	δ Ophiuchi	....	93 21	23·0	31·2	39·8	48·0	7 56·1	16 7 39·62	− 0·73	−22·19	−22·25	− 3·45
	5604	ζ Herculis	....	58 9	16·0	25·5	35·4	45·1	36 54·9	16 36 35·38	− 0·55	−22·22	−52·26	− 3·00
	5821	(b) α Herculis	....	75 27	36·0	44·5	53·3	2·0	9 10·2	17 8 53·20	− 0·64	−22·37	−22·27	− 3·35
	6355	α Lyræ	....	51 20	25·0	35·2	46·1	56·9	33 7·2	18 32 46·08	− 0·50	−22·22	−22·27	− 3·35
	6429	β Lyræ	....	56 47	10·0	19·9	30·0	39·8	45 49·5	18 45 29·84	− 0·54	−22·36	−22·27	− 3·36
	6528	ζ Aquilæ	....	76 19	19·0	27·3	36·1	44·5	59 53·0	18 59 35·98	− 0·64	−22·31	−22·27	− 3·50
	6595	α Aquilæ	....	78 36	35·4	43·9	52·5	0·9	12 9·1	19 11 52·36	− 0·65	−22·24	−22·28	− 3·52
	6646	δ Aquilæ	....	87 8	48·3	56·5	5·2	13·4	19 21·6	19 19 5·00	− 0·70	−22·26	−22·28	− 3·63
July 4	4729	α Bootis	....	70 8	36·1	45·0	53·9	2·7	10 11·3	14 9 53·80	− 0·62	−23·14	−23·09	− 2·45
	5604	ζ Herculis	....	58 9	16·8	26·4	36·1	46·0	36 55·8	16 36 36·22	− 0·56	−23·08	−23·09	− 2·97
	5821	α Herculis	....	75 27	37·0	45·2	54·0	2·6	9 11·0	17 8 53·96	− 0·65	−23·13	−23·09	− 3·31
	5941	(c) α Ophiuchi	....	77 20	47·6	56·0	4·6	13·1	29 21·4	17 29 4·54	− 0·65	−23·15	−23·09	− 3·42
	6021	μ Herculis	....	62 12	16·4	25·7	35·2	44·6	41 54·0	17 41 35·18	− 0·59	−23·12	−23·09	− 3·25
	6281	δ Ursæ Minoris	....	3 24	1·0	20·5	44·5	1·5	21 20·5	18 16 41·60	+ 2·74	....	−23·09	− 6·33
	6355	α Lyræ	....	51 20	25·6	36·1	47·0	57·4	33 8·0	18 32 46·82	− 0·52	−22·92	−23·09	− 3·34
	6429	β Lyræ	....	56 47	10·7	20·5	30·8	40·5	45 50·2	18 45 30·54	− 0·55	−23·05	−23·09	− 3·35
	6528	ζ Aquilæ	....	76 19	19·9	28·1	37·0	45·3	59 54·0	18 59 36·86	− 0·66	−23·13	−23·09	− 3·54
July 6	5821	α Herculis	....	75 27	37·0	45·4	54·1	2·5	9 11·0	17 8 54·00	− 0·64	−23·18	−23·25	− 3·34
	5941	α Ophiuchi	....	77 20	47·5	56·0	4·9	13·2	29 21·4	17 29 4·60	− 0·65	−23·20	−23·25	− 3·43
	6021	μ Herculis	....	62 12	16·7	25·9	35·5	44·8	41 54·0	17 41 35·38	− 0·58	−23·33	−23·25	− 3·25
	6355	α Lyræ	....	51 20	26·0	36·4	47·4	57·8	33 8·4	18 32 47·20	− 0·52	−23·29	−23·25	− 3·35
July 7	5414	δ Ophiuchi	....	93 21	24·0	32·2	40·6	49·0	7 57·2	16 7 40·60	− 0·71	−23·22	−23·19	− 3·45
	5604	ζ Herculis	....	58 9	16·9	26·2	36·5	46·0	36 55·9	16 36 36·30	− 0·55	−23·19	−23·19	− 2·95
	5706	κ Ophiuchi	....	80 25	24·3	32·7	41·0	49·4	51 57·9	16 51 41·06	− 0·65	−23·18	−23·18	− 3·11
	5821	α Herculis	....	75 27	37·0	45·3	54·0	2·4	9 11·0	17 8 53·94	− 0·63	−23·13	−23·18	− 3·31
	5941	α Ophiuchi	....	77 20	47·6	56·0	4·9	13·2	29 21·4	17 29 4·62	− 0·63	....	−23·18	− 3·41
	6281	δ Ursæ Minoris	....	3 24	......	20·0	44·0	1·5	....	18 16 41·50	+ 2·48	....	−23·18	− 7·32

(a) From June 6th to 18th alterations were being made on pendulum of Brisbane Clock. (b) Very faint. Cloudy. (c) Beats of clock very unequal.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1864.
1864.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
July 8	5143	α Coronæ Borealis······	········	62 50	3·8	13·0	22·4	31·8	29 41·0	15 29 22·40	− 0·53	− 23·28	− 23·29	− 2·75
	5604	ζ Herculis················	········	58 9	17·0	26·3	36·5	46·1	36 56·0	16 36 36·38	− 0·51	− 23·31	− 23·29	− 2·95
	5821	α Herculis················	········	75 27	37·1	45·5	54·0	2·7	9 11·0	17 8 54·06	− 0·57	− 23·31	− 23·29	− 3·34
	5941	α Ophiuchi··········· ·····	········	77 20	47·5	56·0	4·9	13·1	29 21·5	17 29 4·60	− 0·58	− 23·27	− 23·29	− 3·43
	6281	δ Ursæ Minoris··········	········	3 24	2·0	21·0	44·0	1·5	21 22·0	18 16 42·10	+ 1·73	········	− 23·29	− 7·78
July 13	6355	α Lyræ······················	········	51 20	25·8	36·1	47·0	57·3	33 7·9	18 32 46·82	− 0·49	− 22·94	− 22·99	− 3·35
	6429	β Lyræ ·····················	········	56 47	10·8	20·4	30·5	40·2	45 50·2	18 45 30·42	− 0·51	− 22·94	− 22·99	− 3·41
	6528	ζ Aquilæ···················	········	76 19	19·8	28·2	36·8	45·2	59 53·6	18 59 36·72	− 0·59	− 23·00	− 22·99	− 3·60
	6646	δ Aquilæ···················	········	87 8	49·2	57·5	5·9	14·1	19 22·4	19 19 5·82	− 0·62	− 23·02	− 22·99	− 3·77
	6772	γ Aquilæ···················	········	79 42	58·0	6·4	15·0	23·2	40 31·7	19 40 14·86	0·60	− 22·95	− 22·99	− 3·68
July 15	3995	β Leonis···················	········	74 42	15·4	24·0	32·9	41·4	42 50·0	11 42 32·74	− 0·61	− 23·15	− 23·07	− 1·74
	6355	α Lyræ······················	········	51 20	25·9	36·2	47·0	57·5	33 8·1	18 32 46·94	− 0·50	− 23·05	− 23·07	− 3·35
	6528	ζ Aquilæ···················	········	76 19	20·0	28·2	37·0	45·1	59 53·8	18 59 36·88	− 0·62	− 23·12	− 23·07	− 3·61
	6595	ω Aquilæ ··················	········	78 38	36·1	44·7	53·1	1·9	12 10·2	19 11 53·32	− 0·63	− 23·08	− 23·07	− 3·66
	6646	δ Aquilæ···················	········	87 8	49·2	57·5	6·0	14·2	19 22·4	19 19 5·86	− 0·66	− 23·01	− 23·07	− 3·78
	6772	γ Aquilæ···················	········	79 42	58·2	6·5	15·0	23·4	40 31·6	19 40 14·94	− 0·63	− 22·99	− 23·07	− 3·69
	6802	α Aquilæ ·················	········	81 28	19·5	27·7	36·1	14·8	44 53·0	19 44 36·28	− 0·63	− 23·09	− 23·08	− 3·73
	6833	β Aquilæ···················	········	83 54	48·8	57·0	5·5	13·8	49 22·0	19 49 5·42	− 0·65	− 23·10	− 23·08	− 3·74
July 16	6021	μ Herculis·················	········	62 12	16·5	25·9	35·5	44·9	41 54·0	17 41 35·36	− 0·57	− 23·35	− 23·28	− 3·22
	6355	α Lyræ······················	········	51 20	26·0	36·4	47·2	57·8	33 8·3	18 32 47·14	− 0·51	− 23·24	− 23·29	− 3·35
	6528	ζ Aquilæ ·················	········	76 19	20·0	28·5	37·2	45·8	59 54·0	18 59 37·10	0·63	− 23·32	− 23·29	− 3·62
	6595	ω Aquilæ···················	········	78 38	36·6	45·0	53·5	2·0	12 10·1	19 11 53·50	− 0·64	− 23·25	− 23·30	− 3·66
	6646	δ Aquilæ···················	········	87 8	49·6	57·9	6·2	14·4	19 22·7	19 19 6·16	− 0·67	− 23·29	− 23·30	− 3·79
July 18	4618	η Bootis···· ···············	········	70 56	21·3	30·0	39·0	47·6	48 56·3	13 48 38·84	− 0·62	− 23·41	− 23·45	− 2·25
	4876	ι Bootis····················	········	62 22	10·6	19·9	29·4	38·6	39 48·0	14 39 29·30	− 0·58	− 23·51	− 23·45	− 2·34
	5941	α Ophiuchi················	········	77 20	47·9	56·2	5·0	13·4	29 21·7	17 29 4·81	− 0·64	− 23·47	− 23·46	− 3·41
	6281	δ Ursæ Minoris··········	········	3 24	0·0	19·0	41·5	0·0	21 19·5	18 16 40·00	+ 2·33	········	− 23·46	− 5·98
	6429	β Lyræ······················	········	56 47	11·2	21·0	31·1	40·9	45 50·8	18 45 31·00	− 0·55	− 23·48	− 23·46	− 3·41
	6528	ζ Aquilæ···················	········	76 19	20·2	28·7	37·5	46·0	59 54·2	18 59 37·32	− 0·64	− 23·53	− 23·46	− 3·62
	6772	γ Aquilæ···················	········	79 42	58·6	7·0	15·5	23·9	40 32·1	19 40 15·42	− 0·66	− 23·41	− 23·46	− 3·72
	6802	α Aquilæ ·················	········	81 28	20·0	28·2	36·8	45·0	44 53·4	19 44 36·68	− 0·66	− 23·43	− 23·46	− 3·76
	6833	β Aquilæ···················	········	83 54	49·1	57·4	6·0	14·1	49 22·4	19 49 5·80	− 0·68	− 23·42	− 23·46	− 3·77
July 21	6429	β Lyræ······················	········	56 47	11·8	21·3	31·6	41·2	45 51·2	18 45 31·42	− 0·56	− 23·90	− 23·93	− 3·40
	6528	ζ Aquilæ···················	········	76 19	20·8	29·2	37·9	46·2	59 54·8	18 59 37·78	− 0·66	− 23·96	− 23·94	− 3·63
	6595	ω Aquilæ ·················	········	78 38	37·4	45·8	54·4	2·8	12 11·2	19 11 54·32	− 0·67	− 24·02	− 23·94	− 3·68
	6772	γ Aquilæ···················	········	79 42	59·1	7·3	16·1	24·4	40 32·8	19 40 15·94	− 0·68	− 23·89	− 23·94	− 3·74
	6802	α Aquilæ ·················	········	81 28	20·5	28·8	37·2	45·4	44 54·0	19 44 37·18	− 0·67	− 23·90	− 23·94	− 3·78
	6833	β Aquilæ···················	········	83 54	49·8	57·8	6·6	14·8	49 23·0	19 49 6·40	− 0·69	− 23·99	− 23·95	− 3·79
July 23	6429	β Lyræ······················	········	56 47	12·1	22·0	32·2	42·0	45 51·9	18 45 32·04	− 0·56	− 24·53	− 24·53	− 3·39
	6528	ζ Aquilæ ·················	········	76 19	21·3	29·8	38·4	47·0	59 55·2	18 59 38·34	− 0·67	− 24·51	− 24·54	− 3·63
	6595	ω Aquilæ ·················	········	78 38	38·0	46·3	55·0	3·2	12 11·8	19 11 54·86	− 0·68	− 24·54	− 24·54	− 3·69
	6646	δ Aquilæ···················	········	87 8	51·0	59·2	7·6	15·8	19 24·0	19 19 7·52	− 0·71	− 24·58	− 24·55	− 3·52
July 26	4729	α Bootis······ ·············	········	70 8	38·1	47·0	56·0	4·7	10 13·4	14 9 55·84	− 0·62	− 26·47	− 25·52	− 2·19
	6595	ω Aquilæ···················	········	78 38	39·0	47·3	56·0	4·3	12 12·8	19 11 55·86	− 0·66	− 25·58	− 25·54	− 3·69

Date	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance to	Wires observed.					Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock		Correction to Mean R.A. Jan. 1, 1864.
					I.	II.	III	IV.	V.			observed.	interpolated.	
1864.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
July 26	6646	δ Aquilæ	....	87 8	52·0	0·1	8·7	17·0	19 25·2	19 19 8·60	− 0·70	− 25·66	− 25·54	− 3·63
	6772	γ Aquilæ	....	79 42	0·8	9·2	17·7	26·0	40 34·2	19 40 17·58	− 0·67	− 25·52	− 25·55	− 3·76
	6802	α Aquilæ	....	81 28	22·1	30·3	39·0	47·1	44 55·4	19 44 38·78	− 0·67	− 25·48	− 25·55	− 3·60
	6833	β Aquilæ	....	83 54	51·4	59·6	8·0	16·3	49 24·6	19 49 7·98	− 0·69	− 25·55	− 25·56	− 3·61
July 28	7171	α Cygni	....	45 15	54·7	6·3	18·4	30·1	37 41·5	20 37 18·20	− 0·49	....	− 26·15	− 3·86
	7256	32 Vulpeculæ	....	62 26	57·8	7·0	16·4	25·8	49 35·0	20 49 16·40	− 0·58	− 26·16	− 26·15	− 3·79
	7368	ζ Cygni	....	60 18	20·4	29·8	39·4	49·0	7 58·4	21 7 39·40	− 0·57	− 26·08	− 26·15	− 3·81
	7627	16 Pegasi	....	64 41	4·9	13·9	23·2	32·3	47 41·4	21 47 23·14	− 0·59	− 26·21	− 26·16	− 3·81
July 30	6528	(a) ζ Aquilæ	....	76 19	23·4	31·7	40·5	49·0	59 57·3	18 59 40·38	− 0·64	− 26·58	− 26·50	− 3·63
	6595	ω Aquilæ	....	78 38	40·0	48·4	57·0	5·2	12 13·8	19 11 56·88	− 0·65	− 26·58	− 26·50	− 3·70
	6646	δ Aquilæ	....	87 8	53·0	1·1	9·5	17·7	19 26·0	19 19 9·46	− 0·68	− 26·53	− 26·50	− 3·64
	6772	γ Aquilæ	....	79 42	1·8	10·0	18·6	27·0	40 35·1	19 40 18·50	− 0·65	− 26·45	− 26·49	− 3·77
	6802	α Aquilæ	....	81 28	23·1	31·2	39·[illegible]	48·1	44 56·3	19 44 39·70	− 0·65	− 26·40	− 26·48	− 3·62
	6833	β Aquilæ	....	83 54	52·1	0·5	9·0	17·2	49 25·4	19 49 8·84	− 0·67	− 26·41	− 26·47	− 3·63
Aug. 1	4729	α Bootis	....	70 8	39·5	48·3	57·2	6·0	10 14·8	14 9 57·16	− 0·60	− 26·91	− 26·90	− 3·09
	6595	ω Aquilæ	....	78 38	40·5	48·8	57·1	5·7	12 14·1	19 11 57·30	− 0·64	− 27·02	− 26·91	− 3·69
	6646	δ Aquilæ	....	87 8	53·3	1·4	10·0	18·2	19 26·4	19 19 9·86	− 0·67	− 26·94	− 26·91	− 3·64
	6772	γ Aquilæ	....	79 42	2·0	10·5	19·0	27·2	40 35·4	19 40 18·82	− 0·65	− 26·77	− 26·91	− 3·77
	6802	α Aquilæ	....	81 28	23·2	31·6	40·4	48·6	44 57·0	19 44 40·16	− 0·64	− 26·87	− 26·91	− 3·62
	6833	β Aquilæ	....	83 54	52·8	0·9	9·4	17·7	49 26·0	19 49 9·36	− 0·66	− 26·94	− 26·92	− 3·63
Aug. 2	6802	α Aquilæ	....	81 28	23·7	32·0	40·4	48·6	44 57·0	19 44 40·34	− 0·64	− 27·05	− 27·08	− 3·61
	6833	β Aquilæ	....	83 54	53·0	1·1	9·5	17·9	49 26·1	19 49 9·52	− 0·66	− 27·10	− 27·09	− 3·63
	7256	32 Vulpeculæ	....	62 26	58·6	8·0	17·5	26·8	49 36·0	20 49 17·38	− 0·56	− 27·13	− 27·09	− 3·82
	7368	ζ Cygni	....	60 18	21·4	30·8	40·6	50·0	7 59·4	21 7 40·44	− 0·56	− 27·09	− 27·10	− 3·85
Aug. 4	6802	α Aquilæ	....	81 28	24·0	32·3	41·0	49·2	45 57·6	19 44 40·82	− 0·63	− 27·54	− 27·54	− 3·62
	6833	β Aquilæ	....	83 54	53·2	1·5	10·0	18·2	49 26·4	19 49 9·86	− 0·65	− 27·44	− 27·54	− 3·63
	7256	32 Vulpeculæ	....	62 26	59·1	8·4	18·0	27·1	49 36·5	20 49 17·82	− 0·56	− 27·56	− 27·55	− 3·83
	7368	ζ Cygni	....	60 18	21·9	31·3	41·1	50·5	8 0·0	21 7 40·96	− 0·55	− 27·60	− 27·56	− 3·87
Aug. 5	7171	α Cygni	....	45 15	56·2	8·0	20·1	31·3	37 43·0	20 37 19·72	− 0·48	....	− 27·80	− 3·88
	7256	32 Vulpeculæ	....	62 26	59·4	8·8	18·1	27·3	49 36·9	20 49 18·10	− 0·55	− 27·85	− 27·81	− 3·83
	7368	ζ Cygni	....	60 18	22·1	31·5	41·2	50·9	8 0·1	21 7 41·16	− 0·55	− 27·79	− 27·81	− 3·85
	7478	β Aquarii	....	96 8	39·7	47·9	56·4	4·6	25 12·7	21 24 56·26	− 0·68	− 27·79	− 27·82	− 3·93
Aug. 8	6646	δ Aquilæ	....	87 8	55·0	3·1	11·5	19·8	19 28·0	19 19 11·48	− 0·64	− 28·60	− 28·56	− 3·63
	6772	γ Aquilæ	....	79 42	3·9	12·1	20·7	29·0	40 37·2	19 40 20·58	− [illegible]·62	− 28·56	− 28·56	− 3·77
	6802	α Aquilæ	....	81 28	25·0	33·2	41·8	50·2	44 58·4	19 44 41·72	− 0·61	− 28·46	− 28·57	− 3·62
	7368	ζ Cygni	....	60 18	23·0	32·3	42·1	51·5	8 1·0	21 7 41·98	− 0·54	− 28·60	− 28·59	− 3·90
	7478	β Aquarii	....	96 8	40·5	48·8	57·2	5·4	25 13·7	21 24 57·12	− 0·67	− 28·63	− 28·59	− 4·02
Aug. 9	5604	ζ Herculis	....	58 9	22·1	31·9	41·9	51·4	37 1·1	16 36 41·68	− 0·52	− 29·04	− 28·95	− 3·51
	7256	32 Vulpeculæ	....	62 26	0·4	9·9	19·2	28·4	49 37·9	20 49 19·16	− 0·54	− 28·90	− 28·95	− 3·85
	7368	ζ Cygni	....	60 18	23·4	32·8	42·4	51·9	8 1·3	21 7 42·36	− 0·54	− 28·98	− 28·95	− 3·90
	7478	β Aquarii	....	96 8	40·9	49·0	57·5	5·7	25 14·0	21 24 57·42	− 0·66	− 28·93	− 28·95	− 4·00
	7561	ι Pegasi	....	80 43	47·2	56·4	4·0	12·1	38 20·5	21 38 3·84	− 0·61	− 28·91	− 28·95	− [illegible]

(a) An apparent reversion of the clock-rate during the time of observation, caused probably by a swerving of the Transit piers through temperature.

Date.	No. in British Association Catalogue.	OBJECT OBSERVED.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1. 1864.
1864.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Aug. 10	6772	(a) γ Aquilæ	....	79 42	4·4	12·7	21·1	29·4	40 38·0	19 40 21·12	− 0·60	− 29·13	− 29·20	− 3·76
	6802	α Aquilæ	....	81 28	25·8	34·0	42·5	51·0	44 59·1	19 44 42·48	− 0·60	− 29·24	− 29·20	− 3·81
	7256	32 Vulpeculæ	....	62 26	1·0	10·1	19·7	29·0	49 38·2	20 49 19·60	− 0·54	− 29·34	− 29·30	− 3·85
	7368	ζ Cygni	....	60 18	23·5	33·0	42·9	52·2	8 1·7	21 7 42·66	− 0·53	− 29·29	− 29·28	− 3·90
	7478	β Aquarii	....	96 8	41·0	49·2	57·9	6·2	25 14·4	21 24 57·74	− 0·65	− 29·26	− 29·25	− 4·03
	7561	ε Pegasi	....	80 43	47·4	55·6	4·2	12·4	38 20·9	21 38 4·10	− 0·60	− 29·18	− 29·22	− 3·93
Aug. 15	7171	α Cygni	....	45 15	56·3	9·9	21·8	3·3	37 45·1	20 37 21·68	− 0·46	....	− 29·66	− 3·86
	7256	32 Vulpeculæ	....	62 26	1·2	10·5	20·0	29·3	49 38·8	20 49 19·06	− 0·53	− 29·70	− 29·66	− 3·86
	7368	ζ Cygni	....	60 18	24·0	33·5	43·2	52·7	8 2·0	21 7 43·08	− 0·53	− 29·70	− 29·66	− 3·91
	7478	β Aquarii	....	96 8	41·4	49·7	58·1	6·4	25 14·7	21 24 58·06	− 0·65	− 29·55	− 29·66	− 4·06
	7561	ε Pegasi	....	80 43	47·9	56·1	4·5	13·0	38 21·3	21 38 4·56	− 0·59	− 29·61	− 29·66	− 3·97
	7627	16 Pegasi	....	64 41	8·5	17·5	26·9	36·0	47 45·1	21 47 26·80	− 0·54	− 29·73	− 29·66	− 4·00
Aug. 29	6802	α Aquilæ	....	81 28	29·4	37·5	46·1	54·4	45 2·8	19 44 46·04	− 0·57	− 32·94	− 33·00	− 3·70
	7868	η Aquarii	....	90 47	43·1	51·3	59·9	8·0	29 16·2	22 28 59·70	− 0·60	− 33·04	− 33·01	− 4·06
	8034	α Pegasi	....	75 29	20·0	28·2	37·1	45·4	58 54·0	22 58 36·94	− 0·54	− 33·01	− 33·02	− 4·13
	8105	γ Piscium	....	87 25	28·0	36·2	44·8	53·0	11 1·1	23 10 44·62	− 0·59	− 33·05	− 33·03	− 4·09
	8169	κ Piscium	....	89 27	18·8	27·0	35·4	43·5	20 51·8	23 20 35·30	− 0·59	− 33·06	− 33·04	− 4·04
	8233	ι Piscium	....	85 4	18·4	26·7	35·3	43·1	33 51·6	23 33 35·02	− 0·58	− 33·05	− 33·05	− 4·06
Aug. 31	7256	32 Vulpeculæ	....	62 26	5·1	14·3	24·0	33·1	49 42·4	20 49 23·78	− 0·50	− 33·62	− 33·60	− 3·79
	7368	ζ Cygni	....	60 18	27·9	37·2	47·0	56·4	8 6·0	21 7 46·90	− 0·50	− 33·58	− 33·61	− 3·88
	7478	β Aquarii	....	96 8	45·4	53·7	2·2	10·5	25 18·8	21 25 2·12	− 0·62	− 33·61	− 33·62	− 4·09
	7561	ε Pegasi	....	80 43	52·0	0·1	8·6	17·0	38 25·2	21 38 8·58	− 0·57	− 33·61	− 33·62	− 4·01
	7908	ζ Pegasi	....	79 50	2·2	10·5	19·2	27·6	35 36·0	22 35 19·10	− 0·56	− 33·69	− 33·63	− 4·10
	8034	α Pegasi	....	75 29	20·5	29·0	37·8	46·1	58 54·3	22 58 37·54	− 0·54	− 33·60	− 33·64	− 4·14
Sept. 3	7478	β Aquarii	....	96 8	46·7	54·9	3·3	11·5	25 19·0	21 25 3·26	− 0·62	− 34·76	− 34·75	− 4·06
	7561	ε Pegasi	....	80 43	53·0	1·1	9·8	18·0	38 26·4	21 38 9·66	− 0·56	− 34·70	− 34·76	− 4·01
	7627	16 Pegasi	....	64 41	13·7	22·5	32·0	41·0	47 50·1	21 47 31·86	− 0·50	− 34·79	− 34·77	− 4·04
	7688	α Aquarii	....	90 57	10·8	18·9	27·3	35·4	59 43·9	21 59 27·26	− 0·60	− 34·75	− 34·78	− 4·09
	7908	ζ Pegasi	....	79 50	3·4	11·8	20·3	28·8	35 37·0	22 35 20·26	− 0·55	− 34·84	− 34·80	− 4·11
Sept. 5	5821	α Herculis	....	75 27	48·2	56·7	5·4	14·0	9 22·4	17 9 5·34	− 0·53	− 35·33	− 35·38	− 2·64
	5941	α Ophiuchi	....	77 20	59·1	7·4	16·2	24·4	29 33·0	17 29 16·02	− 0·54	− 35·36	− 35·39	− 2·60
	7368	ζ Cygni	....	60 18	29·9	39·1	49·0	58·1	8 7·8	21 7 48·78	− 0·48	− 35·52	− 35·43	− 3·84
	7561	ε Pegasi	....	80 43	53·6	1·9	10·1	18·8	38 27·0	21 38 10·34	− 0·56	− 35·39	− 35·44	− 4·00
	7627	16 Pegasi	....	64 41	14·2	23·3	32·6	41·8	47 50·9	21 47 32·56	− 0·50	− 35·50	− 35·45	− 4·03
	7908	ζ Pegasi	....	79 50	4·0	12·4	21·0	29·3	35 37·7	22 35 20·88	− 0·56	− 35·45	− 35·46	− 4·12
	8034	α Pegasi	....	75 29	22·3	30·8	39·6	48·0	58 56·4	22 58 39·42	− 0·53	− 35·45	− 35·46	− 4·18
Sept. 6	7561	ε Pegasi	....	80 43	54·0	2·1	10·7	19·0	38 27·2	21 38 10·60	− 0·56	− 35·65	− 35·75	− 4·00
	7627	16 Pegasi	....	64 41	14·6	23·8	33·0	42·0	47 51·1	21 47 32·90	− 0·49	− 35·85	− 35·76	− 4·03
	7688	α Aquarii	....	90 57	11·7	19·9	28·3	36·4	59 44·8	21 59 28·22	− 0·59	− 35·72	− 35·77	− 4·09
	7908	ζ Pegasi	....	79 50	4·4	12·7	21·3	29·8	35 38·0	22 35 21·24	− 0·55	− 35·81	− 35·79	− 4·13
	8105	γ Piscium	....	87 25	31·0	39·1	47·5	55·7	11 4·0	23 10 47·46	− 0·58	− 35·84	− 35·80	− 4·15
	8233	ι Piscium	....	85 4	21·3	29·5	38·0	46·2	33 54·4	23 33 37·88	− 0·57	− 35·84	− 35·82	− 4·14
Sept. 9	7368	ζ Cygni	....	60 18	30·9	40·2	50·0	59·4	8 9·0	21 7 49·90	− 0·47	− 36·68	− 36·60	− 3·81
	7561	ε Pegasi	....	80 43	54·8	3·0	11·5	20·0	38 28·2	21 38 11·46	− 0·56	− 36·52	− 36·61	− 3·99

(a) An apparent inversion of the clock-rate operated with regularity during the period of observations this night; but, as usual, is rather to be attributed to swerving of the piers through temperature.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan 1, 1864.
1864.				° ′	s	s	s	s	m s	h m s	s	s	s	s
Sept. 9	7627	16 Pegasi	....	64 41	15·4	24·5	34·0	43·0	47 52·0	21 47 33·78	− 0·49	−36·74	−36·62	− 4·02
	7688	α Aquarii	....	90 57	12·5	20·8	29·2	37·1	59 45·5	21 59 29·02	− 0·59	−36·53	−36·62	− 4·05
	8034	α Pegasi	....	75 29	23·5	31·9	40·6	49·1	58 57·8	22 58 40·58	− 0·53	−36·60	−36·63	− 4·13
	8233	ι Piscium	....	85 4	22·0	30·4	39·0	47·0	33 55·2	23 33 38·72	− 0·57	−36·66	−36·65	− 4·16
Sept. 11	7688	α Aquarii	....	90 57	13·0	21·1	29·5	37·8	59 46·0	21 59 29·48	− 0·58	−37·00	−36·98	− 4·08
	7773	β Aquarii	....	98 25	4·2	12·4	21·0	29·2	10 37·5	22 10 20·86	− 0·61	−36·85	−36·99	− 4·13
	7908	ζ Pegasi	....	79 50	5·8	14·0	22·5	30·9	35 39·2	22 35 22·48	− 0·54	−37·06	−37·00	− 4·18
	8034	α Pegasi	....	75 29	24·0	32·3	41·1	49·6	58 58·1	22 58 41·02	− 0·53	−37·03	−37·71	− 4·20
Sept. 12	7256	32 Vulpeculæ	....	62 26	8·8	18·0	27·4	36·7	49 46·0	20 49 27·38	− 0·47	−37·37	−37·32	− 3·47
	7368	ζ Cygni	....	60 18	31·3	40·9	50·8	0·0	8 9·4	21 7 50·48	− 0·45	−37·31	−37·33	− 3·75
	7627	16 Pegasi	....	64 41	16·0	25·1	34·4	43·6	47 52·8	21 47 34·38	− 0·49	−37·36	−37·33	− 4·03
	7908	ζ Pegasi	....	79 50	5·9	14·2	22·9	31·1	35 39·4	22 35 22·70	− 0·53	−37·29	−37·34	− 4·13
Sept. 14	7688	α Aquarii	....	90 57	13·5	21·9	30·3	38·4	59 46·8	21 59 30·18	− 0·58	−37·71	−37·78	− 4·07
	7868	η Aquarii	....	90 47	47·8	56·1	4·5	12·9	29 21·0	22 29 4·46	− 0·58	−37·78	−37·79	− 4·12
	7908	ζ Pegasi	....	79 50	6·5	14·9	23·2	31·5	35 40·0	22 35 23·22	− 0·53	−37·81	−37·80	− 4·13
	8034	α Pegasi	....	75 29	24·9	33·2	42·0	50·4	58 59·0	22 58 41·90	− 0·52	−37·92	−37·80	− 4·20
	8169	κ Piscium	....	89 27	23·4	31·7	40·3	48·4	20 56·7	23 20 40·10	− 0·57	−37·76	−37·81	− 4·16
	8233	ι Piscium	....	85 4	23·3	31·5	40·0	48·2	33 56·4	23 33 39·88	− 0·55	−37·81	−37·82	− 4·19
Sept. 16	8034	α Pegasi	....	75 29	25·5	34·0	42·9	51·2	58 59·6	22 58 42·64	− 0·52	−38·65	−38·69	− 4·21
	8105	γ Piscium	....	87 25	33·9	42·0	50·4	58·6	11 6·9	23 10 50·36	− 0·56	−38·71	−38·70	− 4·20
	8169	κ Piscium	....	89 27	24·5	32·7	41·2	49·2	20 57·6	23 20 41·04	− 0·57	−38·70	−38·70	− 4·16
	8233	ι Piscium	....	85 4	24·1	32·4	41·0	49·1	33 57·3	23 33 40·78	− 0·55	−38·70	−38·70	− 4·50
	8331	ω Piscium	....	83 51	46·6	54·7	3·3	11·4	53 19·8	23 53 3·16	− 0·55	−38·69	−38·71	− 4·22
	4	α Andromedæ	....	61 37	46·8	56·1	5·7	15·0	2 24·3	0 2 5·58	− 0·47	−38·77	−38·71	− 4·54
Sept. 17	7561	ι Pegasi	....	80 43	57·1	5·4	14·0	22·2	38 30·6	21 38 13·86	− 0·54	−38·98	−39·09	− 3·55
	7627	16 Pegasi	....	64 41	17·9	27·0	36·3	45·2	47 54·4	21 47 36·16	− 0·49	−39·17	−39·10	− 3·87
	7688	α Aquarii	....	90 57	15·0	23·1	31·8	40·0	59 48·0	21 59 31·58	− 0·58	−39·12	−39·10	− 4·06
	7868	η Aquarii	....	90 47	49·3	57·3	6·0	14·1	29 22·3	22 29 5·80	− 0·58	−39·12	−39·11	− 4·12
	7908	ζ Pegasi	....	79 50	7·8	16·0	24·7	33·0	35 41·1	22 35 24·52	− 0·53	−39·11	−39·11	− 4·13
Sept. 21	7868	η Aquarii	....	90 47	50·4	58·5	7·0	15·3	29 23·4	22 29 6·92	− 0·56	−40·28	−40·38	− 4·10
	7908	ζ Pegasi	....	79 50	9·0	17·3	26·0	34·2	35 42·6	22 35 25·82	− 0·52	−40·44	−40·39	− 4·11
	8034	α Pegasi	....	75 29	27·2	35·7	44·4	53·0	59 1·4	22 58 44·34	− 0·50	−40·38	−40·40	− 4·51
	4	α Andromedæ	....	61 37	48·5	57·7	7·5	16·8	2 26·0	0 2 7·30	− 0·45	−40·48	−40·40	− 4·51
	26	γ Pegasi	....	75 32	42·2	50·7	59·5	8·0	7 16·4	0 6 59·36	− 0·51	−40·40	−40·41	− 4·31
Sept. 24	8034	α Pegasi	....	75 29	28·2	36·5	45·3	53·6	59 2·2	22 58 45·20	− 0·49	−41·25	−41·25	− 4·30
	8105	γ Piscium	....	87 25	36·3	44·5	53·0	1·1	11 9·2	23 10 52·82	− 0·54	−41·19	−41·26	− 4·30
	8169	κ Piscium	....	89 27	27·1	35·3	43·8	52·0	21 0·2	23 20 43·68	− 0·55	−41·34	−41·26	− 4·16
	8233	ι Piscium	....	85 4	26·7	35·0	43·5	51·6	34 0·0	23 33 43·36	− 0·53	−41·28	−41·27	− 4·02
Sept. 27	7561	ι Pegasi	....	80 43	59·4	7·4	16·1	24·5	38 32·6	21 38 16·20	− 0·51	−41·44	−41·38	− 3·81
	7627	16 Pegasi	....	64 41	19·8	29·0	38·6	47·2	47 56·2	21 47 38·16	− 0·45	−41·30	−41·38	− 3·85
	7868	η Aquarii	....	90 47	51·3	0·0	8·0	16·2	29 24·4	22 29 7·96	− 0·55	−41·37	−41·38	− 4·05
	7908	ζ Pegasi	....	79 50	10·1	18·4	27·0	35·0	35 43·4	22 35 26·76	− 0·51	−41·43	−41·38	− 4·09

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1864.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Sept. 30	8331	ω Piscium	....	83 51	49·3	58·0	6·0	14·8	53 23·0	23 53 6·22	− 0·51	−41·74	−41·73	− 4·27
	4	α Andromedæ	....	61 37	49·9	59·2	8·7	17·9	2 27·2	0 2 8·58	− 0·42	−41·74	−41·73	− 4·64
	26	γ Pegasi	....	75 32	43·6	52·1	1·0	9·0	7 17·4	0 7 0·62	− 0·48	−41·64	−41·73	− 4·39
	288	ε Piscium	....	82 48	23·1	31·3	39·5	48·3	56 56·4	0 56 39·72	− 0·51	−41·66	−41·73	− 4·32
	453	η Piscium	....	75 19	42·1	50·9	59·5	8·1	25 16·4	1 24 59·40	− 0·47	−41·89	−41·73	− 4·47
Oct. 6	7336	61[1] Cygni	....	51 53	14·0	24·4	35·0	45·8	1 55·9	21 1 35·02	− 0·34	....	−42·83	− 3·59
	7368	ζ Cygni	....	60 18	36·9	46·1	55·8	5·0	8 14·4	21 7 55·61	− 0·38	−42·88	−42·83	− 3·44
	7561	ι Pegasi	....	80 43	0·9	8·9	17·0	25·9	38 34·0	21 38 17·34	− 0·48	−42·72	−42·83	− 3·75
	7627	16 Pegasi	....	64 41	21·1	30·5	39·9	48·7	47 57·8	21 47 39·60	− 0·41	−42·90	−42·83	− 3·76
Oct. 12	5143	α Coronæ Borealis	....	62 50	22·5	31·6	41·1	50·4	29 59·5	15 29 41·02	− 0·39	−43·63	−43·62	− 1·16
	7627	16 Pegasi	....	64 41	22·0	31·0	40·4	49·3	47 58·5	21 47 40·24	− 0·40	−43·64	−43·62	− 3·67
	577	β Arietis	....	69 49	39·2	47·8	56·8	5·6	48 14·2	1 47 56·72	− 0·42	−43·65	−43·64	− 4·75
	648	α Arietis	....	67 9	1·8	10·6	19·8	28·4	0 37·4	2 0 19·60	− 0·41	−43·60	−43·64	− 4·85
Oct 13	5941	α Ophiuchi	....	77 20	6·8	15·0	23·9	32·1	29 40·4	17 29 23·64	− 0·47	−43·75	−43·84	− 2·10
	8331	ω Piscium	....	83 51	51·7	0·0	8·6	16·8	53 25·0	23 53 8·42	− 0·50	−43·96	−43·90	− 4·26
	4	α Andromedæ	....	61 37	52·0	1·2	10·9	20·1	2 29·4	0 2 10·72	− 0·39	−43·91	−43·91	− 4·64
	26	γ Pegasi	....	75 32	45·8	54·3	3·0	11·5	7 20·0	0 7 2·92	− 0·46	−43·96	−43·92	− 4·39
Oct. 14	8331	ω Piscium	....	83 51	51·9	0·0	8·6	16·9	53 25·0	23 53 8·48	− 0·50	−44·02	−44·05	− 4·26
	4	α Andromedæ	....	61 37	52·1	1·4	11·0	20·2	2 29·6	0 2 10·86	− 0·38	−44·06	−44·06	− 4·64
	18	....	7·0	31 3	45·4	1·3	18·0	33·8	4 49·6	0 4 17·62	− 0·21	....	−44·06	− 6·07
	26	γ Pegasi	....	75 32	46·0	54·3	3·0	11·5	7 20·0	0 7 2·96	− 0·46	−44·00	−44·07	− 4·39
	57	....	7·0	89 2	21·0	29·0	37·4	45·6	11 54·0	0 11 37·40	− 0·53	....	−44·07	− 4·25
	68	....	....	22 54	19·9	40·9	2·8	24·0	15 45·1	0 15 2·54	+ 0·07	....	−44·07	− 7·32
	83	....	6·0	37 40	9·0	22·4	36·4	49·8	19 3·0	0 18 36·12	− 0·19	....	−44·07	− 5·71
	105	....	6·0	13 42	0·4	34·6	10·2	45·0	24 19·5	0 23 9·94	+ 0·46	....	−44·07	−10·40
	149	....	7·0	77 30	24·2	32·6	41·4	49·6	29 58·2	0 29 41·20	− 0·46	....	−44·07	− 4·43
	360	α Ursæ Minoris	....	1 25	10·0	45·5	25·5	58·0	22 32·0	1 11 22·20	+ 9·05	....	−44·08	−87·59
	453	η Piscium	....	75 19	44·5	53·2	1·8	10·4	25 18·9	1 25 1·76	− 0·45	−44·15	−44·08	− 4·59
	577	β Arietis	....	69 49	39·7	48·3	57·2	6·0	48 15·0	1 47 57·24	− 0·42	−44·15	−44·09	− 4·77
	648	α Arietis	....	67 9	2·0	11·0	20·3	29·0	0 37·9	2 0 20·04	− 0·41	−44·02	−44·09	− 4·87
Oct. 17	288	(a) ε Piscium	....	82 48	26·4	34·8	43·3	51·4	56 59·9	0 56 43·16	− 0·38	−45·13	−45·24	− 4·42
	360	α Ursæ Minoris	....	1 25	11·0	47·0	29·0	4·0	22 38·5	1 11 25·90	+ 6·10	....	−45·26	−87·64
	453	η Piscium	....	75 19	45·8	54·3	3·0	11·3	25 20·0	1 25 2·88	− 0·34	−45·36	−45·27	− 4·61
	518	ν Piscium	....	85 10	55·0	3·2	11·5	19·9	35 28·0	1 35 11·52	− 0·38	−45·39	−45·27	− 4·43
	577	β Arietis	....	69 49	40·6	49·4	58·3	7·0	48 16·0	1 47 58·26	− 0·32	−45·24	−45·26	− 4·80
	648	α Arietis	....	67 9	3·4	12·3	21·1	30·2	0 39·0	2 0 21·20	− 0·32	−45·23	−45·25	− 4·91
Oct. 20	8169	κ Piscium	....	89 27	32·2	40·4	48·8	57·0	21 5·2	23 20 48·72	− 0·35	−46·68	−46·70	− 4·08
	8233	ι Piscium	....	85 4	31·9	40·2	48·6	56·9	34 5·0	23 33 48·52	− 0·33	−46·70	−46·70	− 4·16
	4	α Andromedæ	....	61 37	54·3	3·9	13·4	22·6	2 32·0	0 2 13·24	− 0·26	−46·58	−46·70	− 4·62
	26	γ Pegasi	....	75 32	48·3	56·9	5·4	14·0	7 22·6	0 7 5·44	− 0·30	−46·65	−46·70	− 4·38
	360	α Ursæ Minoris	....	1 25	15·0	50·0	31·0	5·5	22 40·0	1 11 28·30	+ 5·33	....	−46·70	−87·57
	453	η Piscium	....	75 19	47·1	55·5	4·4	13·0	25 21·3	1 25 4·26	− 0·30	−46·77	−46·70	− 4·62
	577	β Arietis	....	69 49	42·1	51·0	0·0	8·7	48 17·3	1 47 59·62	− 0·28	−46·82	−46·70	− 4·82
	648	α Arietis	....	67 9	4·7	13·5	22·8	31·6	0 40·6	2 0 22·64	− 0·28	−46·69	−46·70	− 4·93

(a) An apparent inversion of the clock's rate during the observations, most probably caused by a swerving of the Transit piers through temperature.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1864.
1864.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Oct. 24	453	η Piscium	....	75 19	48·0	56·4	5·3	13·7	25 22·2	1 25 5·12	− 0·25	− 47·66	− 47·66	− 4·64
	518	ν Piscium	....	85 10	57·1	5·4	13·9	22·1	35 30·3	1 35 13·76	− 0·28	− 47·70	− 47·66	− 4·46
	648	α Arietis	....	67 9	5·7	14·5	23·7	32·7	0 41·6	2 0 23·64	− 0·24	− 47·69	− 47·67	− 4·97
	704	67 Ceti	....	97 1	47·7	55·9	4·1	12·6	11 21·0	2 11 4·32	− 0·33	− 47·68	− 47·67	− 4·27
	760	ξ² Ceti	....	82 9	31·6	40·0	48·6	56·0	22 5·1	2 21 48·48	− 0·26	− 47·60	− 47·68	− 4·57
	837	γ Ceti	....	87 18	51·0	59·2	8·0	16·0	37 24·3	2 37 7·70	− 0·29	− 47·62	− 47·68	− 4·45
	949	α Ceti	....	86 25	46·2	54·3	3·0	11·1	56 19·3	2 56 2·78	− 0·29	− 47·69	− 47·69	− 4·46
Nov. 1	7908	ζ Pegasi	....	79 50	14·9	23·1	31·8	40·1	35 48·4	22 35 31·66	− 0·21	− 46·95	− 46·98	− 3·75
	4	α Andromedæ	....	61 37	54·4	3·9	13·1	22·9	2 32·2	0 2 13·36	− 0·16	− 46·88	− 46·98	− 4·54
	26	γ Pegasi	....	75 32	18·5	57·0	5·7	14·3	7 22·5	0 7 5·60	− 0·20	− 46·97	− 46·98	− 4·32
	577	β Arietis	....	69 19	42·3	51·0	0·2	8·9	48 17·5	1 47 59·98	− 0·18	− 47·02	− 46·98	− 4·88
	648	α Arietis	....	67 9	5·6	13·8	23·0	32·0	0 40·8	2 0 22·92	− 0·17	− 46·93	− 46·98	− 5·02
Nov. 2	704	67 Ceti	....	97 1	16·4	54·6	3·1	11·4	11 19·7	2 11 3·04	− 0·22	− 46·46	− 46·51	− 4·32
	760	ξ² Ceti	....	82 9	30·4	38·8	47·3	55·5	22 3·9	2 21 47·18	− 0·18	− 46·51	− 46·51	− 4·64
	837	γ Ceti	....	87 18	50·0	58·2	6·6	15·0	37 23·2	2 37 6·60	− 0·19	− 46·54	− 46·51	− 4·53
	986	δ Arietis	....	70 46	25·7	34·3	43·2	52·0	5 0·6	3 4 43·16	− 0·15	− 46·59	− 46·51	− 5·02
	1166	η Tauri	....	66 17	58·1	7·0	16·2	25·1	40 34·2	3 40 16·12	− 0·14	− 46·50	− 46·51	− 5·19
Nov. 8	288	ε Piscium	....	82 18	25·1	33·3	12·0	50·2	56 58·1	0 56 41·50	− 0·08	− 44·09	− 44·08	− 4·40
	360	α Ursæ Minoris	....	1 25	11·5	46·0	28·5	1·0	22 38·5	1 11 25·70	+ 1·75	....	− 44·06	− 64·24
	453	η Piscium	....	75 19	44·1	53·0	1·4	10·0	25 18·5	1 25 1·40	− 0·07	− 44·10	− 44·07	− 4·66
	577	β Arietis	....	69 49	39·3	48·0	57·0	5·8	48 14·5	1 47 56·92	− 0·07	− 44·05	− 44·07	− 4·90
	648	α Arietis	....	67 9	2·0	11·0	20·2	28·8	0 38·0	2 0 20·00	− 0·05	− 44·17	− 44·07	− 5·04
	837	γ Ceti	....	87 18	47·4	55·5	4·2	12·3	37 20·5	2 37 3·08	− 0·09	− 43·98	− 44·06	− 4·57
	949	α Ceti	....	86 25	42·4	50·6	59·2	7·2	56 15·5	2 55 58·98	− 0·09	− 43·94	− 44·06	− 4·61
	1166	η Tauri	....	66 17	55·8	4·4	13·8	22·8	40 31·9	3 40 13·74	− 0·05	− 44·12	− 44·05	− 5·28
Nov. 9	837	γ Ceti	....	87 18	47·0	55·2	3·6	12·0	37 20·2	2 37 3·60	− 0·09	− 43·59	− 43·60	− 4·58
	949	α Ceti	....	86 25	42·0	50·1	58·8	7·0	56 15·1	2 55 58·60	− 0·09	− 43·55	− 43·60	− 4·62
	986	δ Arietis	....	70 46	22·8	31·4	40·3	49·0	4 57·6	3 4 40·22	− 0·07	− 43·65	− 43·59	− 5·10
	1166	η Tauri	....	66 17	55·2	4·0	13·1	22·3	40 31·2	3 40 13·22	− 0·05	− 43·59	− 43·59	− 5·29
Nov. 11	986	δ Arietis	....	70 46	21·8	30·5	39·4	48·3	4 57·0	3 4 39·40	− 0·07	− 42·82	− 42·78	− 5·11
	1166	η Tauri	....	66 17	54·5	3·3	12·6	21·6	40 30·3	3 10 12·46	− 0·05	− 42·81	− 42·78	− 5·31
	4696	α Draconis	....	24 58	44·3	3·6	23·5	43·0	2 2·6	14 1 23·40	+ 0·03	....	− 42·78	+ 2·66
	4876	ι Bootis	....	62 22	28·1	37·4	47·0	56·1	40 5·3	14 39 46·78	− 0·06	− 42·72	− 42·78	− 1·13
Nov. 21	453	η Piscium	....	75 19	42·5	50·9	59·6	8·0	25 16·3	1 24 59·46	− 0·07	− 42·19	− 42·08	− 4·63
	648	α Arietis	....	67 9	0·0	9·0	18·3	27·0	0 36·0	2 0 18·06	− 0·06	− 42·20	− 42·08	− 5·06
	837	γ Ceti	....	87 18	45·5	53·4	2·2	10·3	37 18·6	2 37 2·00	− 0·08	− 41·96	− 42·08	− 4·62
	949	α Ceti	....	86 25	40·5	48·8	57·0	5·4	56 13·7	2 55 57·08	− 0·08	− 41·98	− 42·08	− 4·68
	986	δ Arietis	....	70 46	21·1	29·9	38·9	47·6	4 56·2	3 4 38·74	− 0·06	− 42·09	− 42·08	− 5·19
	1166	η Tauri	....	66 17	53·7	2·6	12·0	21·0	40 29·9	3 40 11·84	− 0·06	− 42·06	− 42·08	− 5·43
Nov. 23	360	(a) α Ursæ Minoris	....	1 25	3·5	38·5	21·0	56·0	22 31·0	1 11 18·00	+ 0·81	....	− 41·66	− 78·15
	453	η Piscium	....	75 19	41·9	50·2	59·0	7·3	25 15·9	1 24 58·86	− 0·07	− 41·60	− 41·66	− 4·62
	518	ν Piscium	....	85 10	51·0	59·2	7·8	16·0	35 24·1	1 35 7·62	− 0·09	− 41·75	− 41·66	− 4·46
	577	β Arietis	....	69 49	37·0	45·4	54·9	3·4	48 12·0	1 47 54·54	− 0·07	− 41·68	− 41·66	− 4·89
	837	γ Ceti	....	87 18	45·3	53·4	1·9	10·0	37 19·2	2 37 1·76	− 0·09	− 41·71	− 41·66	− 4·62

(a) Definition very bad all night.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1864.
1864.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Nov. 23	949	α Ceti	....	86 25	40·1	48·4	56·8	5·0	56 13·2	2 55 56·70	− 0·09	−41·58	−41·66	− 4·69
	986	δ Arietis	....	70 46	21·0	29·5	38·6	47·1	4 55·9	3 4 38·42	− 0·07	−41·75	−41·66	− 5·20
	1166	η Tauri	....	66 17	53·5	2·2	11·6	20·2	40 29·3	3 40 11·36	− 0·07	−41·55	−41·65	− 5·45
Nov. 26	648	α Arietis	....	67 9	59·6	8·5	17·6	26·5	0 35·4	2 0 17·52	− 0·06	−41·67	−41·67	− 5·05
	760	ξ[2] Ceti	....	82 9	25·5	33·9	42·4	50·6	21 59·0	2 21 42·28	− 0·09	−41·63	−41·67	− 4·71
	837	γ Ceti	....	87 18	45·1	53·3	2·0	10·2	37 18·4	2 37 1·60	− 0·09	−41·74	−41·67	− 4·63
	949	α Ceti	....	86 25	40·1	48·3	57·0	5·2	56 13·3	2 55 56·78	− 0·09	−41·65	−41·67	− 4·70
Nov. 28	1166	η Tauri	....	66 17	53·4	2·2	11·5	20·4	40 29·4	3 40 11·38	− 0·07	−41·53	−41·57	− 5·49
	1376	ε Tauri	....	71 6	10·2	19·0	27·9	36·4	21 45·2	4 21 27·74	− 0·07	−41·63	−41·57	− 5·36
	1420	α Tauri	....	73 45	36·9	45·2	54·1	2·8	29 11·2	4 28 54·04	− 0·09	−41·52	−41·57	− 5·26
	1520	ι Aurigæ	....	57 2	36·4	46·1	56·2	6·0	49 15·9	4 48 56·12	− 0·07	−41·60	−41·57	− 6·01
	4729	α Bootis	....	70 8	53·1	2·0	11·0	19·7	10 28·4	14 10 10·64	− 0·07	−41·46	−41·50	− 1·75
	4876	ε Bootis	....	62 22	27·0	36·4	46·0	55·2	40 4·4	14 39 45·80	− 0·07	−41·49	−41·50	− 1·37
Nov. 29	949	α Ceti	....	86 25	39·8	48·0	56·5	4·7	56 13·0	2 55 56·40	− 0·11	−41·25	−41·28	− 4·70
	986	(a) δ Arietis	....	70 46	20·6	29·0	38·2	46·9	4 55·5	3 4 38·04	− 0·08	−41·33	−41·28	− 5·23
	1376	ε Tauri	....	71 6	10·0	18·6	27·5	36·2	21 45·0	4 21 27·46	− 0·08	−41·33	−41·28	− 5·37
	1420	α Tauri	....	73 45	36·4	45·1	53·9	2·3	29 11·0	4 28 53·74	− 0·09	−41·21	−41·28	− 5·27
Nov. 30	6772	γ Aquilæ	....	79 42	14·1	22·4	31·2	39·4	40 47·8	19 40 30·98	− 0·11	−41·00	−41·00	− 2·24
	6802	α Aquilæ	....	81 28	35·3	43·6	52·3	0·7	45 9·0	19 44 52·15	− 0·11	−40·91	−41·00	− 2·33
	6833	β Aquilæ	....	83 54	4·9	13·1	21·6	29·9	49 38·1	19 49 21·52	− 0·11	−41·10	−41·00	− 2·38
	1166	η Tauri	....	66 17	52·9	1·7	11·0	20·0	40 29·0	3 40 10·92	− 0·08	−41·05	−41·02	− 5·50
	1376	ε Tauri	....	71 6	9·8	18·3	27·2	36·0	21 44·6	4 21 27·18	− 0·09	−41·03	−41·02	− 5·38
	1420	α Tauri	....	73 45	36·4	44·9	53·6	2·2	29 10·8	4 28 53·58	− 0·10	−41·03	−41·03	− 5·27
Dec. 1	701	67 Ceti	....	97 1	40·5	48·9	57·3	5·4	11 13·7	2 10 57·16	− 0·15	−40·64	−40·64	− 4·33
	760	ξ[2] Ceti	....	82 9	24·8	33·0	41·3	49·8	21 58·0	2 21 41·38	− 0·12	−40·71	−40·63	− 4·70
	1166	η Tauri	....	66 17	52·6	1·4	10·8	19·5	40 28·4	3 40 10·54	− 0·09	−40·65	−40·63	− 5·51
	1376	ε Tauri	....	71 6	9·4	18·0	26·9	35·5	21 44·3	4 21 26·82	− 0·10	−40·65	−40·62	− 5·39
	1420	α Tauri	....	73 45	36·0	44·4	53·2	1·8	29 10·2	4 28 53·12	− 0·11	−40·55	−40·61	− 5·29
Dec. 5	1166	η Tauri	....	66 17	51·0	0·0	9·4	18·4	40 27·2	3 40 9·20	− 0·10	−39·28	−39·25	− 5·53
	1376	ε Tauri	....	71 6	8·0	16·7	25·6	34·3	21 43·0	4 21 25·52	− 0·12	−39·30	−39·25	− 5·42
	1420	α Tauri	....	73 45	34·5	43·1	52·0	0·4	29 9·2	4 28 51·84	− 0·12	−39·22	−39·25	− 5·33
	1520	ι Aurigæ	....	57 2	34·1	44·0	54·0	3·8	49 13·5	4 48 53·88	− 0·09	−39·24	−39·25	− 6·11
	1623	β Orionis	....	98 21	27·5	35·7	44·3	52·4	9 0·7	5 8 44·12	− 0·17	−39·20	−39·25	− 4·60
Dec. 7	1166	η Tauri	....	66 17	50·8	59·2	9·0	17·8	40 27·0	3 40 8·76	− 0·12	−38·82	−38·85	− 5·53
	1376	ε Tauri	....	71 5	7·5	16·2	25·2	34·0	21 42·6	4 21 25·10	− 0·14	−38·84	−38·85	− 5·44
	1420	α Tauri	....	73 45	34·2	42·7	51·6	0·1	29 8·8	4 28 51·48	− 0·14	−38·82	−38·85	− 5·35
	1520	ι Aurigæ	....	57 2	33·9	43·6	53·7	3·4	49 13·2	4 48 53·56	− 0·10	−38·89	−38·85	− 6·13
	1681	β Tauri	....	61 30	7·9	17·2	26·9	36·2	18 45·4	5 18 26·72	− 0·11	−38·89	−38·85	− 5·90
Dec. 8	360	α Ursæ Minoris	....	1 25	44·0	22·0	7·5	42·5	22 16·5	1 11 2·50	+ 4·65	....	−38·72	−69·32
	453	η Piscium	....	75 19	38·9	47·2	56·1	4·4	25 13·0	1 24 55·92	− 0·16	−38·67	−38·71	− 4·52
	518	ν Piscium	....	85 10	48·0	56·3	4·8	13·0	35 21·2	1 35 4·66	− 0·18	−38·79	−38·71	− 4·37
	1166	η Tauri	....	66 17	50·6	59·4	8·8	17·9	40 26·6	3 40 8·66	− 0·13	−38·71	−38·71	− 5·53
	1376	ε Tauri	....	71 6	7·4	16·0	25·2	33·8	21 42·2	4 21 24·92	− 0·15	−38·83	−38·71	− 5·44

(a) Faint. Cloudy.

Date.	No. in British Association Catalogue.	Object Observed.	[illegible]	[illegible]	Times observed I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviation.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1864.
1864.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Dec. 8	1420	α Tauri	....	73 45	34·0	42·5	51·5	0·0	29 8·5	4 28 51·30	− 0·16	− 38·62	− 38·71	− 5·35
	1520	ι Aurigæ	....	57 2	33·9	43·3	53·7	3·5	49 13·0	4 48 53·48	− 0·11	− 38·79	− 38·71	− 6·14
Dec. 9	360	(a) α Ursæ Minoris	....	1 25	44·5	23·5	6·5	42·5	22 16·5	1 11 2·70	+ 3·76	....	− 38·62	− 68·64
	453	η Piscium	....	75 19	38·6	47·2	56·0	4·4	25 13·0	1 24 55·84	− 0·13	− 38·63	− 38·62	− 4·51
	577	β Arietis	....	69 49	33·9	42·4	51·5	0·1	48 9·1	1 47 51·46	− 0·12	− 38·62	− 38·62	− 4·82
	1376	(b) ι Tauri	....	71 6	7·4	16·0	25·0	33·7	21 42·3	4 21 24·88	− 0·13	− 38·62	− 38·62	− 5·45
	1420	α Tauri	....	73 45	34·0	42·6	51·3	0·0	29 8·4	4 28 51·26	− 0·13	− 38·60	− 38·62	− 5·36
Dec. 19	453	(c) η Piscium	....	75 19	37·0	45·4	54·1	2·6	25 11·0	1 24 54·02	− 0·06	− 36·97	− 36·94	− 4·42
	518	ι Piscium	....	85 10	46·0	54·3	2·9	11·0	35 19·3	1 35 2·70	− 0·09	− 37·01	− 36·94	− 4·28
	577	β Arietis	....	69 49	32·0	40·9	49·9	58·5	48 7·1	1 47 49·68	− 0·06	− 36·99	− 36·94	− 4·73
	837	γ Ceti	....	87 18	40·4	48·5	57·1	5·3	37 13·4	2 36 56·94	− 0·10	− 36·94	− 36·94	− 4·56
	949	α Ceti	....	86 25	35·4	43·6	52·1	0·2	56 8·6	2 55 51·98	− 0·09	− 36·89	− 36·94	− 4·66
	1681	β Tauri	....	61 30	6·0	15·2	25·0	34·3	18 43·6	5 18 24·82	− 0·04	− 36·92	− 36·94	− 6·04
Dec. 21	837	γ Ceti	....	87 18	40·0	48·2	56·9	5·0	37 13·1	2 36 56·64	− 0·08	− 36·68	− 36·61	− 4·54
	1730	δ Orionis	....	90 23	28·5	36·8	45·3	53·4	26 1·6	5 25 45·12	− 0·04	− 36·55	− 36·61	− 4·97
	1765	ι Orionis	....	91 17	43·8	52·0	0·4	8·5	30 17·0	5 30 0·34	− 0·08	− 36·57	− 36·61	− 4·93
	1883	α Orionis	....	82 37	13·9	22·0	30·6	38·9	48 47·1	5 46 30·50	− 0·07	− 36·65	− 36·61	− 5·21
Dec. 24	837	γ Ceti	....	87 18	38·9	47·0	55·5	3·7	37 12·0	2 36 55·42	− 0·06	− 35·50	− 35·53	− 4·52
	949	α Ceti	....	86 25	34·0	42·2	50·6	59·0	56 7·2	2 55 50·60	− 0·06	− 35·56	− 35·53	− 4·64
	986	δ Arietis	....	70 46	13·8	23·2	32·4	41·0	4 49·9	3 4 32·06	− 0·03	− 35·45	− 35·53	− 5·18
	1166	η Tauri	....	66 17	47·3	56·1	5·4	14·4	40 23·5	3 40 5·40	− 0·02	− 35·56	− 35·53	− 5·53
	1376	ι Tauri	....	71 6	4·5	13·0	21·9	30·6	21 39·3	4 21 21·66	− 0·03	− 35·64	− 35·53	− 5·51
	1420	α Tauri	....	73 45	31·0	39·5	48·2	56·6	29 5·2	4 28 48·10	− 0·04	− 35·46	− 35·53	− 5·43
Dec. 29	7368	ζ Cygni	....	60 18	26·6	36·1	45·8	55·2	8 4·9	21 7 45·72	− 0·00	− 34·69	− 34·65	− 2·49
	7561	ι Pegasi	....	80 43	51·0	59·2	7·9	16·1	38 24·5	21 38 7·74	− 0·03	− 34·63	− 34·65	− 2·49
	1376	ι Tauri	....	71 6	3·3	12·0	21·0	29·6	21 38·3	4 21 20·84	− 0·00	− 34·66	− 34·64	− 5·59
	1420	α Tauri	....	73 45	30·0	38·5	47·4	56·0	29 4·4	4 28 17·26	− 0·02	− 34·65	− 34·64	− 5·42
	1681	β Tauri	....	61 30	3·9	13·0	22·8	32·0	18 41·2	5 18 22·58	− 0·00	− 34·66	− 34·64	− 6·10
	1730	δ Orionis	....	90 23	26·6	35·0	43·3	51·5	25 59·7	5 25 43·22	− 0·05	− 34·60	− 34·64	− 5·01
	1765	ι Orionis	....	91 17	41·9	50·0	58·5	6·7	30 15·0	5 29 58·42	− 0·05	− 34·63	− 34·64	− 4·98
Dec. 30	7368	ζ Cygni	....	60 18	26·6	36·1	46·0	55·4	8 4·9	21 7 45·80	+ 0·01	− 34·79	− 34·68	− 2·06
	7561	ι Pegasi	....	80 43	51·0	59·2	7·9	16·2	38 24·6	21 38 7·76	− 0·02	− 34·68	− 34·68	− 2·69
	7908	ζ Pegasi	....	79 50	1·8	10·0	18·6	26·9	35 35·2	22 35 18·50	− 0·02	− 34·71	− 34·68	− 3·02
	360	α Ursæ Minoris	....	1 25	27·5	2·5	47·0	22·5	21 58·0	1 10 43·50	+ 2·60	....	− 34·65	− 52·55
	420	ϑ Ceti	....	98 51	35·1	43·4	52·1	0·3	18 6·9	1 17 51·96	− 0·05	− 34·59	− 34·65	− 3·81
	453	η Piscium	....	75 19	34·2	43·0	51·6	0·1	25 8·6	1 24 51·50	− 0·00	− 34·63	− 34·64	− 4·39
	1765	ι Orionis	....	91 17	41·8	50·0	58·4	6·6	30 14·9	5 29 58·34	− 0·03	− 34·57	− 34·63	− 4·98
	1883	α Orionis	....	82 37	11·6	20·0	28·6	36·8	48 45·0	5 48 28·40	− 0·02	− 34·53	− 34·63	− 5·25
	1968	κ Orionis	....	75 13	11·5	20·0	28·7	37·2	0 45·8	6 0 28·64	− 0·00	− 34·69	− 34·63	− 5·54

(a) Faint. Cloudy. (b) Very faint. (c) Very bad observing night. Stars blurred.

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ROYAL OBSERVATORY, EDINBURGH.

Individual Observations of Mean Right Ascensions of Stars observed at the Royal Observatory, Edinburgh, in the Year 1864, reduced to January 1, 1864.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
		B.A.C. 4, α Andromedæ.		
			° ′	h. m. s.
Jan. 7	0·02	(1·0) (a)	61 40	0 1 21·79
19	0·05			21·80
Feb. 12	0·12			21·80
Sept. 16	0·71			21·84
21	0·72			21·86
30	0·75			21·79
Oct. 13	0·78			21·78
14	0·79			21·78
20	0·80			21·66
Nov. 1	0·84			21·68
		B.A.C. 18.		
Oct. 14	0·79	7·0	31 3	0 3 27·28
		B.A.C. 26, γ Pegasi.		
Jan. 7	0·02	(2·0)	75 34	0 6 14·11
19	0·05			14·18
Feb. 12	0·12			14·07
Sept. 21	0·72			14·10
30	0·75			14·02
Oct. 13	0·78			14·15
14	0·79			14·04
20	0·80			14·06
Nov. 1	0·84			14·10
		B.A.C. 57.		
Oct. 14	0·79	7·0	89 4	0 10 48·55
		B.A.C. 68.		
Oct. 14	0·79	(7·0)	22 56	0 14 11·22
		B.A.C. 83.		
Oct. 14	0·79	6·0	37 42	0 17 46·15
		B.A.C. 105.		
Oct. 14	0·79	6·0	13 44	0 22 15·93
		B.A.C. 149.		
Oct. 41	0·79	7·0	77 32	0 28 52·24
		B.A.C. 288, ε Piscium.		
Jan. 18	0·05	4·0	82 51	0 56 53·13
19	0·05			53·12
Sept. 30	0·75			53·16
Oct. 17	0·79			53·12
Nov. 8	0·85			53·24
		B.A.C. 420, θ Ceti.		
Jan. 14	0·04	(3·0)	98 53	1 17 13·44
18	0·05			13·42
19	0·05			13·49
Dec. 30	1·00			13·45
		B.A.C. 453, η Piscium.		
Jan. 14	0·04	(4·0)	75 21	1 24 12·54
18	0·05			12·64
19	0·05			12·58
Sept. 30	0·75			12·73
Oct. 14	0·79			12·64
17	0·79			12·66
20	0·80			12·64
24	0·81			12·57
Nov. 8	0·85			12·60
21	0·89			12·68
23	0·90			12·51
Dec. 8	0·94			12·53
9	0·94			12·58
19	0·97			12·60
30	1·00			12·56
		B.A.C. 518, ο Piscium.		
Oct. 17	0·79	(5·0)	85 12	1 34 21·44
24	0·81			21·36
Nov. 23	0·90			21·41
Dec. 8	0·94			21·40
19	0·97			21·39
		B.A.C. 577, β Arietis.		
Oct. 12	0·78	(3·0)	69 52	1 47 7·91
14	0·79			7·96
17	0·79			7·86
20	0·80			8·02
Nov. 1	0·84			7·94
8	0·85			7·88
23	0·90			7·92
Dec. 9	0·94			7·90
19	0·97			7·95
		B.A.C. 648, α Arietis.		
Feb. 18	0·13	(2·0)	67 11	1 59 30·78
26	0·15			30·87
Oct. 12	0·78			30·70
14	0·79			30·67
17	0·79			30·72
20	0·80			30·73
24	0·81			30·76
Nov. 1	0·84			30·75
8	0·85			30·84
21	0·89			30·86
26	0·90			30·74
		B.A.C. 704, 67 Ceti.		
Oct. 24	0·81	(6·0)	97 3	2 10 12·05
Nov. 2	0·84			11·99
Dec. 1	0·92			12·04

(a) Magnitudes in parenthesis, are the tabular ones of the British Association Catalogue.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.

B.A.C. 760, ξ² Ceti.

Month and Day	Fraction of Year	Magnitude	N.P.D. ° ′	Mean R.A. h m s
Oct. 24	0·81	(4·0)	82 9	2 20 55·97
Nov. 2	0·84			55·85
26	0·90			55·81
Dec. 1	0·92			55·93

B.A.C. 837, γ Ceti.

Month and Day	Fraction of Year	Magnitude	N.P.D.	Mean R.A.
Jan. 5	0·01	(3·0)	87 20	2 36 15·35
Oct. 24	0·81			15·28
Nov. 2	0·84			15·37
8	0·85			15·26
9	0·86			15·33
21	0·89			15·22
23	0·90			15·39
26	0·90			15·41
Dec. 19	0·97			15·34
[illegible]	0·97			15·41
24	0·98			15·31

B.A.C. 949, α Ceti.

Month and Day	Fraction of Year	Magnitude	N.P.D.	Mean R.A.
Jan. 5	0·01	(2·5)	86 27	2 55 10·29
Oct. 24	0·81			10·34
Nov. 8	0·85			10·22
9	0·86			10·29
21	0·89			10·24
23	0·90			10·26
26	0·90			10·32
29	0·91			10·31
Dec. 19	0·97			10·29
24	0·98			10·37

B.A.C. 966, δ Arietis.

Month and Day	Fraction of Year	Magnitude	N.P.D.	Mean R.A.
Nov. 2	0·84	(4·0)	70 47	3 3 51·48
9	0·86			51·46
11	0·86			51·44
21	0·89			51·41
23	0·90			51·49
29	0·91			51·45
Dec. [illegible]	0·98			51·32

B.A.C. 1166, η Tauri.

Month and Day	Fraction of Year	Magnitude	N.P.D.	Mean R.A.
Nov. 2	0·84	(3·0)	66 19	3 39 24·28
8	0·85			24·36
9	0·86			24·29
11	0·86			24·32

B.A.C. 1166, η Tauri.

Month and Day	Fraction of Year	Magnitude	N.P.D. ° ′	Mean R.A. h m s
Nov. 21	0·89	(3·0)	66 19	3 39 24·27
23	0·90			24·19
28	0·91			24·25
30	0·91			24·32
Dec. 1	0·92			24·31
5	9·93			24·32
7	0·93			24·26
8	0·94			24·29
24	0·96			24·32

B.A.C. 1347.

Month and Day	Fraction of Year	Magnitude	N.P.D.	Mean R.A.
Jan. 5	0·01	8·0	65 55	4 15 17·69

B.A.C. 1361.

Month and Day	Fraction of Year	Magnitude	N.P.D.	Mean R.A.
Jan. 5	0·01	(6·0)	71 16	4 17 1·97

B.A.C. 1376, ε Tauri.

Month and Day	Fraction of Year	Magnitude	N.P.D.	Mean R.A.
Jan. 4	0·01	(3·5)	71 7	4 20 40·66
Feb. 23	0·15			40·75
Nov. 28	0·91			40·74
29	0·91			40·73
30	0·91			40·69
Dec. 1	0·92			40·71
5	0·93			40·73
7	0·93			40·67
8	0·94			40·62
9	0·94			40·68
24	0·98			40·79
29	0·99			40·70

B.A.C. 1420, α Tauri.

Month and Day	Fraction of Year	Magnitude	N.P.D.	Mean R.A.
Jan. 4	0·01	(1·0)	73 46	4 28 7·09
5	0·01			7·19
Feb. 23	0·15			7·16
Nov. 28	0·91			7·12
29	0·91			7·10
30	0·91			7·18
Dec. 1	0·92			7·11
5	0·93			7·14
7	0·93			7·14
8	0·94			7·08
9	0·94			7·15
24	0·98			7·10
29	0·99			7·18

B.A.C. 1434.

Month and Day	Fraction of Year	Magnitude	N.P.D. ° ′	Mean R.A. h m s
Jan. 5	0·01	5·5	77 45	4 30 [illegible]·56

B.A.C. 1463.

Month and Day	Fraction of Year	Magnitude	N.P.D.	Mean R.A.
Jan. 5	0·01	7·5	66 38	4 37 30·25

B.A.C. 1520, ι Aurigæ.

Month and Day	Fraction of Year	Magnitude	N.P.D.	Mean R.A.
Feb. 2	0·09	(4·0)	57 3	4 48 8·49
Nov. 28	0·91			8·47
Dec. 5	0·93			8·43
7	0·93			8·48
8	0·94			8·52

B.A.C. 1623, β Orionis.

Month and Day	Fraction of Year	Magnitude	N.P.D.	Mean R.A.
Jan. 7	0·02	(1·0)	98 [illegible]	5 7 60·03
Feb. 2	0·09			59·99
4	0·09			60·05
Dec. 5	0·93			60·10

B.A.C. 1681, β Tauri.

Month and Day	Fraction of Year	Magnitude	N.P.D.	Mean R.A.
Jan. 2	0·00	(2·0)	61 31	5 17 41·72
4	0·01			41·35
7	0·02			41·53
17	0·04			41·65
18	0·05			41·55
Feb. 2	0·09			41·52
4	0·09			41·62
Dec. 7	0·93			41·56
19	0·97			41·56
29	0·99			41·64

B.A.C. 1703.

Month and Day	Fraction of Year	Magnitude	N.P.D.	Mean R.A.
Jan. 5	0·01	7·0	73 40	5 20 19·66

B.A.C. 1730, δ Orionis.

Month and Day	Fraction of Year	Magnitude	N.P.D.	Mean R.A.
Jan. 2	0·00	(2·0)	90 24	5 25 3·60
7	0·02			3·54
17	[illegible]·04			3·46
Dec. 21	0·97			3·50
29	0·99			3·53

B.A.C. 1765, ι Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Jan. 2	0·00	(2·5)	91° 17′	5h 29m 18s·50
5	0·01			18·71
7	0·02			18·86
17	0·04			18·84
Dec. 21	0·97			18·72
29	0·99			18·75
30	1·00			18·70

B.A.C. 1883, α Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Jan. 2	0·00	(1·0)	82 37	5 47 48·54
4	0·01			48·61
5	0·01			48·62
7	0·02			48·58
17	0·04			48·56
19	0·05			48·53
23	0·06			48·53
Dec. 21	0·97			48·61
30	1·00			48·47

B.A.C. 1958, ν Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Jan. 19	0·05	(4·5)	75 13	5 59 48·50
23	0·06			48·41
27	0·07			48·41
Feb. 5	0·10			48·40
Dec. 30	1·00			48·47

B.A.C. 2163, γ Geminorum.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Jan. 4	0·01	(2·5)	73 29	6 29 51·36
5	0·01			51·31
23	0·06			51·30
27	0·07			51·28
Feb. 2	0·09			51·30
5	0·10			51·28

B.A.C. 2410, δ Geminorum.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Jan. 5	0·01	(3·0)	67 46	7 11 60·04
18	0·05			59·92
20	0·05			60·08
23	0·06			59·96
27	0·07			59·97
28	0·07			60·02
Feb. 5	0·10			60·03
14	0·12			59·94
16	0·13			60·02
18	0·13			59·96

B.A.C. 2462, β Canis Minoris.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Jan. 18	0·05	(3·0)	81° 26′	7h 19m 46s·46
Feb. 5	0·10			46·46

B.A.C. 2485, α² Geminorum.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Jan. 19	0·05	(1·5)	57 49	7 25 55·09
20	0·05			54·94
27	0·07			55·09
28	0·07			55·08
Feb. 2	0·09			55·07
12	0·12			55·13
14	0·12			55·09
15	0·12			55·05
16	0·13			55·15
18	0·13			55·26

B.A.C. 2522, α Canis Minoris.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Jan. 18	0·05	(1·0)	84 26	7 32 10·84
19	0·05			10·93
27	0·07			10·87
28	0·07			10·88
Feb. 2	0·09			10·93
5	0·10			10·85
12	0·12			10·82
14	0·12			10·85
15	0·12			10·92
16	0·13			10·79
18	0·13			10·85

B.A.C. 2555, β Geminorum.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Jan. 18	0·05	(2·0)	61 39	7 36 59·44
19	0·05			59·38
27	0·07			59·41
28	0·07			59·45
Feb. 2	0·09			59·41
5	0·10			59·46
12	0·12			59·42
14	0·12			59·49
15	0·12			59·41
16	0·13			59·38
18	0·13			59·31

B.A.C. 2586.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Feb. 2	0·09	7·0	61° 28′	7h 41m 31s·37
4	0·09	7·0		31·39
5	0·10	8·0		31·45
12	0·12	7·0		31·32

B.A.C. 2672, 6 Cancri.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Jan. 18	0·05	(5·5)	61 50	7 55 9·65
28	0·07			9·56
Feb. 2	0·09			9·67
4	0·09			9·61
5	0·10			9·67
12	0·12			9·62
23	0·15			9·65
Mar. 8	0·18			9·73

B.A.C. 2683.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Feb. 4	0·09	6·0	70 47	7 56 53·48
5	0·10			53·56
16	0·13	6·5		53·52
Mar. 8	0·18			53·56

B.A.C. 2688.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Feb. 2	0·09	(7·0)	62 5	7 57 16·66
12	0·12			16·68

B.A.C. 2737.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Feb. 2	0·09	7·0	74 58	8 3 20·29
4	0·09	6·0		20·24
5	0·10	7·0		20·27

B.A.C. 2748.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Feb. 2	0·09	6·5	75 36	8 4 45·45
4	0·09	7·0		45·49
5	0·10			45·54

B.A.C. 2761.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Feb. 2	0·09	7·0	76 32	8 6 47·18
4	0·09	7·0		47·24
5	0·10	6·0		47·25

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1864
B.A.C. 2778, β Cancri.				
			° ′	h m s
Feb. 2	0·09	3·0	80 24	8 9 8·26
4	0·09	3·0		8·21
5	0·10	4·0		8·26
B.A.C. 2862, η Cancri.				
Jan. 20	0·05	(6·0)	69 6	8 24 50·37
28	0·07			50·38
Feb. 4	0·09			50·45
B.A.C. 2867.				
Feb. 15	0·12	7·0	79 29	8 25 15·65
23	0·15	6·0		15·71
B.A.C. 2882.				
Feb. 4	0·09	6·0	29 35	8 28 4·35
5	0·10	6·0		4·47
12	0·12	7·5		4·38
B.A.C. 2937, γ Cancri.				
Feb. 4	0·09	6·0	68 3	8 35 24·70
5	0·10	5·0		24·83
12	0·12			24·73
B.A.C. 2971, ε Hydræ.				
Jan. 20	0·05	(4·0)	83 5	8 39 34·27
28	0·07			34·32
Feb. 4	0·09			34·30
5	0·10			34·28
8	0·10			34·33
15	0·12			34·33
18	0·13			34·26
19	0·13			34·34
23	0·15			34·40
26	0·15			34·23
Mar. 8	0·18			34·29
B.A.C. 2988.				
Feb. 4	0·09	7·5	34 33	8 42 55·27
12	0·12	8·0		55·35
15	0·12	7·0		55·38
B.A.C. 3004.				
Feb. 19	0·13	7·0	23 58	8 45 0·04
26	0·16	7·5		0·19
B.A.C. 3013.				
Feb. 4	0·09	6·0	84 9	8 45 13·04
5	0·10	7·0		13·21
12	0·12			13·21
B.A.C. 3048, ι Ursæ Majoris.				
Feb. 19	0·13		41 26	8 49 53·10
26	0·16	3·0		53·04
B.A.C. 3053.				
Feb. 4	0·09	6·0	80 5	8 50 21·79
5	0·10	7·0		21·87
12	0·12			21·86
B.A.C. 3055, α Cancri.				
Feb. 15	0·12	5·0	77 37	8 51 2·87
23	0·15	4·0		2·84
Mar. 8	0·18			2·73
B.A.C. 3083.				
Feb. 4	0·09	7·0	38 38	8 55 43·47
5	0·10	7·0		43·57
12	0·12			43·62
B.A.C. 3086.				
Feb. 15	0·12	6·0	30 6	8 56 7·69
19	0·13	7·0		8·03
26	0·15	7·0		8·03
B.A.C. 3093.				
Feb. 23	0·15	8·0	64 51	8 56 54·42
Mar. 8	0·18			54·46
B.A.C. 3103.				
Feb. 4	0·09	7·0	72 21	8 58 37·87
5	0·10	7·5		37·94
12	0·12			38·03
B.A.C. 3111, κ Cancri.				
Feb. 15	0·12	5·5	78 47	9 0 22·68
19	0·13	6·0		22·77
23	0·15	5·0		22·73
B.A.C. 3133.				
Feb. 12	0·12		65 35	9 5 6·50
15	0·12	6·0		6·47
19	0·13	7·0		6·51
B.A.C. 3157.				
Feb. 15	0·12	7·5	29 39	9 10 3·31
B.A.C. 3171, 83 Cancri.				
Feb. 4	0·09		71 43	9 11 23·27
8	0·10			23·34
19	0·13	6·0		23·26
24	0·15			23·26
25	0·15			23·31
Mar. 8	0·18			23·34
9	0·19			23·29
B.A.C. 3223, α Hydræ.				
Feb. 8	0·10	(2·0)	98 4	9 20 54·17
12	0·12			54·15
19	0·13			54·09
24	0·15			54·14
25	0·15			54·17
B.A.C. 3242, θ Ursæ Majoris.				
Feb. 19	0·13	(3·0)	37 42	9 23 44·66
B.A.C. 3312.				
Feb. 23	0·15	4·0	79 29	9 33 53·31
24	0·15	4·0		53·31
B.A.C. 3331, ε Leonis.				
Feb. 5	0·10	(3·0)	65 36	9 38 7·55
8	0·10			7·56
12	0·12			7·72
15	0·12			7·63
16	0·13			7·57

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
B.A.C. 3331, ε Leonis.				
			° ′	h. m. s.
Feb. 17	0·13	(3·0)	65 36	9 38 7·61
18	0·13			7·64
19	0·13			7·56
23	0·15			7·53
24	0·15			7·59
25	0·15			7·68
Mar. 8	0·18			7·56
9	0·19			7·62
12	0·19			7·59
18	0·21			7·58
April 29	0·33			7·59
B.A.C. 3371, μ Leonis.				
Feb. 16	0·13		63 21	9 45 1·37
19	0·13	4·0		1·51
23	0·15	3·5		1·44
24	0·15	4·0		1·42
B.A.C. 3375.				
Feb. 25	0·15	8·0	54 23	9 45 30·10
Mar. 9	0·19			30·05
17	0·21	7·0		30·16
B.A.C. 3380.				
Feb. 16	0·13	6·0	83 24	9 46 34·36
23	0·15	6·0		34·38
24	0·15	6·0		34·29
B.A.C. 3415, π Leonis.				
Feb. 8	0·10		81 18	9 53 1·40
12	0·12			1·53
16	0·13	5·0		1·50
17	0·13			1·50
18	0·13			1·41
19	0·13			1·45
23	0·15			1·44
Mar. 8	0·18			1·38
10	0·19			1·43
12	0·19			1·43
17	0·21			1·30
B.A.C. 3418.				
			° ′	h. m. s.
Feb. 24	0·15	8·0	80 24	9 53 48·31
25	0·15	8·0		48·33
Mar. 9	0·19	7·5		48·38
B.A.C. 3427.				
Feb. 24	0·15	8·0	56 42	9 56 2·70
25	0·15	8·0		2·77
Mar. 9	0·19	7·0		2·76
B.A.C. 3430.				
Feb. 19	0·13	8·0	81 7	9 56 5·66
23	0·15	8·0		5·62
Mar. 17	0·21	8·0		5·76
B.A.C. 3438.				
Feb. 19	0·13	8·0	84 22	9 57 41·41
23	0·15	7·0		41·41
24	0·15	7·0		41·23
B.A.C. 3439.				
Feb. 25	0·15	7·0	54 20	9 57 47·82
Mar. 9	0·19	7·0		47·73
17	0·21	7·0		47·61
18	0·21	7·0		47·84
B.A.C. 3459, α Leonis.				
Feb. 16	0·13	(1·0)	77 22	10 1 7·59
17	0·13			7·55
18	0·13			7·58
19	0·13			7·71
23	0·15			7·58
24	0·15			7·54
25	0·15			7·51
Mar. 8	0·18			7·49
9	0·19			7·45
10	0·19			7·60
12	0·19			7·60
17	0·21			7·55
18	0·21			7·49
31	0·25			7·51
April 29	0·33			7·50
B.A.C. 3484.				
			° ′	h. m. s.
Feb. 16	0·13		57 54	10 6 21·43
23	0·15	7·5		21·46
24	0·15	7·5		21·40
B.A.C. 3523, γ¹ Leonis.				
Feb. 16	0·13	(2·0)	69 28	10 12 28·27
17	0·13			28·21
24	0·15			28·15
Mar. 10	0·19			28·23
12	0·19			28·23
B.A.C. 3528.				
Mar. 17	0·21	5·0	5 45	10 14 10·78
18	0·21			12·07
B.A.C. 3529.				
Feb. 23	0·15	7·0	82 53	10 13 25·20
25	0·15	7·0		25·06
Mar. 9	0·19	7·0		25·09
B.A.C. 3592.				
Feb. 23	0·15	6·0	87 48	10 22 43·37
25	0·15	6·0		43·36
Mar. 9	0·19	6·0		43·26
B.A.C. 3600, ρ Leonis.				
Feb. 19	0·13	(4·0)	80 0	10 25 38·84
23	0·15			38·84
25	0·15			38·86
Mar. 9	0·19			38·88
10	0·19			38·86
11	0·19			38·84
12	0·19			38·94
15	0·20			38·79
17	0·21			38·92
18	0·21			38·87
B.A.C. 3662.				
Feb. 24	0·15	8·0	78 33	10 34 31·10
25	0·15	8·0		31·17
Mar. 9	0·19	8·0		31·06

Columns: Date (Month and Day; Fraction of Year) | Magnitude observed | Approximate North Polar Distance | Mean Right Ascension, January 1, 1864.

B.A.C. 3667, 34 Sextantis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1864
Feb. 23	0·15	6·0	85° 42′	10h 35m 36s·17
Mar. 11	0·19			36·10
15	0·20	6·0		35·97

B.A.C. 3708, l Leonis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1864
Feb. 23	0·15	5·0	78 44	10 42 6·51
24	0·15			6·41
25	0·15			6·43
Mar. 11	0·19			6·44
15	0·20			6·44
April 10	0·27			6·47

B.A.C. 3726.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1864
Feb. 23	0·15	6·0	88 15	10 45 14·54
25	0·15	6·0		14·53
Mar. 9	0·19	6·0		14·45

B.A.C. 3768.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1864
Feb. 23	0·15	5·5	85 39	10 53 32·23
25	0·15	4·0		32·17
Mar. 9	0·19	5·0		32·19

B.A.C. 3780.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1864
Feb. 23	0·15	6·0	81 41	10 56 37·11
25	0·15	7·0		37·06
Mar. 9	0·19	8·0		37·08
15	0·20	7·0		37·07

B.A.C. 3788, χ Leonis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1864
Feb. 23	0·15	(4·5)	81 56	10 57 60·07
24	0·15			60·03
25	0·15			59·97
26	0·15			60·00
Mar. 9	0·19			60·13
11	0·19			60·01
17	0·21			60·00
28	0·24			59·95
31	0·25			60·08
April 1	0·25			60·02
10	0·27			60·03

B.A.C. 3821.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1864
Mar. 11	0·19	6·0	20° 59′	11h 3m 27s·30
15	0·20	6·5		27·68
17	0·21	6·0		27·70
18	0·21	6·0		27·69

B.A.C. 3834, δ Leonis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1864
Feb. 25	0·15	(2·5)	68 44	11 6 52·27
26	0·15			52·30
Mar. 8	0·18			52·35
10	0·19			52·33
11	0·19			52·32
15	0·20			52·25
18	0·21			52·34
24	0·23			52·30
28	0·24			52·45
31	0·25			52·29
April 1	0·25			52·25
10	0·27			52·27
19	0·30			52·28

B.A.C. 3836.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1864
Mar. 9	0·19	7·0	87 0	11 6 54·11
17	0·21	7·5		54·07
April 22	0·31			54·26

B.A.C. 3869.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1864
Mar. 11	0·19	6·5	71 49	11 15 21·84
15	0·20	7·0		21·74
17	0·21	8·0		21·80

B.A.C. 3900, τ Leonis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1864
Mar. 9	0·19	5·5	86 24	11 20 56·54
11	0·19			56·58
15	0·20			56·57

B.A.C. 3946, υ Leonis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1864
Mar. 9	0·19	(4·5)	90 4	11 29 59·06
11	0·19			59·12
15	0·20			59·11
17	0·21			59·17
18	0·21			59·12
23	0·22			59·11

B.A.C. 3946, υ Leonis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1864
Mar. 24	0·23	(4·5)	90° 4′	11h 29m 59s·15
28	0·24			59·08
31	0·25			59·06
April 1	0·25			59·14
10	0·27			59·07
19	0·30			59·17
22	0·31			59·16

B.A.C. 3995, β Leonis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1864
Mar. 9	0·19	(2·5)	74 40	11 42 7·20
11	0·19			7·22
15	0·20			7·29
18	0·21			7·33
23	0·22			7·26
24	0·23			7·21
28	0·24			7·16
April 10	0·27			7·19
19	0·30			7·26
22	0·31			7·16
July 15	0·54			7·31

B.A.C. 3996.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1864
Mar. 17	0·21	7·0	84 3	11 42 8·85
31	0·25	6·0		8·91
April 1	0·25	6·0		8·82

B.A.C. 4005.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1864
Mar. 11	0·19	6·0	76 58	11 43 56·53
17	0·21	7·0		56·43
24	0·23	6·0		56·54

B.A.C. 4010.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1864
Mar. 23	0·22		51 17	11 45 8·02
31	0·25	6·0		8·00
April 1	0·25	6·0		8·22
22	0·31			8·40

B.A.C. 4052, σ Virginis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1864
Mar. 11	0·19	5·0	82 37	11 53 54·17
15	0·20	6·0		54·21
17	0·21			54·24

B.A.C. 4111.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
			° ′	h. m. s.
Mar. 23	0·22	6·5	11 48	12 5 22·00
24	0·23	6·5		21·97
28	0·24	7·0		21·86
31	0·25 –	6·0		21·[illegible]

B.A.C. 4145, η Virginis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Mar. 15	0·20	(3·5)	89 55	12 12 56·96
23	0·22			56·87
24	0·23			56·89
31	0·25			56·95
April 1	0·25			56·91
22	0·31			56·92

B.A.C. 4153.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Mar. 17	0·21	6·0	62 37	12 13 29·47
April 19	0·30			29·37

B.A.C. 4199.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Mar. 23	0·22	7·0	63 20	12 20 50·14
31	0·25	7·0		50·19
April 22	0·31			50·12

B.A.C. 4205.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Mar. 17	0·21	7·0	63 1	12 21 50·50

B.A.C. 4231.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Mar. 23	0·22	8·0	64 48	12 26 45·55
24	0·23			45·44
April 1	0·25	7·5		45·50

B.A.C. 4244.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Mar. 23	0·22	7·0	52 51	12 28 32·19
April 1	0·25	7·0		32·30

B.A.C. 4268, γ^1 Virginis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Mar. 23	0·22	(4·0)	90 42	12 34 46·13
30	0·24			46·25
April 11	0·28			46·08

B.A.C. 4340, δ Virginis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
			° ′	h. m. s.
April 1	0·25	(3·0)	85 52	12 48 45·25

B.A.C. 4364. (a)

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
April 1	0·25	8·0	68 0	12 54 55·73

B.A.C. 4401, θ Virginis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Mar. 30	0·24	(4·5)	94 49	13 2 54·62
April 29	0·33			54·58
May 30	0·41			54·71

B.A.C. 4421, β Comæ.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
April 1	0·25	(4·5)	61 26	13 5 31·56
22	0·31			31·68

B.A.C. 4457.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
April 1	0·25		54 9	13 12 49·10
29	0·33	7·0		48·87
May 16	0·37			48·96
17	0·38			48·90

B.A.C. 4468.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
April 29	0·33	8·0	75 8	13 14 40·19

B.A.C. 4480, α Virginis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Mar. 30	0·24	(1·0)	100 27	13 18 1·82
April 11	0·28			1·84
13	0·28			1·79

B.A.C. 4503.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
April 1	0·25	(7·0)	85 25	13 22 20·77

B.A.C. 4513.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
April 1	0·25	7·0	65 4	13 24 25·34
29	0·33			25·34

B.A.C. 4526. (a)

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
April 1	0·25	6·0	64 56	13 26 21·58

B.A.C. 4532, ζ Virginis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
			° ′	h. m. s.
Mar. 30	0·24	(4·0)	89 54	13 27 45·94
31	0·25			45·92
April 1	0·25			45·89
11	0·28			45·92
13	0·28			45·73
19	0·30			45·89
20	0·30			45·90
22	0·31			45·99
29	0·33			46·02
May 3	0·34			45·96
16	0·37			45·85
17	0·38			45·86
21	0·39			45·92
22	0·39			45·91
30	0·41			45·85

B.A.C. 4550.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
April 29	0·33	7·0	36 37	13 31 11·89
May 16	0·37			11·85
17	0·38			11·93

B.A.C. 4575.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
April 29	0·33	6·0	66 37	13 37 19·70
May 16	0·37			19·65
17	0·38			19·41

B.A.C. 4597, τ Bootis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
April 29	0·33	5·0	71 52	13 40 47·97
May 16	0·37			47·92
17	0·38			48·00

B.A.C. 4610.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
April 29	0·33	6·0	58 8	13 42 30·44

B.A.C. 4621.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
May 16	0·37		70 42	13 43 36·89
17	0·38			36·83
30	0·41	6·0		36·86

B.A.C. 4627.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
April 29	0·33	7·5	54 33	13 45 4·31

(a) Tab. R. A. differs by 1 second.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
B.A.C. 4632.				
May 16	0·37	(6·0)	° ′ 54 52	h m s 13 45 47·47
17	0·38			47·47
30	0·41			47·58
B.A.C. 4648, η Bootis.				
Mar. 30	0·24	(3·0)	70 55	13 48 12·57
April 11	0·28			12·54
13	0·28			12·63
20	0·30			12·58
22	0·31			12·49
29	0·33			12·57
May 3	0·34			12·46
7	0·35			12·55
16	0·37			12·51
17	0·38			12·49
21	0·39			12·52
22	0·39			12·65
July 18	0·54			12·52
B.A.C. 4672, τ Virginis.				
Mar. 30	0·24	(4·5)	87 48	13 54 43·59
April 11	0·28			43·52
13	0·28			43·63
20	0·30			43·57
22	0·31			43·56
May 3	0·34			43·61
7	0·35			43·55
21	0·39			43·59
22	0·39			43·58
23	0·39			43·57
B.A.C. 4676.				
April 29	0·33	6·0	57 47	13 55 20·43
May 16	0·37			20·42
17	0·38			20·47
B.A.C. 4696, α Draconis.				
Nov. 11	0·86	(3·5)	24 58	14 0 42·73
B.A.C. 4716, κ Virginis.				
May 16	0·37	(4·0)	99 38	14 5 38·74
B.A.C. 4723. (a)				
May 16	0·37	(7·0)	° ′ 60 15	h m s 14 7 51·91
B.A.C. 4729, α Bootis.				
April 11	0·28	(1·0)	70 6	14 9 27·52
13	0·28			27·62
20	0·30			27·62
29	0·33			27·54
May 3	0·34			27·52
7	0·35			27·52
16	0·37			27·48
22	0·39			27·49
23	0·39			27·50
July 4	0·51			27·61
26	0·57			27·51
Aug. 1	0·58			27·57
Nov. 28	0·91			27·52
B.A.C. 4737.				
May 17	0·38	(6·5)	74 6	14 10 58·49
B.A.C. 4756.				
May 16	0·37	(6·0)	37 20	14 13 45·45
17	0·38			45·48
B.A.C. 4797.				
May 16	0·37	(6·0)	53 12	14 22 38·59
23	0·39			38·73
B.A.C. 4808, ρ Bootis.				
May 3	0·34	(4·0)	59 2	14 25 58·22
7	0·35			58·25
10	0·36			58·17
17	0·38			58·20
21	0·39			58·14
June 21	0·47			58·18
B.A.C. 4809.				
May 16	0·37	(6·0)	62 43	14 26 19·14
23	0·39			19·12
B.A.C. 4820.				
May 16	0·37	(6·0)	° ′ 56 52	h m s 14 28 24·55
17	0·38			24·71
23	0·39			24·41
B.A.C. 4863.				
May 16	0·37	(6·0)	52 40	14 37 9·46
17	0·38			9·57
B.A.C. 4876, ε Bootis.				
May 7	0·35	(3·0)	62 21	14 39 2·65
10	0·36			2·85
16	0·37			2·85
17	0·38			2·91
21	0·39			2·66
23	0·39			2·63
25	0·40			2·60
June 21	0·47			2·90
July 18	0·54			2·93
Nov. 11	0·86			2·81
28	0·91			2·95
B.A.C. 4934.				
May 17	0·38		48 19	14 50 52·19
25	0·40	6·5		51·38
31	0·41	6·0		51·23
B.A.C. 4942.				
May 17	0·38		49 49	14 54 11·17
31	0·41	6·0		11·22
B.A.C. 4965.				
May 17	0·38	(5·5)	44 49	14 58 15·40
25	0·40			15·43
B.A.C. 4969, ψ Bootis.				
May 9	0·35	(5·0)	62 31	14 58 37·35
16	0·37			37·13
23	0·39			37·22
31	0·41			37·13

(a) Tab. R. A. differs by 1·4 sec.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
B.A.C. 4992.				
			° ′	h m s
May 16	0·37	(5·5)	34 55	15 2 23·74
17	0·38			23·78
23	0·39			24·03
B.A.C. 5000.				
May 17	0·38		56 21	15 5 8·47
25	0·40	7·0		8·36
31	0·41	6·5		8·51
B.A.C. 5034, β Libræ.				
May 9	0·35	(2·5)	98 52	15 9 41·51
16	0·37			41·56
17	0·38			41·46
23	0·39			41·49
25	0·40			41·51
30	0·41			41·37
31	0·41			41·47
B.A.C. 5071.				
May 16	0·37		37 35	15 16 5·33
23	0·39	6·0		5·47
25	0·40	6·0		5·37
B.A.C. 5091.				
May 23	0·39	6·0	26 10	15 20 23·19
25	0·40	6·0		23·03
31	0·41	6·0		22·89
B.A.C. 5143, α Coronæ Borealis.				
May 9	0·35	(2·5)	62 49	15 28 55·70
10	0·36			55·81
17	0·38			55·88
23	0·39			55·84
25	0·40			55·97
30	0·41			55·92
31	0·41			55·82
June 21	0·47			55·86
July 8	0·52			55·83
Oct. 12	0·78			55·85
B.A.C. 5196, α Serpentis.				
May 9	0·35	(2·5)	63 9	15 37 34·23
10	0·36			34·24

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
B.A.C. 5196, α Serpentis.				
			° ′	h m s
May 17	0·38	(2·5)	63 9	15 37 34·22
23	0·39			34·21
25	0·40			34·10
30	0·41			34·18
31	0·41			34·19
June 21	0·47			34·16
B.A.C. 5245, ε Serpentis.				
May 17	0·38	(3·0)	85 7	15 44 2·38
23	0·39			2·34
30	0·41			2·26
31	0·41			2·35
B.A.C. 5284, γ Serpentis.				
May 17	0·38	(3·0)	73 53	15 50 10·44
23	0·39			10·47
30	0·41			10·40
31	0·41			10·44
B.A.C. 5414. δ Ophiuchi.				
May 9	0·35	(3·0)	93 20	16 7 13·25
10	0·36			13·23
17	0·38			13·14
26	0·40			13·19
30	0·41			13·14
June 1	0·42			13·22
30	0·50			13·16
July 7	0·51			13·25
B.A.C. 5452.				
May 17	0·38		68 32	16 14 10·46
23	0·39	6·0		10·54
31	0·41	6·0		10·46
B.A.C. 5466, γ Herculis.				
May 23	0·39	(3·5)	70 31	16 15 55·34
30	0·41			55·28
31	0·41			55·35

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
B.A.C. 5493.				
			° ′	h m s
May 17	0·38		67 20	16 19 59·10
23	0·39			59·27
30	0·41	6·0		59·18
31	0·41	6·5		59·16
B.A.C. 5504.				
May 23	0·39	8·0	74 21	16 21 53·69
30	0·41	8·0		53·64
31	0·41	7·0		53·75
B.A.C. 5527.				
May 23	0·39	(5·5)	69 13	16 24 39·44
30	0·41			39·48
31	0·41			39·49
B.A.C. 5537.				
May 23	0·39		79 20	16 27 7·23
31	0·41	7·0		7·15
B.A.C. 5597.				
May 23	0·39		64 53	16 35 22·46
31	0·41	6·0		22·50
B.A.C. 5604, ζ Herculis.				
May 26	0·40	(3·0)	58 9	16 36 9·59
June 1	0·42			9·56
30	0·50			9·57
July 4	0·51			9·60
7	0·51			9·61
8	0·52			9·63
Aug. 9	0·61			9·70
B.A.C. 5615.				
May 23	0·39		53 14	16 38 13·63
30	0·41	7·0		13·51
31	0·41			13·63
B.A.C. 5625.				
May 23	0·39	(7·5)	87 31	16 40 2·60
31	0·41			2·60

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
			° ′	h m s
B.A.C. 5634.				
May 31	0·41	7·0	73 38	16 41 42·54
B.A.C. 5647.				
May 23	0·39		76 30	16 43 18·07
31	0·41	6·0		18·13
B.A.C. 5686.				
May 31	0·41	7·5	74 22	16 47 11·45
B.A.C. 5708, κ Ophiuchi.				
May 23	0·39	(4·0)	80 25	16 51 13·85
26	0·40			13·94
30	0·41			13·91
31	0·41			13·96
June 1	0·42			13·87
July 7	0·51			13·89
B.A.C. 5726.				
May 30	0·41	7·0	83 12	16 53 51·55
31	0·41	7·0		51·66
B.A.C. 5776.				
May 30	0·41	(6·0)	41 0	17 1 12·43
B.A.C. 5787.				
May 30	0·41	7·0	79 47	17 3 15·42
B.A.C. 5821, α Herculis.				
May 26	0·40	(3·5)	75 27	17 8 26·84
30	0·41			26·95
31	0·41			26·83
June 1	0·42			26·86
21	0·47			26·81
30	0·50			26·94
July 4	0·51			26·88
6	0·51			26·77
7	0·51			26·79
8	0·52			26·86
Sept. 5	0·68			26·79

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
			° ′	h m s
B.A.C. 5941, α Ophiuchi.				
Jan. 5	0·01	(2·0)	77 20	17 28 37·26
June 1	0·42			37·37
21	0·47			37·32
23	0·48			37·31
July 4	0·51			37·38
6	0·51			37·27
7	0·51			37·38
8	0·52			37·30
18	0·54			37·33
Sept. 5	0·68			37·29
Oct. 13	0·78			37·23
B.A.C. 6021, μ Herculis.				
June 23	0·48	(4·0)	62 12	17 41 8·23
July 4	0·51			8·25
6	0·51			8·30
16	0·54			8·29
B.A.C. 6355, α Lyræ.				
Jan. 5	0·01	(1·0)	51 20	18 32 20·08
June 21	0·47			20·08
23	0·48			20·05
30	0·50			19·99
July 4	0·51			19·87
6	0·51			20·08
13	0·53			19·99
15	0·54			20·02
16	0·54			19·99
B.A.C. 6429, β Lyræ.				
June 21	0·47	(3·0)	56 48	18 45 3·52
23	0·48			3·56
30	0·50			3·67
July 4	0·51			3·52
13	0·53			3·51
18	0·54			3·58
21	0·55			3·53
23	0·56			3·56
B.A.C. 6528, ζ Aquilæ.				
June 30	0·50	(3·0)	76 20	18 59 9·57
July 4	0·51			9·57
13	0·53			9·54
15	0·54			9·58

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
			° ′	h m s
B.A.C. 6528, ζ Aquilæ.				
July 16	0·54	(3·0)	76 20	18 59 9·56
18	0·54			9·60
21	0·55			9·55
23	0·56			9·60
30	0·58			9·61
B.A.C. 6595, ε Aquilæ.				
June 30	0·50	5·0	78 39	19 11 25·91
July 15	0·54			25·96
16	0·54			25·90
21	0·55			26·03
23	0·56			25·95
26	0·57			25·99
30	0·58			26·01
Aug. 1	0·58			26·04
B.A.C. 6646, δ Aquilæ.				
June 30	0·50	(3·5)	87 9	19 18 38·39
July 13	0·53			38·44
15	0·54			38·35
16	0·54			38·40
23	0·56			38·41
26	0·57			38·53
30	0·58			38·44
Aug. 1	0·58			38·44
6	0·60			38·45
B.A.C. 6772, γ Aquilæ.				
July 13	0·53	(3·0)	79 43	19 39 47·59
15	0·54			47·55
18	0·54			47·58
21	0·55			47·58
26	0·57			47·60
30	0·58			47·59
Aug. 1	0·58			47·49
8	0·60			47·63
10	0·61			47·56
Nov. 30	0·91			47·63
B.A.C. 6802, α Aquilæ.				
July 15	0·54	(1·5)	81 29	19 44 8·64
18	0·54			8·60
21	0·55			8·79
26	0·57			8·76

B.A.C. 6802, α Aquilæ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
July 30	0·58	(1·5)	81° 29′	19h 44m 8s·75
Aug. 1	0·58			8·79
2	0·59			8·80
4	0·59			8·83
8	0·60			8·72
10	0·61			8·87
29	0·66			8·77
Nov. 30	0·91			8·74

B.A.C. 6833, β Aquilæ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
July 15	0·54	(3·5)	83 56	19 48 37·95
18	0·54			37·89
21	0·55			37·97
26	0·57			37·92
30	0·58			37·87
Aug. 1	0·58			37·95
2	0·59			37·95
4	0·59			37·84
Nov. 30	0·91			38·03

B.A.C. 7171, α Cygni.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Jan. 7	0·02	(1·0)	45 18	20 36 47·81
July 28	0·57			47·70
Aug. 5	0·59			47·56
15	0·62			47·70

B.A.C. 7256, 32 Vulpeculæ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
July 29	0·57	(4·5)	62 27	20 48 45·88
Aug. 2	0·59			45·91
4	0·59			45·88
5	0·59			45·91
9	0·61			45·82
10	0·61			45·91
15	0·62			45·91
31	0·67			45·89
Sept. 12	0·70			45·92

B.A.C. 7336, 61¹ Cygni.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Oct. 6	0·76	(5·5)	51 55	21 0 48·26

B.A.C. 7368, ζ Cygni.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
July 28	0·57	(3·0)	60° 20′	21h 7m 8s·87
Aug. 2	0·59			8·93
4	0·59			8·98
5	0·59			8·92
8	0·60			8·95
9	0·61			8·97
10	0·61			8·95
15	0·62			8·98
31	0·67			8·91
Sept. 5	0·68			9·03
9	0·69			9·02
12	0·70			8·92
Oct. 6	0·76			8·99
Dec. 29	0·99			8·98
30	1·00			9·05

B.A.C. 7478, β Aquarii.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Aug. 5	0·59	(3·0)	96 10	21 24 23·77
8	0·60			23·64
9	0·61			23·78
10	0·61			23·81
15	0·62			23·69
31	0·67			23·79
Sept. 3	0·67			23·81

B.A.C. 7561, ε Pegasi.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Aug. 9	0·61	(2·5)	80 45	21 37 30·35
10	0·61			30·35
15	0·62			30·34
31	0·67			30·38
Sept. 3	0·67			30·33
5	0·68			30·34
6	0·68			30·29
9	0·69			30·30
17	0·71			30·28
27	0·74			30·45
Oct. 6	0·76			30·28
Dec. 29	0·99			30·37
30	1·00			30·39

B.A.C. 7627, 16 Pegasi.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
July 28	0·57	(5·5)	64 43	21 46 52·58
Aug. 15	0·62			52·60
Sept. 3	0·67			52·55

B.A.C. 7627, 16 Pegasi.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Sept. 5	0·68	(5·5)	64° 43′	21h 46m 52s·58
6	0·68			52·62
9	0·69			52·65
12	0·70			52·56
17	0·71			52·60
27	0·74			52·45
Oct. 6	0·76			52·60
12	0·78			52·55

B.A.C. 7688, α Aquarii.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Sept. 3	0·67	(3·0)	90 59	21 58 47·79
6	0·68			47·77
9	0·69			47·73
11	0·70			47·84
14	0·70			47·75
17	0·71			47·84

B.A.C. 7773, θ Aquarii.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Sept. 11	0·70	(4·5)	98 27	22 9 39·13

B.A.C. 7868, η Aquarii.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Aug. 29	0·66	(4·0)	90 49	22 28 22·01
Sept. 14	0·70			21·97
17	0·71			21·99
21	0·72			21·88
27	0·74			21·97

B.A.C. 7908, ζ Pegasi.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1864.
Jan. 14	0·04	(3·0)	79 53	22 34 40·84
Aug. 31	0·67			40·81
Sept. 3	0·67			40·79
5	0·68			40·74
8	0·68			40·77
11	0·70			40·81
12	0·70			40·70
14	0·70			40·76
17	0·71			40·75
21	0·72			40·80
27	0·74			40·80
Nov. 1	0·84			40·72
Dec. 30	1·00			40·78

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1864
			° ′	h m s
B.A.C. 8034, α Pegasi.				
Jan. 7	0·02	(2·0)	75 32	22 57 59·23
14	0·04			59·36
Aug. 29	0·66			59·25
31	0·67			59·22
Sept. 5	0·68			59·25
9	0·69			59·23
11	0·70			59·29
14	0·70			59·38
16	0·71			59·22
21	0·72			59·24
24	0·73			59·26
B.A.C. 8105, γ Piscium.				
Aug. 29	0·66	(4·5)	87 28	23 10 6·91
Sept. 6	0·68			6·93
B.A.C. 8105, γ Piscium.				
Sept. 16	0·71	(4·5)	87 28	23 10 6·90
24	0·73			6·82
B.A.C. 8169, κ Piscium.				
Aug. 29	0·66	(5·5)	89 29	23 19 57·63
Sept. 14	0·70			57·56
16	0·71			57·61
24	0·73			57·69
Oct. 20	0·80			57·59
B.A.C. 8233, ι Piscium.				
Jan. 18	0·05	(4·5)	85 7	23 32 57·49
19	0·05			57·41
B.A.C. 8232, ι Piscium.				
Aug. 29	0·66	(4·5)	85 7	23 32 57·33
Sept. 6	0·68			57·35
9	0·69			57·34
14	0·70			57·32
16	0·71			57·33
24	0·73			57·34
Oct. 20	0·80			57·33
B.A.C. 8331, ω Piscium.				
Sept. 16	0·71	(4·5)	88 53	23 52 19·68
30	0·75			19·71
Oct. 13	0·78			19·76
14	0·79			19·67

EXPLANATION OF THE EDINBURGH TRANSIT OBSERVATIONS FOR 1864; AND THE METHODS OF THEIR REDUCTION.

Pages 330 to 352 contain the Transit Observations of stars for 1864, similarly with those for 1849, where the methods of reduction are more fully described; the variable data for the present year being as below.

The star observations were taken almost wholly by Mr Alexander Wallace, M.A., the First Assistant Astronomer. They were actually more numerous than here recorded, because, with a view chiefly to economy in printing, all days of observation with less than four standard stars have been struck out; also parts of a day far removed from the chief observing hours of the night; also those periods of the year when either the Instrumental corrections were uncertain, or the Clock going badly. The said observations, however, had been already computed in our MS. books, and have often served useful temporary purposes, as for approximate clock-corrections and instrumental errors.

The Micrometer observations for instrumental corrections have, on the other hand, always been taken by the Astronomer, and he has also decided on the quantities for computation to be adopted for each day of star observation.

Intervals of the Wires.

From 17 observations of α Ursæ Minoris, above and below the Pole, in the year 1864, (and after January of that year when, in order to replace Wire V. broken a few days before, the whole system of wires was renewed), the intervals of the wires and their Equatorial distances from their mean or middle point were found to be, the star being above the Pole.

		s.	
Wire	I.	+ 16·584	Equatorial
...	II.	+ 8·345	
...	III.	− 0·087	
...	IV.	− 8·316	
...	V.	− 16·525	

These values, sensibly different from those of 1863, as belonging to a different set of wires, have been employed in the reductions throughout the year; using for Polaris (whose Declination varied between 88° 34′ 56″ and 88° 35′ 45″) the following quantities or those adapted to a declination of 88° 35′, with the amount of alteration due to each additional second of Declination added under the term n'',—

		m.	s.	s.	s.	
Wire	I.	+ 11	11·06	+ n ×	·133	Declination 88° 35′
...	II.	+ 5	37·57	+ n ×	·067	
...	III.	− 0	3·53			
...	IV.	− 5	36·40	− n ×	·067	
...	V.	− 11	8·70	− n ×	·132	

and for δ Ursæ Minoris (whose Declination varied between 86° 36′ 0″) and

86° 36′ 40″) the following quantities, or those adapted to a declination of 86° 36′, with the amount of alteration due to each additional second of Declination added under the term n'',—

			m.	s.				s.	
Wire	I.	+	4	39·65	+	n''	×	·023	Declination 86° 36′
...	II.	+	2	20·71	+	n	×	·012	
...	III.	−	0	1·48					
...	IV.	−	2	20·21	−	n	×	·012	
...	V.	−	4	38·66	−	n	×	·023	

The correction generally for the imperfect transit of a star, whose North Polar Distance is not very small, being

$$= \frac{\text{Sum of Equatorial intervals for the Wires observed}}{\text{Number of Wires}} \times \text{cosecant of Stars N.P.D.},$$

this quantity being applied to the mean of whatever wires were observed.

With close Polar stars, the *Sine* is used in place of the *Arc*.

The signs and order of the Wires are to be changed when the star is below the Pole.

In the column entitled "Reduction to the Mean of the Wires," either the simple arithmetical mean of the Wires—if 5 were observed—is entered; or, if a less number, the reduced mean according to the method already explained and the quantities above given.

CORRECTIONS FOR INSTRUMENTAL DEVIATIONS.

These deviations are three in number, and are severally termed, Collimation error, Level error, and Azimuth error.

The Collimation error is the deviation of the line joining the optical centre of the object-glass and the Mean of the Wires, from the plane perpendicular to the axis of rotation; and is *mechanically* positive, or is positive as a correction for all objects at all altitudes both above and below the horizon, when the object-glass deviates to the east of the said plane:—0^s·012, the diurnal aberration, is included, for practical convenience, in the sum representing the collimation.

The Level error is the angle of inclination of the axis of rotation to the horizon, measured in a vertical plane; and is *mechanically* positive, as a correction, for all objects above the horizon, negative for those below, when the Western end is higher than the other.

The Azimuthal error is the angle of deviation of the axis of rotation (presumed approximately horizontal) from the East and West line, measured in a horizontal plane; and is *mechanically* positive as a correction for all objects South of the Zenith, or Nadir, and negative for those North of the same, when the Western end of said axis deviates towards the South.

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COLLIMATION AND LEVEL ERRORS.

These are determined, as explained in former years, by special observations made from time to time with the collimating eye-piece, and by measuring micrometrically the distance between the Middle wire and its reflected image in reversed positions of the transit-instrument's axis.

For dates between the epochs of observation, the errors have been assumed to vary as the time, except where the readings of the earth-thermometers, as noticed in the Introduction, have indicated a modification thereof to be probably desirable.

AZIMUTHAL ERROR.

Of the three usual methods for determining the azimuthal position of a transit-instrument; viz. by a Polar star combined with an Equatorial star, by two successive transits of a Polar star above and below the Pole, or by three consecutive transits of a Polar star, the first plan has alone been adopted; for although the two latter have the advantage of being independent of the Right Ascension assumed for the stars, yet they can only be employed with safety when the stability of the instrument can be depended on through the twelve or twenty-four hours during which the observations extend.

Now grave doubts had long existed on this head; and, as set forth both in the Introduction to this volume and the Report to the Board of Visitors for 1870, towards the end of the volume, see pp. R 50 to R 57, they have since been proved to be only too well founded. The following therefore is the formula which has always been adopted, enabling, for each transit of a Polar star observed, a comparatively instantaneous determination of the Azimuthal error then to be made :—

$$\text{Azimuthal error} = \frac{\text{R.A. 1st} \ast - \text{R.A. 2d} \ast - (\text{obs. tr. 1st} \ast - \text{obs. tr. 2d} \ast) - \text{clock's loss in the interval}}{\left(\frac{\sin \text{Z.D. South}}{\sin \text{N.P.D.}}\ \text{1st} \ast\right) - \left(\frac{\sin \text{Z.D. South}}{\sin \text{N.P.D.}}\ \text{2d} \ast\right)}$$

In the course of the year 31 combinations of either α, or δ, Ursæ Minoris and a Clock star were obtained, from which the Azimuth error at these epochs was computed, and for dates between them the error was made to vary nearly as the time, modified in some cases by the temperature and the annual curve shown in Plate III.

TABLE I.

ADOPTED INSTRUMENTAL CORRECTIONS, EXPRESSED IN SECONDS OF TIME FOR CONVENIENCE OF APPLICATION TO TIME OBSERVATIONS.

Date.	Collimation.	Level.	Azimuth.
1864.	s.	s.	s.
Jan. 2	−0·15	+0·13	0·00
3	−0·15	+0·13	0·00
4	−0·15	+0·14	0·00
5	−0·15	+0·14	−0·02
7	−0·15	+0·15	−0·02
9	−0·15	+0·16	−0·04
10	−0·15	+0·16	−0·06
12	anomalous	……	……
14	−0·06	+0·11	−0·28
16	−0·06	+0·12	−0·25
17	−0·06	+0·12	−0·22
18	−0·06	+0·12	−0·20
19	−0·06	+0·12	−0·16
20	−0·06	+0·12	−0·17
21	−0·06	+0·12	−0·18
22	−0·06	+0·12	−0·20
23	−0·06	+0·12	−0·22
24	−0·06	+0·11	−0·21
26	−0·06	+0·11	−0·21
27	−0·06	+0·11	−0·21
28	−0·06	+0·11	−0·21
Feb. 2	−0·06	+0·11	−0·20
3	−0·06	+0·11	−0·20
4	−0·06	+0·10	−0·20
5	−0·06	+0·10	−0·20
7	−0·06	+0·10	−0·21
8	−0·06	+0·10	−0·21
12	−0·06	+0·10	−0·22
13	−0·06	+0·10	−0·23
14	−0·06	+0·10	−0·23
15	−0·06	+0·10	−0·24
16	−0·06	+0·10	−0·25
17	−0·06	+0·10	−0·25
18	−0·06	+0·10	−0·26
19	−0·06	+0·10	−0·27
20	−0·06	+0·09	−0·28
22	−0·06	+0·09	−0·28
23	−0·06	+0·09	−0·29
24	−0·06	+0·09	−0·30
25	−0·06	+0·09	−0·30
26	−0·06	+0·09	−0·30
Mar. 7	−0·06	+0·07	−0·31
8	−0·06	+0·07	−0·32
9	−0·06	+0·06	−0·33
10	−0·06	+0·06	−0·34
11	−0·06	+0·06	−0·34

Date.	Collimation.	Level.	Azimuth.
1864.	s.	s.	s.
Mar. 12	−0·06	+0·06	−0·35
15	−0·06	+0·05	−0·36
16	−0·06	+0·05	−0·37
17	−0·06	+0·05	−0·37
18	−0·06	+0·05	−0·38
20	−0·06	+0·04	−0·39
23	−0·06	+0·04	−0·39
24	−0·06	+0·04	−0·40
25	−0·06	+0·03	−0·40
28	−0·06	+0·03	−0·41
30	−0·06	+0·03	−0·41
31	−0·06	+0·03	−0·41
April 1	−0·06	+0·03	−0·52
2	−0·06	+0·03	−0·55
10	−0·06	+0·01	−0·58
11	−0·06	+0·01	−0·51
13	−0·06	+0·01	−0·58
17	−0·06	+0·01	−0·55
18	−0·06	0·00	−0·54
19	−0·06	0·00	−0·53
20	−0·06	0·00	−0·52
21	−0·06	0·00	−0·50
22	−0·06	0·00	−0·48
26	−0·06	−0·01	−0·53
29	−0·06	−0·02	−0·61
30	−0·06	−0·02	−0·62
May 3	−0·06	−0·03	−0·63
6	−0·06	−0·03	−0·64
7	−0·06	−0·03	−0·64
9	−0·06	−0·04	−0·65
10	−0·06	−0·04	−0·66
16	−0·06	−0·05	−0·67
17	−0·06	−0·05	−0·63
21	−0·06	−0·06	−0·65
22	−0·06	−0·06	−0·66
23	−0·06	−0·07	−0·66
24	−0·06	−0·07	−0·67
25	−0·06	−0·07	−0·67
26	−0·06	−0·07	−0·69
30	−0·06	−0·08	−0·70
31	−0·06	−0·08	−0·70
June 1	−0·06	−0·09	−0·70
2	−0·06	−0·09	−0·70
4	−0·06	−0·09	−0·71
5	−0·06	−0·10	−0·71

Date.	Collimation.	Level.	Azimuth.
1864.	s.	s.	s.
June 7	−0·06	−0·10	−0·71
8	−0·06	−0·10	−0·72
11	−0·06	−0·11	−0·72
13	−0·06	−0·11	−0·72
16	−0·06	−0·11	−0·73
17	−0·06	−0·11	−0·73
18	−0·06	−0·12	−0·73
19	−0·06	−0·12	−0·73
20	−0·06	−0·12	−0·73
21	−0·06	−0·12	−0·72
22	−0·06	−0·12	−0·72
23	−0·06	−0·12	−0·72
25	−0·06	−0·13	−0·71
28	−0·06	−0·13	−0·71
30	−0·06	−0·13	−0·70
July 4	−0·07	−0·14	−0·69
6	−0·07	−0·14	−0·68
7	−0·07	−0·14	−0·66
8	−0·07	−0·14	−0·58
13	−0·07	−0·15	−0·58
15	−0·07	−0·15	−0·62
16	−0·07	−0·15	−0·64
18	−0·07	−0·15	−0·66
19	−0·07	−0·15	−0·67
21	−0·07	−0·15	−0·68
22	−0·07	−0·15	−0·69
23	−0·07	−0·15	−0·69
25	−0·07	−0·15	−0·68
26	−0·07	−0·15	−0·67
28	−0·07	−0·15	−0·66
30	−0·07	−0·15	−0·65
Aug. 1	−0·07	−0·15	−0·64
2	−0·07	−0·15	−0·63
4	−0·07	−0·15	−0·62
5	−0·07	−0·15	−0·61
8	−0·07	−0·15	−0·60
9	−0·07	−0·15	−0·59
10	−0·07	−0·15	−0·58
11	−0·07	−0·15	−0·68
13	−0·07	−0·15	−0·57
15	−0·07	−0·15	−0·57
16	−0·07	−0·15	−0·57
19	−0·07	−0·15	−0·56
20	−0·07	−0·15	−0·56
22	−0·07	−0·14	−0·56
23	−0·07	−0·14	−0·56

Date.	Collimation.	Level.	Azimuth.	Date.	Collimation.	Level.	Azimuth.	Date.	Collimation.	Level.	Azimuth.
1864.	s.	s.	s.	1864.	s.	s.	s.	1864.	s.	s.	s.
Aug. 24	−0·07	−0·14	−0·56	Sept. 29	−0·07	−0·07	−0·52	Nov. 16	−0·04	+0·04	−0·08
26	−0·07	−0·14	−0·56	30	−0·07	−0·06	−0·52	18	−0·04	+0·03	−0·08
28	−0·07	−0·13	−0·55					21	−0·04	+0·03	−0·08
29	−0·07	−0·13	−0·55	Oct. 1	−0·07	−0·06	−0·51	22	−0·04	+0·03	−0·08
31	−0·07	−0·13	−0·55	4	−0·07	−0·05	−0·51	23	−0·04	+0·02	−0·08
				6	−0·07	−0·04	−0·52	26	−0·04	+0·03	−0·09
Sept. 3	−0·07	−0·12	−0·55	12	−0·07	−0·02	−0·53	28	−0·04	+0·03	−0·10
5	−0·07	−0·12	−0·55	13	−0·07	−0·02	−0·54	29	−0·04	+0·03	−0·11
6	−0·07	−0·11	−0·55	14	−0·07	−0·01	−0·55	30	−0·04	+0·03	−0·12
8	−0·07	−0·11	−0·55	17	−0·06	−0·01	−0·40				
9	−0·07	−0·11	−0·55	18	−0·06	0·00	−0·37	Dec. 1	−0·04	+0·03	−0·14
11	−0·07	−0·11	−0·54	20	−0·06	0·00	−0·35	4	−0·04	+0·04	−0·15
12	−0·07	−0·10	−0·54	24	−0·06	+0·01	−0·30	6	−0·04	+0·04	−0·17
14	−0·07	−0·10	−0·54					7	−0·04	+0·04	−0·20
16	−0·07	−0·10	−0·54	Nov. 1	−0·05	+0·03	−0·25	8	−0·04	+0·04	−0·22
17	−0·07	−0·10	−0·54	2	−0·05	+0·03	−0·20	9	−0·04	+0·04	−0·18
18	−0·07	−0·09	−0·54	3	−0·05	+0·03	−0·17	10	−0·04	+0·04	−0·14
19	−0·07	−0·09	−0·54	5	−0·04	+0·03	−0·14	19	−0·04	+0·07	−0·12
21	−0·07	−0·09	−0·53	8	−0·04	+0·04	−0·09	21	−0·04	+0·07	−0·10
24	−0·07	−0·08	−0·53	9	−0·04	+0·04	−0·09	24	−0·04	+0·08	−0·09
26	−0·07	−0·07	−0·53	11	−0·04	+0·04	−0·09	29	−0·04	+0·09	−0·07
27	−0·07	−0·07	−0·53	12	−0·04	+0·04	−0·09	30	−0·04	+0·09	−0·05
28	−0·07	−0·07	−0·52	15	−0·04	+0·04	−0·09				

The correction to the star observations of times of Transit, for each of the above three instrumental deviations successively, is,

$$\text{Collimation correction} \times \frac{1}{\text{sin Star's North Polar Distance}},$$

the sign being positive for a star above the Pole, and negative when it crosses the Meridian below the Pole.

$$\text{Level correction} \times \frac{\text{cos Star's Zenith Distance South}}{\text{sin Star's North Polar Distance}},$$

the sign being positive for a star above the Pole, and negative when it crosses the Meridian below the Pole. And

$$\text{Azimuthal correction} = \frac{\text{sin Star's Zenith Distance South}}{\text{sin Star's North Polar Distance}},$$

the sign being positive for a star above the Pole *and* to the South of the Zenith, also for a star below the Pole and North of the Zenith; but negative when above the Pole and to the North of the Zenith.

CORRECTION OF THE CLOCK.

For computing the errors of the Clock and the Azimuthal errors of the Transit Instrument, the following Table of the Mean Right Ascensions of the principal stars for January 1, 1864, has been employed, and was kindly communicated at the time by G. B. Airy, Esq., Astronomer Royal, as being the same employed by him for reducing the Greenwich Observations of 1864.

TABLE II.

MEAN RIGHT ASCENSIONS ADOPTED OF STANDARD STARS.

Star's Name.	Assumed Mean Right Ascension, January 1, 1864.	Correction to Nautical Almanac.	Star's Name.	Assumed Mean Right Ascension, January 1, 1864.	Correction to Nautical Almanac.
	h. m. s.	s.		h. m. s.	s.
α Andromedæ	0 1 21·78	+0·06	κ Geminorum	6 6 40·13	....
γ Pegasi	0 6 14·11	+0·05	μ Geminorum	6 14 43·98	+0·01
ι Ceti	0 12 21·83	....	β Canis Majoris	6 16 42·73	....
12 Ceti	0 23 5·88	−0·03	ν Geminorum	6	....
ε Andromedæ	0 31 22·13	....	γ Geminorum	6 29 51·27	−0·03
β Ceti	0 36 15·61	+0·06	Cephei 51	6 35 41·40	+2·51
ω Andromedæ	0 49 12·82	....	Sirius	6 39 9·24	−0·17
ε Piscium	0 55 53·23	−0·02	θ Canis Majoris	6 47 52·28	....
β Andromedæ	1 2 7·55	....	ε Canis Majoris	6 53 16·88	0·00
Polaris	1 9 18·99	+0·24	γ Canis Majoris	6 57 36·34	−0·02
θ Ceti	1 17 13·51	+0·02	51 Geminorum	7 5 33·59	....
η Piscium	1 24 12·57	+0·05	δ Geminorum	7 11 59·[illegible]	0·00
ν Piscium	1 34 21·32	0·00	β Canis Minoris	7 19 46·44	....
β Arietis	1 47 7·90	+0·01	Castor	7 25 55·10	0·00
α Arietis	1 59 30·74	+0·02	Procyon	7 32 10·92	+0·10
67 Ceti	2 10 12·01	+0·03	Pollux	7 36 59·40	+0·02
ξ² Ceti	2 20 55·85	0·00	ξ Navis	7 43 34·46	....
δ Ceti	2 32 30·84	....	6 Cancri	7 55 [illegible]·64	−0·09
γ Ceti	2 36 15·35	0·04	15 Argûs	8 1 45·16	+0·01
ε Arietis	2 53 59·26	....	δ Cancri	8 9 6·29	....
α Ceti	2 55 10·31	+0·06	β Cancri	8 15 34·39	....
δ Arietis	3 3 51·40	+0·01	η Cancri	8 24 50·40	+0·03
τ' Arietis	3 13 22·78	....	γ Cancri	8 35 21·68	....
ο Tauri	3 17 29·56	....	ι Hydræ	8 39 34·31	−0·02
f Tauri	3 23 22·40	....	α Cancri	8 51 2·77	....
ε Eridani	3 26 31·16	....	κ Cancri	9 [illegible] 22·71	....
11 Tauri	3 32 39·23	....	83 Cancri	9 11 23·20	+0·10
δ Eridani	3 36 44·07	....	α Hydræ	9 20 54·23	+0·03
η Tauri	3 39 21·29	+0·[illegible]6	ξ Leonis	9 24 36·70	....
γ Eridani	3 51 41·08	+0·05	ο Leonis	9 33 53·37	....
ω Tauri	4 1 14·81	....	ι Leonis	9 38 7·60	+0·04
ο' Eridani	4 5 13·65	−0·02	ω Leonis	9 45 1·41	....
γ Tauri	4 12 3·42	....	π Leonis	9 53 1·46	0·00
ε Tauri	4 20 40·68	+0·01	Regulus	10 1 7·59	+0·03
Aldebaran	4 28 7·17	0·00	γ¹ Leonis	10 12 28·22	0·00
μ Eridani	4 38 12·25	....	μ Hydræ	10	....
ι Aurigæ	4 48 8·44	0·01	ρ Leonis	10 25 38·89	0·00
ε Leporis	4 59 42·21	+0·04	34 Sextantis	10 35 36·03	....
Rigel	5 8 0·15	+0·02	l Leonis	10 42 6·37	+0·02
β Tauri	5 17 41·62	+0·06	d Leonis	10 53 32·15	....
δ Orionis	5 25 3·56	−0·03	χ Leonis	10 58 0·00	−0·01
α Leporis	5 26 43·94	−0·04	δ Leonis	11 6 52·31	+0·01
ε Orionis	5 29 18·76	−0·01	δ Crateris	11 12 32·59	+0·05
α Columbæ	5 34 43·51	−0·14	τ Leonis	11 20 56·54	....
κ Orionis	5 41 18·38	....	υ Leonis	11 29 59·12	−0·03
α Orionis	5 47 48·57	+0·02	β Leonis	11 42 7·24	+0·05
1 Geminorum	5 55 51·24	....	π Virginis	11 53 54·20	....
ν Orionis	5 59 46·41	−0·02	ε Corvi	12 3 8·09	+0·04

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Star's Name.	Assumed Mean Right Ascension, January 1, 1864.	Correction to Nautical Almanac.	Star's Name.	Assumed Mean Right Ascension, January 1, 1864.	Correction to Nautical Almanac.
	h. m. s.	s		h. m. s.	s
η Virginis	12 12 56·90	+0·04	α Lyræ	18 32 20·04	+0·07
δ Corvi	12 22 49·92	....	2 Aquilæ	18	....
β Corvi	12 27 14·86	+0·14	β Lyræ	18 45 3·56	+0·12
35 Virginis	12 40 55·92	....	ι Aquilæ	18 53 26·98	....
δ Virginis	12 48 45·25	....	ζ Aquilæ	18 59 9·53	+0·13
ε Virginis	12 55 24·39	....	ψ Sagittarii	19 7 11·91	....
θ Virginis	13 2 54·62	+0·02	ω Aquilæ	19 11 25·95	+0·04
Spica	13 18 1·87	+0·03	δ Aquilæ	19 18 38·41	+0·04
ζ Virginis	13 27 45·91	−0·01	α Vulpeculæ	19 23 2·81	....
m Virginis	13 34 28·58	....	μ Aquilæ	19 27 26·71	....
τ Bootis	13 40 47·97	....	h² Sagittarii	19 28 25·64	+0·11
η Bootis	13 48 12·56	+0·04	γ Aquilæ	19 39 47·63	+0·08
τ Virginis	13 54 43·61	+0·05	α Aquilæ	19 44 8·83	+0·05
κ Virginis	14 5 38·67	....	β Aquilæ	19 48 37·93	+0·06
Arcturus	14 9 27·56	+0·07	c Sagittarii	19 54 17·44	....
f Bootis	14 20 7·84	....	λ Ursæ Minoris	20 0 7·09	−0·32
ξ Bootis	14 25 58·13	0·00	θ Aquilæ	20 4 17·17	....
ε Bootis	14 39 2·87	+0·08	α² Capricorni	20 10 30·36	+0·06
α² Libræ	14 43 21·54	+0·04	β Capricorni	20 13 22·02	....
ξ² Libræ	14 49 23·53	....	ρ Capricorni	20 21 5·97	+0·14
ψ Bootis	14 58 37·13	−0·03	ε Delphini	20 26 42·89	....
β Libræ	15 9 41·48	+0·03	α Delphini	20 33 19·28	....
ι² Libræ	15 15 26·88	....	ε Aquarii	20 40 18·65	....
ζ¹ Libræ	15 20 35·46	....	32 Vulpeculæ	20 48 45·87	+0·04
α Coronæ	15 28 55·84	+0·08	θ Capricorni	20 58 17·87	....
α Serpentis	15 37 34·24	+0·07	ζ Cygni	21 7 8·94	+0·07
ε Serpentis	15 44 2·30	....	α Equulei	21 9 1·43	....
γ Serpentis	15 50 10·38	....	ι Capricorni	21 14 40·18	....
β¹ Scorpii	15 57 31·98	+0·04}	β Aquarii	21 24 23·80	+0·03
δ Ophiuchi	16 7 13·22	+0·08	ξ Aquarii	21 30 30·55	....
γ Herculis	16 15 55·32	....	ε Pegasi	21 37 30·39	+0·03
Antares	16 21 4·36	+0·02	δ Capricorni	21 39 31·80	....
λ Ophiuchi	16 24 3·36	....	16 Pegasi	21 46 52·53	+0·01
ζ Ophiuchi	16 29 40·33	....	α Aquarii	21 58 47·82	+0·04
ζ Herculis	16 36 9·61	+0·02	ι Pegasi	22 0 40·86	....
κ Ophiuchi	16 51 13·89	−0·05	θ Aquarii	22 9 39·27	−0·01
ε Herculis	16 55 5·27	....	γ Aquarii	22 14 37·84	....
η Ophiuchi	17 2 34·81	....	π Aquarii	22 23 26·82	....
α Herculis	17 8 26·84	+0·10	η Aquarii	22 28 21·98	+0·01
θ Ophiuchi	17 13 39·56	+0·06	ζ Pegasi	22 34 40·75	+0·08
ν Ophiuchi	17 19 46·01	....	μ Pegasi	22 43 26·49	....
α Ophiuchi	17 28 37·33	+0·06	λ Aquarii	22 45 31·00	....
β Ophiuchi	17 36 45·26	....	Fomalhaut	22 50 7·70	+0·03
μ Herculis	17 41 8·23	+0·06	α Pegasi	22 57 59·26	+0·02
89 Herculis	17 49 56·06	....	γ Piscium	23 10 6·89	0·00
72 Ophiuchi	18 0 54·12	....	κ Piscium	23 19 57·61	−0·03
μ Sagittarii	18 5 37·78	+0·06	ι Piscium	23 32 57·33	−0·03
η Serpentis	18 14 16·36	....	δ Sculptoris	23 41 50·16	−0·05
δ Ursæ Minoris	18 16 12·82	−0·16	ω Piscium	23 52 19·70	−0·03
λ Sagittarii	18 19 34·65	....	2 Ceti	23 56 46·19	....

The Mean Right Ascensions are converted into Apparent for any day of observation, by the application of the reductions of mean to apparent places taken from the Nautical Almanac. The Correction of the Clock is determined from the observed transits of the stars in the foregoing Table (excepting the

close Polar stars), the corrections of the instrument being previously applied, compared with the Apparent Right Ascensions computed.

The Corrections of the Clock thus determined are contained in the column entitled "Correction of Clock observed."

The sign + prefixed to the Correction of the Clock denotes that the clock is slow; the sign − that it is fast.

On account partly of the variability at times of the Clock-rate, and still more frequently of swerving in the azimuthal position of the Transit Instrument as produced by changes of temperature acting on its supporting stone piers during the observations, the "Adopted Clock Corrections" have been generally obtained by graphical projection, and the stars of each night have been used much more by themselves than with reference to those of preceding and following nights.

At the same time, to afford a tabular view, in the usual manner, of the march of the Clock, its daily errors at 0^h Sidereal Time, as given more or less approximately by the curves, are contained in the following Table.

TABLE III.

CORRECTION FOR TRANSIT CLOCK AT 0^h SIDEREAL TIME.

Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.
1864.	s	1864.	s	1864.		1864.	s	1864.	s
Jan. 2	− 7·50	Mar. 8	− 15·50	May 16	− 11·80	July 30	− 26·51	Oct. 12	− 43·63
4	− 7·41	9	− 15·67	17	− 12·38	Aug. 1	− 26·94	13	− 43·91
6	− 7·10	10	− 16·00	21	− 14·36	2	− 27·16	14	− 44·06
7	− 7·30	11	− 16·41	22	− 15·12	4	− 27·61	17	− 45·22
14	− 7·90	12	− 16·60	23	− 15·63	5	− 27·85	20	− 46·70
17	− 8·18	15	− 17·53	25	− 16·95	8	− 28·64	24	− 47·65
18	− 8·37	17	− 17·79	26	− 17·49	9	− 28·97	Nov. 1	− 46·98
19	− 8·72	18	− 18·10	30	− 20·22	10	− 29·26	2	− 46·55
20	− 8·97	23	− 19·68	31	− 21·05	15	− 29·68	8	− 44·10
23	− 10·01	24	− 20·06	June 1	− 21·57	29	− 33·07	9	− 43·65
27	− 10·86	28	− 21·98	21	− 20·91	31	− 33·67	11	− 42·82
28	− 11·10	30	− 22·33	22	− 21·31	Sept. 3	− 34·85	21	− 42·00
Feb. 2	− 12·05	31	− 22·81	30	− 22·33	5	− 35·48	23	− 41·68
4	− 12·30	April 1	− 23·20	July 4	− 23·12	6	− 35·83	26	− 41·67
5	− 12·25	10	− 24·72	6	− 23·25	9	− 36·67	28	− 41·60
8	− 12·30	11	− 25·11	7	− 23·20	11	− 37·03	29	− 41·32
12	− 13·12	13	− 25·88	8	− 23·25	12	− 37·37	30	− 41·01
14	− 13·38	19	− 28·25	13	− 23·00	14	− 37·84	Dec. 1	− 40·68
15	− 13·55	20	− 28·83	15	− 23·13	16	− 38·71	5	− 39·29
16	− 13·79	22	− 29·64	16	− 23·35	17	− 39·14	7	− 38·90
17	− 13·74	29	− 32·09	18	− 23·50	21	− 40·40	8	− 38·74
18	− 13·65	May 3	− 34·47	21	− 23·98	24	− 41·28	9	− 39·63
19	− 13·48	7	− 36·93	23	− 24·64	27	− 41·40	19	− 36·95
23	− 13·35	9	− 38·18	26	− 25·62	30	− 41·73	21	− 36·64
24	− 13·26	10	− 38·64	28	− 26·20	Oct. 6	− 42·87	24	− 35·56
25	− 13·25							29	− 34·65
26	− 13·25							30	− 34·66

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OBSERVATIONS

MADE WITH

THE MURAL CIRCLE,

AND

CALCULATION

OF

APPARENT NORTH POLAR DISTANCES.

1864.

Date.	Star or other Object Observed. No. in British Assn. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Corr. to Mean N. P. D. Jan. 1, 1864.
1864.				h m s	° ′	′ ″	″	rev.	inches	°	°				° ′ ″	″
Jan. 1	....	Nadir ‖|		4 36 0	54 0	2 51·1	54·9	0·500	30·31	34·4	27·1	......	......	....	......	
	......	Nadir |‖	.....	......	54 0	2 64·7	65·3	0·500	......	.....	.....	......	......	....	......	
	1501	......	.....	4 15 15	234 20	4 12·7	19·4	0·500	30·31	....	27·1	0	0	6	+ 0 21 16·2	− 4·3
	1626	......	....	5 9 20	249 40	1 10·0	17·4	0·500	30·31	.....	27·0	......	......	6	+ 15 38 14·0	0·0
	1683	......	....	5 17 57	255 10	3 49·4	57·5	0·500	30·31	.....	27·0	......	......	7	+ 21 40 54·8	− 1·5
	1826	......	....	5 39 33	280 30	1 7·2	15·0	0·557	30·31	.....	27·0	......	......	5	+ 46 28 14·6	6·3
	1883	(a) α Orionis	....	......	282 35	1 31·9	44·0	0·500	30·31	....	27·0	......	......	5	+ 49 33 35·7	6·6
	2022	......	6·0	6 9 41	279 55	4 52·4	59·7	0·840	30·31	....	27·0	......	......	4	+ 45 57 8·4	− 7·2
	2101	......	....	6 22 17	267 20	1 19·3	57·3	0·500	30·31	.....	26·0	......	......	5	+ 33 18 54·9	− 7·1
	2184	......	.....	6 33 39	273 25	3 13·0	22·0	0·710	30·31	....	25·9	......	......	5	+ 39 25 25·6	− 7·9
	2292	......	.....	6 53 34	279 10	0 37·8	15·4	0·441	30·31	....	25·9	......	......	6	+ 45 7 41·9	− 8·9
	2363	......	....	7 6 17	265 0	3 24·4	33·1	0·494	30·31	....	25·9	......	......	5	+ 31 0 30·6	− 9·5
	.....	Nadir ‖|		7 12 0	54 0	2 54·8	55·0	0·500	30·31	35·4	25·9	......	.....	.....	......	
	......	Nadir |‖		......	54 0	2 65·4	66·0	0·500			.....	......	.....	.....	......	
Jan. 5	......	Nadir ‖		4 26 0	54 0	2 53·8	53·8	0·500	30·06	33·7	29·0	......	.....	.....	......	
	......	Nadir ‖	....	......	54 0	2 66·8	67·0	0·500	.....	.....	......	......	.....	.....	......	
	1491	......	....	4 43 19	284 15	4 22·6	30·6	0·587	30·06	....	29·0	0	0	6	+ 47 18 32·0	− 3·7
	1656	......	....	5 11 28	284 10	1 47·7	56·9	0·500	30·06	.....	29·0	......	.....	6	+ 47 38 54·6	− 5·2
	1703	(a)	....	5 20 27	273 40	0 7·8	16·2	0·494	30·06	.....	29·0	......	.....	5	+ 39 37 13·5	− 4·2
	1765	ι Orionis	2·0	5 29 28	291 15	1 20·0	28·3	0·500	30·05	....	28·9	......	.....	6	+ 57 13 26·6	− 7·1
	1826	......	.....	5 39 33	280 30	1 9·7	17·7	0·500	30·05	....	28·9	......	.....	7	+ 46 28 15·5	− 6·4
	1883	α Orionis	....	5 47 56	282 35	1 36·6	44·2	0·341	30·05	....	28·9	......	......	6	+ 48 33 38·4	− 6·7
	1932	......	....	5 55 21	251 25	0 28·4	37·2	0·700	30·05	.....	28·9	......	.....	5	+ 17 22 38·4	− [illegible]
	2022	......	6·0	6 9 45	279 55	5 3·3	9·9	0·487	30·05	....	28·9	......	.....	5	+ 45 57 9·4	− 7·3
	2101	......	8·5	6 22 17	267 20	1 50·0	58·3	0·500	30·05		28·9	......	.....	6	+ 33 18 55·8	− 7·1
	2184	......	......	6 33 40	273 25	3 16·3	24·2	0·634	30·05	.....	28·6	......	.....	5	+ 39 25 26·2	− [illegible]
	2306	......	.....	6 56 13	278 50	0 33·0	40·1	0·521	30·05	....	27·0	......	....	6	+ 44 47 39·0	− 9·1
	2363	......	.....	7 6 18	265 0	3 25·9	33·3	0·500	30·05	....	27·0	......	.....	7	+ 31 0 31·6	− [illegible]
	2410	δ Geminorum	..	7 12 8	267 45	0 53·0	63·9	0·843	30·05	.....	27·0	......	.....	7	+ 33 43 9·3	− [illegible]
	......	Nadir ‖	..	7 22 0	54 0	2 53·8	54·2	0·500	30·05	36·0	27·0	......	.....	....	......	.....
	......	Nadir |‖	....	......	54 0	2 65·3	66·4	0·500	....	....	....	......	.....	....	......	.....
Jan. 7	......	Nadir ‖|	....	6 16 0	54 0	2 51·7	56·0	0·500	29·88	34·0	29·7	0	4	.....	......	.....
	......	Nadir |‖	....	......	54 0	2 61·1	66·0	0·500	....	......	....	......	......	.....	......	.....
Jan. 11	......	Nadir ‖|	.....	4 46 0	54 0	2 55·2	54·0	0·500	29·54	40·0	13·1	......	.....	.....	......	.....
	......	Nadir |‖	.....	......	54 0	2 61·1	64·2	0·500	......	......	.....	......	.....	.....	......	.....
	1683	......	.....	5 17 58	255 40	3 51·4	58·0	0·500	29·51	.....	13·0	......	......	7	+ 21 40 57·2	− 1·0
	1772	......	6·0	......	260 50	1 54·1	61·4	0·500	29·51	....	43·0	......	....	6	+ 26 49 0·1	− 3·6
	1883	α Orionis	3·0	5 47 58	282 35	1 34·1	41·4	0·500	29·54	.....	43·7	......	....	7	+ 48 33 41·1	− 7·8
	......	Nadir ‖|	.....	5 53 0	54 0	2 52·6	51·6	0·500	29·54	42·7	43·5	......	......	......	......	.....
	......	Nadir |‖	.....	......	54 0	2 64·0	62·8	0·500	.....	.....	.....	......	......	......	......	.....
Jan. 12	......	Nadir ‖|	.....	4 41 0	54 0	2 54·0	55·8	0·500	29·85	40·8	40·2	......	.....	......	......	.....
	......	Nadir |‖	.....	......	54 0	2 65·0	65·9	0·500	......	.....	.....	......	......	......	......	.....
	1626	......	7·5	5 9 20	249 40	1 8·0	16·9	0·500	29·90	.....	40·2	S. W.	0	6	+ 15 38 13·0	+ 0·8
	1656	......	......	5 14 29	281 40	1 49·3	57·6	0·540	29·90	.....	40·2	......	......	7	+ 47 38 57·1	− 5·7
	1696	......	8·0	......	287 10	0 11·9	20·3	0·500	29·90	......	40·1	......	......	5	+ 53 7 18·6	− 6·9
	1730	δ Orionis	......	5 25 13	290 20	3 0·9	11·0	0·600	29·90	......	40·1	......	......	7	+ 56 20 12·1	− 7·7
	1772	......	......	5 30 48	260 50	1 43·9	52·3	0·765	29·90	......	40·1	......	......	8	+ 26 46 57·0	− 2·8

(a) Bad definition.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1864.
1864.				h. m. s.	° ′	′ ″	″	revs.	inches	°	°				° ′ ″	″
Jan. 12	1813	......	6·0	5 38 28	221 30	4 55·2	63·0	0·574	29·90	......	40·1	......	......	7	− 12 27 58·1	+ 2·2
	1883	(a) α Orionis	2·0	5 47 58	282 35	1 38·1	47·0	0·341	29·90	......	40·2	......	......	9	+ 48 33 40·9	− 7·3
	1932	......	......	5 55 26	251 25	0 28·5	37·3	0·671	29·90	......	40·3	......	......	7	+ 17 22 38·0	− 3·2
	2022	......	......	6 9 47	279 55	5 3·1	11·7	0·557	29·90	......	40·5	......	......	6	+ 45 57 12·3	− 7·9
	2046	......	7·0	6 15 6	233 35	4 13·9	20·5	0·500	29·90	......	40·7	......	......	8	− 0 23 42·2	− 2·8
	2083	......	......	6 20 53	216 10	3 4·0	10·2	0·533	29·91	......	40·9	......	......	8	− 17 49 51·9	− 1·8
	2184	......	......	6 33 42	273 25	3 22·8	30·6	0·451	29·91	......	40·7	......	......	7	+ 39 25 28·0	− 8·3
	2236	......	......	6 43 54	266 10	4 10·6	19·6	0·660	29·91	......	40·5	......	......	6	+ 32 11 22·0	− 8·3
	2292	......	......	6 53 38	279 10	0 39·2	47·9	0·526	29·91	......	40·5	......	......	7	+ 45 7 46·5	− 9·6
	2363	......	......	7 6 17	265 0	3 24·8	32·8	0·589	29·93	......	40·0	......	......	5	+ 31 0 33·6	− 9·5
	2410	δ Geminorum	......	7 12 9	267 45	0 59·8	67·2	0·582	29·93	......	40·0	......	......	7	+ 33 43 7·5	− 9·9
	2463	(b)	......	7 20 23	262 5	5 25·6	33·3	0·535	29·93	......	39·9	......	......	5	+ 28 7 33·0	− 10·2
	2488	......	......	7 26 49	243 30	1 43·4	53·3	0·500	29·93	......	39·9	......	......	6	+ 9 28 48·9	− 10·1
	2522	α Canis Minoris	......	7 32 20	284 20	5 0·5	8·4	0·523	29·94	......	39·4	......	......	6	+ 50 22 8·7	− 11·0
	2586	......	......	7 41 10	261 25	2 47·8	54·5	0·520	29·94	......	39·2	......	......	7	+ 27 24 53·6	− 11·5
	......	Nadir	......	7 54 0	54 0	2 53·3	54·7	0·500	29·94	40·0	39·2	......	......	......	......	......
	......	Nadir	......	......	54 0	2 64·8	65·1	0·500	......	......	......	......	......	......	......	......
Jan. 14	......	Nadir	......	4 50 0	54 0	2 53·6	54·4	0·500	29·91	39·8	35·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 65·2	65·2	0·500	......	......	......	......	......	......	......	......
	1623	(c) β Orionis	......	5 8 10	298 20	0 2·2	9·8	0·500	29·91	......	35·0	8, W.	2	5	+ 64 17 8·4	− 8·9
	1656	......	......	5 14 25	281 40	1 46·2	54·9	0·658	29·91	......	35·0	......	......	5	+ 47 38 57·6	− 5·8
	1703	......	......	......	273 40	0 6·8	14·6	0·500	29·92	......	35·1	......	......	4	+ 39 37 12·6	− 4·5
	1751	......	......	5 28 58	224 20	3 21·1	26·3	0·597	29·92	......	35·1	......	......	5	− 9 39 33·4	+ 3·3
	1813	(d)	......	5 38 26	221 30	4 57·4	63·1	0·500	29·92	......	35·1	......	......	3	− 12 27 59·0	+ 2·7
	......	Nadir	......	5 49 0	54 0	2 54·0	54·6	0·500	29·92	37·9	35·3	......	......	......	......	......
	......	Nadir	......	......	54 0	2 64·7	65·0	0·500	......	......	......	......	......	......	......	......
Jan. 18	......	Nadir	......	5 25 0	54 0	2 55·3	56·5	0·500	29·69	39·8	39·1	......	......	......	......	......
	......	Nadir	......	......	54 0	2 64·1	65·1	0·500	......	......	......	......	......	......	......	......
	2306	......	......	......	278 50	0 38·2	46·2	0·424	29·67	......	39·6	9 S.W.	0	6	+ 44 47 42·1	− 10·1
	2410	(e) δ Geminorum	......	7 12 36	267 45	1 2·6	10·0	0·500	29·67	......	39·9	......	......	7	+ 33 43 7·8	− 10·0
	2522	(c) α Canis Minoris	......	7 32 47	284 20	5 4·4	13·2	0·500	29·67	......	39·9	......	......	5	+ 50 22 12·2	− 11·7
	2683	......	......	7 57 30	270 45	1 18·0	26·6	0·500	29·65	......	39·4	......	......	6	+ 36 43 24·1	− 12·3
	......	Nadir	......	8 14 0	54 0	2 55·1	56·7	0·500	29·65	40·1	39·4	......	......	......	......	......
	......	Nadir	......	......	54 0	2 64·4	64·8	0·500	......	......	......	......	......	......	......	......
Jan. 19	......	Nadir	......	4 54 0	54 0	2 53·9	55·4	0·500	29·67	41·7	44·4	......	......	......	......	......
	......	Nadir	......	......	54 0	2 65·0	66·8	0·500	......	......	......	......	......	......	......	......
	2463	......	......	7 20 23	262 5	5 26·3	35·5	0·500	29·70	......	44·4	7, W.	4	6	+ 28 7 33·6	− 10·0
	2488	......	......	7 26 49	243 30	1 40·6	50·4	0·610	29·70	......	44·4	......	......	6	+ 9 28 49·0	− 9·1
	......	Nadir	......	8 20 0	54 0	2 54·4	54·9	0·500	29·70	43·6	44·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·9	64·3	0·500	......	......	......	......	......	......	......	......
Jan. 27	......	Nadir	......	5 44 0	54 0	2 52·9	55·9	0·500	29·33	44·8	45·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·7	66·7	0·500	......	......	......	......	......	......	......	......
	2022	......	6·0	6 9 49	280 0	0 5·0	13·6	0·499	29·33	......	44·3	18, S.W.	2	6	+ 45 57 11·4	− 8·8
	2101	(f)	......	6 22 20	267 20	1 51·0	58·0	0·500	29·33	......	44·2	......	......	4	+ 33 18 56·5	− 7·0
	2184	......	......	6 33 43	273 25	3 20·8	29·4	0·570	29·33	......	44·0	......	......	6	+ 39 25 29·7	− 8·8
	2236	(g)	......	6 43 57	266 10	4 10·8	20·3	0·668	29·33	......	43·9	......	......	7	+ 32 11 22·8	− 8·1
	2292	......	......	6 53 40	279 10	0 38·1	49·0	0·620	29·33	......	43·9	......	......	5	+ 45 7 49·5	− 10·6

(a) Good definition. (b) Definition getting worse. (c) Bad definition. (d) Sky getting cloudy. (e) Time by old Transit Clock.
(f) Slightly obscured by a cloud at time of transit. (g) Wind getting very boisterous.

Date.	Star or other Object Observed: No. in British Asso. Catalogue.	Star or other Object Observed: Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist. Jan. 1 1864.
1864.				h m s	° ′	′ ″	″	revs.	in.	°	°				° ′ ″	″
Jan. 23	2334	....	......	7 1 11	239 55	4 46·9	56·1	0·500	29·33	...	43·9	....	......	7	+ 5 56 52·6	− 5·1
	2410	δ Geminorum......	....	7 12 12	267 45	0 56·7	64·1	0·729	29·33	......	43·4	....	......	7	+33 43 8·5	− 9·9
	2522	α Canis Minoris...	......	7 32 23	284 20	5 1·1	10·6	0·588	29·33	...	42·8	....	......	8	+50 22 12·1	−12·8
Feb. 2	......	Nadir ‖	.. ..	6 0 0	54 0	2 54·7	55·1	0·500	29·36	41·4	38·0					
	......	Nadir ‖	....	....	54 0	2 64·2	65·5	0·500	......	......	......	....	......	......	....	......
	2022	(a)	....	....	280 0	0 7·1	1·3	0·500	29·36	.....	38·0	10, S.W.	5	3	+45 57 13·5	− 9·1
	2046	....	......	6 15 10	233 35	1 10·0	17·6	0·500	29·36	......	38·0	....	......	5	− 0 23 45·1	+ 0·9
	2101	....	......	6 22 22	267 20	1 29·9	58·0	0·500	29·36	......	38·0	....	......	6	+33 18 56·2	− 6·9
	2188	....	......	7 26 52	243 30	1 12·9	53·1	0·450	29·37	......	38·0	....	......	......	+ 9 28 47·4	− 7·0
	2586	....	.....	7 41 15	261 25	2 10·2	18·0	0·500	29·37	......	38·0	....	......	7	+27 24 54·5	−10·7
	2683	....	......	7 57 7	270 15	1 16·5	26·0	0·550	29·37	......	38·0	....	......	6	+36 43 25·0	−12·6
	2737	....	...	8 3 33	271 55	2 58·0	67·1	0·343	29·37	......	38·9	....	......	......	+40 55 1·3	−13·2
	2867	....	......	8 25 27	279 25	3 1·2	10·8	0·572	29·37	...	38·0	....	......	7	+45 25 11·1	−14·3
	......	Nadir ‖	......	9 15 0	54 0	2 52·2	52·2	0·500	29·37	40·0	38·0	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 64·8	64·8	0·500	......	......	......	....	......	......	....	......
Feb. 3	......	Nadir ‖	......	6 20 0	54 0	2 53·7	54·7	0·500	29·51	39·0	34·0					
	......	Nadir ‖	......	....	54 0	2 63·9	65·5	0·500	....	......	......	....	......	......	....	......
	2238	....	......	6 43 55	266 10	1 14·0	18·2	0·671	29·51	......	34·0	12, W.	1	5	+32 11 21·2	− 8·0
	2306	....	6·0	6 56 19	278 50	0 34·8	42·0	0·633	29·51	......	34·0	....	......	7	+44 47 43·8	−11·0
	2379	....	......	7 8 25	240 15	3 0·6	8·6	0·750	29·51	......	34·0	....	......	6	+ 6 15 11·2	− 4·6
	2463	....	.....	7 20 26	262 10	0 25·5	32·7	0·550	29·54	....	34·0	....	......	7	+28 7 31·3	− 9·4
	2522	α Canis Minoris..	1·0	7 32 21	284 20	4 58·4	68·9	0·762	29·54	......	34·0	....	......	8	+50 22 13·6	−13·2
	2586	....	7·0	7 41 15	251 25	2 47·7	54·9	0·500	29·51	......	34·[illegible]	....	......	7	+27 24 52·1	−10·0
	2683	....	......	7 57 7	270 15	1 19·4	26·7	0·500	29·54	.....	33·9	....	......	6	+36 43 24·4	−12·6
	2737	....	......	8 3 34	271 55	2 55·1	62·5	0·500	29·54	....	33·9	....	......	7	+40 55 0·9	−13·1
	2867	....	......	8 25 30	279 25	3 2·8	10·2	0·500	29·54	......	33·9	....	......	6	+45 25 8·8	−14·3
	2971	ι Hydræ	......	8 39 48	283 0	4 27·9	35·4	0·500	29·51	.....	33·8	....	......	7	+49 1 34·4	−14·8
	......	Nadir ‖	......	9 20 0	54 0	2 55·1	55·6	0·500	29·51	34·5	33·8	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 66·1	67·0	0·500	......	......	......	....	......	......	....	......
Feb. 4	......	Nadir ‖	......	6 25 0	54 0	2 55·8	55·8	0·500	29·98	37·0	33·0					
	......	Nadir ‖	......	....	54 0	2 65·8	66·6	0·500	......	......	......	....	......	......	....	......
	2238	....	......	6 43 58	266 10	4 16·7	23·8	0·382	29·98	....	33·0	3, N.W.	0	6	+32 11 16·3	− 7·8
	2292	....	......	6 53 42	279 10	0 37·3	45·5	0·610	29·98	......	33·0	....	......	7	+45 7 45·6	−11·0
	2463	....	......	7 20 26	262 10	0 27·8	35·9	0·386	29·93	......	32·6	....	......	6	+28 7 28·9	− 9·4
	2522	α Canis Minoris....	......	7 32 25	284 20	4 56·7	64·6	0·662	30·01	....	32·5	....	......	9	+50 22 7·6	−13·3
	2556	....	......	7 41 44	251 25	2 46·0	51·1	0·463	30·01	...	32·5	....	......	8	+27 24 50·2	−10·6
	2683	....	......	7 57 7	270 45	1 16·2	24·0	0·580	30·01	......	32·5	....	......	7	+36 43 23·7	−12·8
	2748	....	......	8 4 59	275 30	5 9·4	18·0	0·584	30·01	.....	32·5	....	......	8	+41 32 16·1	−13·4
	2867	....	......	8 25 28	279 25	2 59·2	66·8	0·574	30·01	......	32·5	....	......	5	+45 25 6·8	−14·4
	2971	ι Hydræ	......	8 39 48	283 0	4 21·7	30·8	0·662	30·01	......	32·5	....	......	6	+49 1 33·1	−14·9
	3053	....	......	8 50 36	280 0	4 54·8	62·6	0·500	30·01	......	32·5	....	......	6	+46 2 1·0	−15·1
	3063	....	......	8 55 56	238 35	3 38·1	15·7	0·611	30·01	......	32·3	....	......	7	+ 4 35 14·6	−13·3
	......	Nadir ‖	......	9 18 0	54 0	2 53·9	55·9	0·500	30·01	34·4	32·6	....	......	......	....	......
	......	Nadir ‖	......	....	54 0	2 66·5	67·3	0·500	......	......	......	....	......	......	....	......
Feb. 5	......	Nadir ‖	......	6 35 0	54 0	2 54·1	56·2	0·500	30·17	36·8	32·0					
	......	Nadir ‖	......	....	54 0	2 66·3	67·7	0·500	......	......	......	....	......	......	....	......
	2292	....	......	6 53 40	279 10	0 37·9	45·9	0·526	30·17	......	32·0	3, N.	1	0	+45 7 43·7	−11·0

(a) Imperfectly seen.

Date.	Star or other Object Observed. No. in British Assoc. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1864.
1864.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Feb. 5	2334	......	......	7 1 46	239 55	4 43·4	52·3	0·598	30·17	......	32·0	......	......	7	+ 5 56 50·4	− 3·9
	2410	δ Geminorum	......	7 12 12	267 45	1 2·2	9·6	0·426	30·17	......	32·0	......	......	7	+33 43 4·4	− 9·8
	2463	......	......	7 20 27	262 5	5 24·9	32·1	0·500	30·17	......	32·0	......	......	6	+28 7 30·0	− 9·3
	2488	......	......	7 26 52	243 30	1 37·8	46·4	0·620	30·17	......	32·0	......	......	6	+ 9 28 44·7	− 6·6
	2586	......	......	7 41 46	261 25	2 42·8	50·2	0·631	30·17	......	32·0	......	......	7	+27 24 50·9	− 10·5
	2737	......	......	8 3 33	274 55	2 50·7	59·4	0·565	30·17	......	32·0	......	......	8	+40 54 58·3	− 13·3
	2867	......	......	8 25 29	279 25	2 57·2	65·4	0·629	30·17	......	32·0	......	......	7	+45 25 6·5	− 14·5
	2971	ι Hydræ	......	8 39 40	283 0	4 24·4	32·9	0·500	30·17	......	32·0	......	......	6	+49 1 30·9	− 15·0
	3053	......	......	8 50 36	260 0	4 54·8	61·2	0·500	30·17	......	32·0	......	......	7	+46 2 0·2	− 15·2
	3157	......	......	9 10 16	229 35	4 29·0	35·4	0·646	30·15	......	31·0	......	......	7	− 4 23 24·1	− 13·5
	......	Nadir ‖|	......	9 19 0	54 0	2 54·6	55·0	0·500	30·15	33·0	30·4	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 66·6	66·6	0·500	......	......	......	......	......	......	......	......
Feb. 8	......	Nadir ‖|	......	7 30 0	54 0	2 55·0	55·6	0·500	29·43	34·4	27·0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 66·2	67·0	0·500	......	......	......	......	......	......	......	......
	2683	......	......	7 57 10	270 45	1 8·8	17·8	0·851	29·43	......	27·0	0	0	6	+36 43 24·0	− 12·6
	2737	......	......	8 3 33	274 55	2 49·1	58·4	0·697	29·43	......	27·0	......	......	7	+40 55 0·9	− 13·4
	2867	......	......	8 25 29	279 25	2 59·1	67·5	0·575	29·43	......	27·1	......	......	6	+45 25 7·3	− 14·6
	2971	ι Hydræ	......	8 39 48	283 0	4 26·4	35·0	0·500	29·43	......	27·1	......	......	8	+49 1 33·2	− 15·2
	3053	......	......	8 50 37	280 0	5 0·0	9·2	0·271	29·43	......	27·1	......	......	5	+46 2 0·7	− 15·4
	3242	(a) θ Ursæ Majoris	......	9 24 0	237 40	2 44·4	52·8	0·629	29·43	......	27·0	......	......	4	+ 3 39 51·4	− 14·7
	......	Nadir ‖|	......	9 33 0	54 0	2 55·8	56·0	0·500	29·43	36·4	27·0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 65·0	65·4	0·500	......	......	......	......	......	......	......	......
Feb. 10	......	Nadir ‖|	......	9 10 0	54 0	2 55·0	55·4	0·500	29·50	35·0	32·0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 65·1	65·3	0·500	......	......	......	......	......	......	......	......
Feb. 12	......	Nadir ‖|	......	7 21 0	54 0	2 54·4	54·5	0·500	29·09	38·0	39·0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 64·9	65·1	0·500	......	......	......	......	......	......	......	......
	2522	α Canis Minoris	......	7 32 25	284 20	5 7·8	16·8	0·490	29·09	......	33·0	6, S.	1	5	+50 22 15·4	− 13·9
	2586	......	......	7 41 46	261 25	2 46·1	54·1	0·533	29·09	......	39·0	......	......	6	+27 24 52·7	− 10·1
	2683	......	......	7 57 8	270 45	1 20·7	27·7	0·500	29·09	......	39·0	......	......	7	+36 43 26·0	− 12·5
	2971	ι Hydræ	......	8 39 49	283 0	4 28·8	35·9	0·500	29·09	......	39·0	......	......	7	+49 1 35·7	− 15·5
	3053	......	......	8 50 37	280 0	4 56·4	63·6	0·558	29·09	......	39·0	......	......	8	+46 2 4·8	− 15·6
	3380	......	......	9 46 51	283 20	3 33·6	42·2	0·500	29·09	......	39·0	......	......	5	+49 20 41·0	− 16·7
	......	Nadir ‖|	......	10 2 0	54 0	2 54·9	56·1	0·500	29·12	39·0	39·0	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 64·2	65·0	0·500	......	......	......	......	......	......	......	......
Feb. 15	......	Nadir ‖|	......	7 6 0	54 0	2 55·7	57·3	0·500	29·14	44·0	43·3	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 64·0	65·7	0·500	......	......	......	......	......	......	......	......
	2463	......	......	7 20 29	262 10	0 25·0	33·1	0·586	29·14	......	43·3	20, S.W.	3	6	+28 7 32·6	− 8·8
	2488	......	......	7 26 54	243 30	1 39·9	48·4	0·500	29·14	......	43·3	......	......	5	+ 9 28 44·6	− 5·1
	2522	α Canis Minoris	......	7 32 26	284 20	5 6·9	16·2	0·500	29·14	......	43·3	......	......	7	+50 22 12·4	− 14·1
	2586	......	......	......	261 25	2 48·4	55·8	0·500	29·14	......	43·3	......	......	6	+27 24 53·8	− 9·9
	2683	......	......	7 57 7	270 45	1 22·7	30·9	0·460	29·14	......	43·3	......	......	7	+36 43 27·6	− 12·5
	2867	......	......	......	279 25	3 2·1	12·0	0·586	29·14	......	43·3	......	......	6	+45 25 12·1	− 14·9
	3013	......	......	8 45 28	284 5	3 25·0	34·0	0·500	29·14	......	43·3	......	......	7	+50 5 32·5	− 15·9
	3438	......	......	9 57 56	284 15	4 39·2	47·1	0·500	29·14	......	43·3	......	......	6	+50 16 46·5	− 17·0
	......	Nadir ‖|	......	10 7 0	54 0	2 52·4	53·8	0·500	29·14	43·5	43·3	......	......	......	......	......
	......	Nadir |‖	......	......	54 0	2 64·2	65·0	0·500	......	......	......	......	......	......	......	......

(a) Very bad definition.

(5 c)

Date.	Star or other Object Observed. No. in British Assoc. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. Mean N. Polar Dist., Jan. 1, 1864.
1864.				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
Feb. 16	......	Nadir	......	8 23 0	54 0	2 53·7	53·7	0·500	29·48	39·5	39·0	....	......	......	....	......
	......	Nadir	......	....	54 0	2 65·1	66·1	0·500	......	......	......	....	......	......	....	......
	3529	....	......	10 13 40	282 50	2 34·8	42·4	0·552	29·48	......	39·0	12, W.	6	6	+48 49 42·8	−17·2
Feb. 19	......	Nadir	......	7 6 0	54 0	2 55·0	56·0	0·500	30·12	37·7	30·4	4, N.E.	0	......	....	......
	......	Nadir	......	....	54 0	2 65·7	66·3	0·500	......	......	......	....	......	......	....	......
	2463	(a)	......	7 20 27	262 10	0 23·8	33·9	0·546	30·12	......	30·4	....	......	6	+28 7 30·6	− 8·6
	2488	....	......	7 26 54	243 30	1 34·6	45·5	0·650	30·12	......	30·4	....	......	5	+ 9 28 43·7	− 4·6
	2586	....	......	7 41 46	261 25	2 44·6	54·3	0·500	30·11	......	30·0	....	......	7	+27 24 50·4	− 9·7
	2971	ι Hydræ	......	8 39 50	263 0	4 23·3	33·2	0·500	30·10	......	29·3	....	......	6	+49 1 30·8	−15·9
	3013	....	......	....	284 5	3 20·4	31·6	0·500	30·10	......	29·3	....	......	4	+50 5 28·3	−16·2
	3083	....	......	8 55 59	238 35	3 33·1	40·1	0·650	30·10	......	29·3	....	......	5	+ 4 35 40·5	−10·4
	3133	....	......	9 5 22	285 30	3 54·0	63·2	0·500	30·10	......	29·1	....	......	6	+51 31 1·1	−16·7
	3242	θ Ursæ Majoris	......	9 23 59	237 40	2 41·2	50·8	0·624	30·10	......	29·0	....	......	7	+ 3 39 48·8	−13·4
	3360	....	......	9 46 50	283 20	3 30·0	39·7	0·500	30·08	......	29·1	....	......	6	+49 20 37·1	−17·1
	3431	....	......	9 56 34	256 50	3 32·2	40·5	0·530	30·08	......	29·3	....	......	5	+22 50 37·9	−16·2
	3484	....	7·0	10 6 34	257 50	4 9·4	17·2	0·558	30·08	......	29·2	....	......	4	+23 51 16·0	−16·7
	3529	....	8·0	10 13 40	282 50	2 34·1	44·0	0·500	30·08	......	29·2	....	......	5	+48 49 41·1	−17·4
	......	Nadir	......	10 24 0	54 0	2 56·6	56·2	0·500	30·08	32·0	29·2	....	......	......	....	......
	......	Nadir	......	....	54 0	2 63·9	66·0	0·500	......	......	......	....	......	......	....	......
Feb. 21	......	Nadir	......	7 21 0	54 0	2 55·9	57·0	0·500	29·80	35·0	31·6	....	......	......	....	......
	......	Nadir	......	....	54 0	2 64·7	65·3	0·500	......	......	......	....	......	......	....	......
	2586	....	......	7 41 47	261 25	2 43·7	49·9	0·590	29·80	......	31·1	0	0	6	+27 24 50·5	− 9·4
	2683	(b)	9·0	7 57 8	270 45	1 19·6	27·9	0·498	29·80	......	31·1	....	......	4	+36 43 25·0	−13·3
	2862	....	......	8 28 19	229 30	5 44·0	50·4	0·783	29·80	......	31·0	....	......	5	− 4 27 4·4	− 5·6
	3083	....	......	8 55 59	238 35	3 36·8	44·1	0·479	29·80	......	31·0	....	......	7	+ 4 35 39·8	− 9·4
	3157	....	......	9 10 18	229 35	4 25·9	32·9	0·598	29·80	......	31·0	....	......	7	− 4 23 27·7	− 9·0
	3242	θ Ursæ Majoris	......	9 23 59	237 40	2 42·6	50·8	0·592	29·80	......	31·0	....	......	6	+ 3 39 49·8	−11·5
	3331	ι Leonis	......	9 38 22	265 35	1 0·1	7·4	0·580	29·80	......	31·0	....	......	7	+31 33 7·0	−15·8
	3375	....	......	9 45 45	254 20	2 48·0	54·6	0·660	29·80	......	31·0	....	......	7	+20 19 56·4	−11·9
	3420	....	......	9 54 25	257 45	3 56·7	63·9	0·500	29·80	......	31·0	....	......	7	+23 46 1·6	−15·6
	......	Nadir	......	10 40 0	54 0	2 55·2	55·4	0·500	29·80	31·4	29·8	....	......	......	....	......
	......	Nadir	......	....	54 0	2 66·4	65·1	0·500	......	......	......	....	......	......	....	......
Feb. 26	......	Nadir	......	8 51 0	54 0	2 54·0	54·4	0·500	29·77	35·7	33·6	....	......	......	....	......
	......	Nadir	......	....	54 0	2 64·0	64·5	0·500	......	......	......	....	......	......	....	......
	3133	....	6·0	9 5 20	285 30	3 57·2	64·2	0·500	29·77	......	33·7	....	......	6	+51 31 4·2	−17·1
	3157	....	......	9 10 17	229 35	4 26·4	31·4	0·669	29·77	......	33·7	....	......	6	− 4 23 25·4	− 8·4
	3242	(c) θ Ursæ Majoris	......	9 23 58	237 40	2 41·8	48·6	0·647	29·77	......	33·7	....	......	7	+ 3 39 49·7	−11·3
	3331	ι Leonis	......	9 38 21	265 30	5 57·8	64·4	0·666	29·77	......	33·6	....	......	7	+31 33 8·8	−15·7
	3380	(d)	9·0	9 46 47	283 20	3 36·2	41·4	0·500	29·77	......	33·6	....	5	3	+49 20 42·2	−17·5
	3427	....	......	9 56 16	256 40	2 1·0	6·8	0·457	29·77	......	33·0	....	......	5	+22 39 4·2	−15·5
	3484	....	8·0	10 6 34	257 50	4 12·0	18·8	0·498	29·77	......	32·7	....	......	4	+23 51 17·4	−16·1
	3529	....	......	10 13 38	282 50	2 39·3	46·3	0·438	29·77	......	32·5	....	......	6	+48 49 44·2	−17·7
	3592	....	......	10 22 57	267 45	2 46·9	54·3	0·500	29·77	......	32·6	....	......	5	+53 44 53·9	−17·8
	3662	....	......	10 34 45	278 30	2 40·4	47·8	0·500	29·77	......	32·6	....	......	5	+44 29 46·9	−17·8
	......	Nadir	......	10 45 0	54 0	2 53·9	54·2	0·500	29·77	35·0	32·6	....	......	......	....	......
	......	Nadir	......	....	54 0	2 64·9	64·7	0·500	......	......	......	....	......	......	....	......

(a) Bad definition. (b) Rather hazy. (c) Stars well defined. (d) Scarcely seen at time of transit.

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Date.	Star or other Object Observed: No. in British Asso. Catalogue.	Star or other Object Observed: Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1864.
1864.				h. m. s.	° ′			revols.	inches.	°	°				° ′ ″	″
Feb. 26	......	Nadir ‖ |	......	8 4 0	54 0	2 53·3	52·3	0·500	29·67	35·7	33·3	....	......	......	....	......
	......	Nadir | ‖	......	....	54 0	2 64·4	63·4	0·500	......	......	......	....	......	......	....	......
	3053	....	......	8 50 34	280 0	4 55·7	61·1	0·538	29·69	......	32·8	....	......	......	+46 2 3·8	−16·0
Mar. 7	......	Nadir ‖ |	......	9 17 0	54 0	2 54·0	55·4	0·500	28·95	35·6	31·8	....	......	......	....	......
	......	Nadir | ‖	......	....	54 0	2 64·7	66·8	0·500	......	......	......	....	......	......	....	......
Mar. 9	......	Nadir ‖ |	......	8 56 0	54 0	2 55·6	56·0	0·500	29·20	36·0	30·8	....	......	......	....	......
	......	Nadir | ‖	......	....	54 0	2 65·8	66·4	0·500	......	......	......	....	......	......	....	......
	3242	θ Ursæ Majoris	......	9 21 0	237 40	2 36·8	44·0	0·704	29·16	......	30·6	....	......	4	+ 3 39 45·7	− 8·6
	3726	....	......	10 45 24	288 10	4 25·8	33·8	0·549	29·17	......	29·0	....	......	......	+54 11 34·2	−18·5
	3780	....	......	10 56 53	281 35	5 37·4	45·6	0·534	29·17	......	29·0	....	......	5	+47 37 45·5	−18·2
	3834	δ Leonis	......	11 7 8	268 40	3 50·0	58·0	0·500	29·17	......	29·0	....	......	7	+34 40 56·0	−17·6
	......	Nadir ‖ |	......	11 37 0	54 0	2 53·7	53·5	0·500	29·17	34·7	29·0	....	......	......	....	......
	......	Nadir | ‖	......	....	54 0	2 66·1	65·9	0·500	......	......	......	....	......	......	....	......
Mar. 11	......	Nadir ‖ |	......	8 11 0	54 0	2 55·7	56·8	0·500	29·12	37·9	38·7	....	......	......	....	......
	......	Nadir | ‖	......	....	54 0	2 64·6	65·4	0·500	......	......	......	....	......	......	....	......
	2867	....	......	8 25 31	279 25	3 2·4	11·2	0·587	29·12	......	38·7	7, W.	0	6	+45 25 11·4	−15·3
	2971	ι Hydræ	......	8 39 50	283 0	4 23·8	31·4	0·741	29·12	......	38·5	....	......	7	+49 1 37·1	−16·5
	3053	....	......	8 50 38	260 0	5 0·0	8·0	0·490	29·12	......	38·5	....	......	6	+46 2 6·4	−16·1
	3083	(a)	......	8 55 59	238 35	3 34·4	41·6	0·472	29·12	......	38·5	....	......	7	+ 4 35 37·2	− 6·4
	3133	....	......	9 5 23	285 30	4 0·9	7·5	0·500	29·12	......	38·4	....	......	7	+51 31 6·9	−17·6
	3325	....	......	9 37 23	226 5	2 49·9	58·3	0·706	29·12	......	38·0	....	......	6	− 7 55 0·7	− 6·6
	3375	....	......	9 45 44	254 20	2 46·9	55·7	0·589	29·20	......	38·0	....	......	6	+20 19 54·5	−12·9
	3529	....	......	10 13 42	282 50	2 35·0	45·4	0·610	29·20	......	38·0	....	......	5	+48 49 45·5	−18·1
	3592	....	......	10 23 0	287 45	2 48·7	57·7	0·500	29·20	......	38·0	....	......	5	+53 44 55·7	−18·6
	3662	(b)	......	10 34 48	278 30	2 40·2	48·4	0·541	29·20	......	38·0	....	......	4	+44 29 47·4	−17·8
	3821	....	......	11 3 43	220 55	0 12·4	20·0	0·500	29·20	......	36·4	....	......	5	−13 7 43·6	−11·7
	3869	....	......	11 15 38	271 45	3 50·6	56·8	0·500	29·20	......	36·4	....	......	6	+37 45 55·8	−17·7
	......	Nadir ‖ |	......	12 0 0	54 0	2 55·3	55·9	0·500	29·28	36·9	36·0	....	......	......	....	......
	......	Nadir | ‖	......	....	54 0	2 64·8	65·8	0·500	......	......	......	....	......	......	....	......
Mar. 15	......	Nadir ‖ |	......	9 15 0	54 0	2 53·9	54·2	0·500	29·67	41·0	37·0	....	......	......	....	......
	......	Nadir | ‖	......	....	54 0	2 63·7	64·9	0·500	......	......	......	....	......	......	....	......
	3375	....	......	9 45 48	254 20	2 50·9	57·8	0·482	29·67	......	36·3	4, N.W.	3	6	+20 19 55·6	−12·2
	3431	....	......	9 56 37	256 50	3 31·5	37·5	0·500	29·67	......	36·2	....	......	6	+22 50 36·6	−13·2
	3484	....	6·5	10 6 39	257 50	4 10·7	19·1	0·500	29·67	......	36·0	....	......	5	+23 51 17·2	−13·8
	3592	....	6·0	10 23 4	287 45	2 46·9	55·3	0·570	29·67	......	35·4	....	......	6	+53 44 56·5	−18·6
	3662	....	......	10 34 47	278 30	2 39·0	46·5	0·538	29·67	......	35·0	....	......	7	+44 29 46·9	−17·7
	3726	....	......	10 45 33	288 10	4 28·0	35·4	0·500	29·67	......	35·0	....	......	7	+54 11 35·7	−18·8
	3780	....	......	10 56 54	281 35	5 38·3	47·0	0·450	29·70	......	36·0	....	......	6	+47 37 45·1	−18·2
	3834	δ Leonis	......	11 7 11	268 40	3 45·7	54·1	0·541	29·70	......	36·0	....	......	7	+34 40 53·9	−17·1
	3869	....	......	11 15 39	271 45	3 48·8	56·6	0·498	29·70	......	35·8	....	......	6	+37 45 55·7	−17·5
	3996	....	......	11 42 27	284 0	2 39·6	48·0	0·601	29·70	......	35·9	....	......	8	+49 59 49·9	−18·1
	......	Nadir ‖ |	......	12 2 0	54 0	2 52·6	53·2	0·500	29·70	37·3	35·8	....	......	......	....	......
	......	Nadir | ‖	......	....	54 0	2 64·4	64·6	0·500	......	......	......	....	......	......	....	......
Mar. 16	......	Nadir ‖ |	......	9 5 0	54 0	2 55·1	56·3	0·500	29·81	41·1	38·0	....	......	......	....	......
	......	Nadir | ‖	......	....	54 0	2 64·9	66·1	0·500	......	......	......	....	......	......	....	......
	3242	θ Ursæ Majoris	......	9 24 1	237 40	2 35·0	42·8	0·705	29·81	......	38·0	0	1	5	+ 3 39 44·5	− 7·2

(a) Wind increasing rapidly. (b) Bad definition.

Date.	Star or other Object Observed: No. in British Assn. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes: A	Microscopes: B	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max = 10	Est. Value of Obs. Max = 10	Apparent Zenith Distance South.	Cor. to Mean N. [illegible] Dist. Jan. 1 1864
1864.				h m s	° '			rev.	inches.	°	°				° ' "	"
Mar. 17	......	Nadir ‖	......	9 12 0	54 0	2 54·9	55·3	0·500	29·72	42·4	40·5	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 64·0	64·4	0·500	......	......	......	......	......	......	......	......
	3331	ι Leonis	......	9 38 25	265 30	5 58·8	67·0	0·500	29·72	......	40·4	0	[illegible]	5	+ 31 33 6·0	- 14·1
	3375	......	......	9 45 16	254 20	2 44·6	52·2	0·621	29·72	......	40·1	......	......	5	+ 20 19 53·3	- 11·9
	3427	......	......	9 56 20	256 10	1 56·0	63·3	0·500	29·72	......	40·3	......	......	6	+ 22 39 1·1	- 12·8
	3484	......	7·0	10 6 18	257 50	1 16·6	17·4	0·489	29·72	......	40·2	......	......	5	+ 23 51 15·9	- 13·5
	3529	......	......	10 13 43	282 50	2 37·2	46·8	0·500	29·70	......	40·0	......	......	5	+ 46 49 45·1	- 18·1
	3592	......	......	10 23 1	287 15	2 18·7	36·2	0·500	29·70	......	40·0	......	......	6	+ 53 44 56·7	- 19·8
	3726	......	......	10 45 31	288 10	1 27·9	35·9	0·437	29·70	......	40·0	......	......	7	+ 54 11 34·0	- 18·8
	3834	δ Leonis	......	11 7 9	268 10	3 47·9	55·9	0·500	29·70	......	39·6	......	......	7	+ 34 40 54·6	- 17·0
	3869	......	......	......	271 45	3 50·8	57·4	0·500	29·70	......	39·3	......	......	5	+ 37 45 57·4	- 17·4
	3996	......	......	11 42 26	281 0	2 41·7	50·3	0·433	29·70	......	39·3	......	......	6	+ 49 59 49·0	- 18·1
	......	Nadir ‖	......	12 16 0	54 0	2 53·5	54·0	0·500	29·70	41·8	39·3	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 63·8	64·0	0·500	......	......	......	......	......	......	......	......
Mar. 18	......	Nadir ‖	......	9 10 0	54 0	2 52·0	53·3	0·500	29·50	42·0	39·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 63·0	64·4	0·500	......	......	......	......	......	......	......	......
	3662	......	......	......	278 30	2 39·4	17·2	0·504	29·50	......	39·0	......	......	4	+ 44 29 46·5	- 17·7
	3780	......	......	10 56 57	284 35	5 39·4	17·4	0·372	29·50	......	38·0	......	......	5	+ 47 37 43·6	- 18·2
	3834	δ Leonis	......	11 7 10	268 10	3 47·7	54·6	0·500	29·50	......	37·7	......	......	7	+ 34 40 54·3	- 16·3
	......	Nadir ‖	......	12 10 0	54 0	2 55·6	56·4	0·500	29·50	41·2	37·6	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 64·8	65·0	0·500	......	......	......	......	......	......	......	......
Mar. 23	......	Nadir ‖	......	10 21 0	54 0	2 55·4	56·2	0·500	29·66	43·8	42·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 64·0	63·8	0·500	......	......	......	......	......	......	......	......
	3834	δ Leonis	......	11 7 11	268 40	3 44·7	50·6	0·601	29·66	......	41·6	7, W.	0	6	+ 34 40 53·8	- 16·4
	3869	......	......	11 15 41	271 45	3 47·7	54·5	0·500	29·66	......	41·6	......	......	5	+ 37 45 54·5	- 16·9
	3996	......	6·0	11 42 28	284 0	2 42·6	50·4	0·448	29·66	......	41·5	......	......	7	+ 49 59 48·9	- 18·1
	4153	......	......	12 13 48	262 35	2 17·8	25·8	0·500	29·66	......	41·0	......	......	6	+ 28 34 24·3	- 16·7
	4205	......	......	12 22 9	262 55	6 10·4	18·6	0·619	29·66	......	40·5	......	......	6	+ 28 56 21·3	- 16·8
	4244	Neb.	6·5	12 25 50	252 15	4 41·2	18·8	0·500	29·66	......	40·2	......	......	5	+ 18 46 47·5	- 16·3
	......	Nadir ‖	......	12 30 0	54 0	2 53·7	54·3	0·500	29·66	46·2	40·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 62·4	63·0	0·500	......	......	......	......	......	......	......	......
Mar. 24	......	Nadir ‖	......	11 0 0	54 0	2 52·6	53·5	0·500	29·50	43·0	42·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 63·6	65·0	0·500	......	......	......	......	......	......	......	......
	3835	......	......	11 7 13	286 55	3 44·9	50·0	0·541	29·50	......	42·0	7, W.	3	6	+ 52 55 51·1	- 16·7
	3869	......	9·0	11 15 40	271 45	3 47·3	54·2	0·580	29·50	......	42·0	......	......	5	+ 37 45 56·2	- 16·8
	3996	......	......	11 42 29	281 0	2 44·8	54·4	0·500	29·50	......	41·4	......	......	6	+ 49 59 50·0	- 15·1
	4153	......	......	12 13 49	262 35	2 17·7	26·9	0·500	29·17	......	41·1	......	......	7	+ 28 34 24·6	- 15·6
	4199	......	......	12 21 10	263 15	5 4·6	9·2	0·500	29·17	......	41·0	......	......	7	+ 29 17 [illegible]	- 15·7
	4231	......	......	12 27 6	264 15	3 0·1	7·9	0·500	29·17	......	41·0	......	......	6	+ 30 45 6·6	- 15·6
	......	Nadir ‖	......	12 30 0	54 0	2 54·5	56·1	0·500	29·17	42·0	41·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 63·1	63·9	0·500	......	......	......	......	......	......	......	......
Mar. 28	......	Nadir ‖	......	10 35 0	54 0	2 54·0	56·1	0·500	28·87	39·5	38·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 64·0	65·4	0·500	......	......	......	......	......	......	......	......
	3780	......	......	10 56 58	261 35	5 36·6	17·2	0·563	28·87	......	37·0	4, N W	0	6	+ 47 37 47·2	- 17·9
	3834	δ Leonis	......	11 7 14	268 40	3 45·7	54·1	0·500	28·87	......	37·0	......	......	7	+ 34 40 52·4	- 16·0
	3869	......	......	11 15 43	271 45	3 48·4	56·6	0·500	28·87	......	37·0	......	......	7	+ 37 45 55·2	- 16·6
	3996	......	......	11 42 31	284 0	2 44·2	53·7	0·500	28·87	......	37·0	......	......	6	+ 49 59 51·9	- 18·0
	......	Nadir ‖	......	12 0 0	54 0	2 54·2	56·3	0·500	28·87	39·2	37·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 64·2	65·5	0·500	......	......	......	......	......	......	......	......

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in minutes per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1864.
1864.				h. m. s.	° '	' "	"	revols.	inches.	°	°				° ' "	"
Mar. 30	......	Nadir	......	10 0 0	54 0	2 54·4	54·0	0·500	29·34	43·0	39·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 64·2	65·0	0·500	......	......	......	......	......	......	......	......
	3592	......	......	10 23 4	297 45	2 52·4	60·8	0·403	29·34	......	39·0	5, W.	0	6	+53 44 57·3	−19·0
	3662	......	......	10 34 53	278 30	2 40·7	48·0	0·500	29·34	......	39·0	......	......	7	+44 29 47·2	−17·2
	3726	......	......	10 45 37	288 10	4 27·8	35·2	0·500	29·34	......	39·0	......	......	6	+54 11 35·3	−19·0
	3780	......	......	10 56 57	281 35	5 38·7	47·8	0·483	29·34	......	39·0	......	......	7	+47 37 46·5	−17·9
	3869	......	......	11 15 44	271 45	3 47·3	55·9	0·500	29·34	......	39·0	......	......	5	+37 45 54·5	−16·3
	3996	......	......	11 42 30	284 0	2 40·3	49·3	0·598	29·27	......	38·6	......	......	6	+49 59 50·6	−17·9
	4153	......	......	12 13 51	262 35	2 19·8	29·0	0·390	29·27	......	38·5	......	......	7	+28 34 23·3	−15·7
	4199	......	7·0	12 21 11	263 15	5 2·6	11·9	0·593	29·27	......	38·4	......	......	6	+29 17 12·4	−15·8
	4231	......	......	12 27 7	264 45	2 57·0	65·6	0·590	29·27	......	38·4	......	......	7	+30 45 6·1	−16·0
	4364	......	......	12 55 17	267 55	4 39·8	48·0	0·588	29·27	......	38·3	......	......	6	+33 56 49·1	−16·3
	......	Nadir	......	13 0 0	54 0	2 54·6	55·2	0·500	29·27	39·8	38·3	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·7	65·0	0·500	......	......	......	......	......	......	......	......
Mar. 31	......	Nadir	......	11 50 0	54 0	2 53·3	52·9	0·500	29·07	41·0	38·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 64·0	65·4	0·500	......	......	......	......	......	......	......	......
	4153	......	......	12 13 51	262 35	2 13·2	21·0	0·650	29·07	......	38·0	3, W.	0	5	+28 34 23·4	−15·5
	4199	......	......	12 21 13	263 15	5 4·4	12·4	0·500	29·07	......	38·0	......	......	5	+29 17 11·3	−15·7
	4364	......	......	12 55 17	267 55	4 40·3	47·3	0·589	29·07	......	38·0	......	......	7	+33 56 49·3	−16·2
	4421	β Comæ	......	13 5 53	261 20	5 55·4	63·3	0·597	29·07	......	38·0	......	......	......	+27 23 5·2	−15·9
	......	Nadir	......	13 12 0	54 0	2 54·0	54·2	0·500	29·07	37·7	37·6	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·8	66·0	0·500	......	......	......	......	......	......	......	......
April 1	......	Nadir	......	10 22 0	54 0	2 54·6	56·0	0·500	29·21	41·5	36·2	......	......	......	......	......
	......	Nadir	......	......	54 0	2 64·8	66·2	0·500	......	......	......	......	......	......	......	......
	3726	......	......	11 45 39	288 10	4 30·1	37·9	0·404	29·21	......	35·7	7, W.	2	6	+54 11 34·5	−19·0
	3869	......	......	11 15 46	271 45	3 45·9	52·7	0·672	29·21	......	35·1	......	......	5	+37 45 56·4	−16·1
	3996	......	......	11 42 34	284 0	2 40·0	47·4	0·680	29·21	......	34·8	......	......	6	+49 59 51·3	−17·9
	4199	......	......	12 21 15	263 15	5 3·1	12·1	0·664	29·22	......	34·7	......	......	6	+29 17 14·2	−15·5
	4364	......	......	12 55 20	267 55	4 46·1	53·6	0·387	29·22	......	34·6	......	......	5	+33 56 49·0	−16·0
	4421	β Comæ	......	13 5 56	261 20	5 56·0	63·8	0·627	29·22	......	34·2	......	......	6	+27 23 5·6	−15·7
	......	Nadir	......	13 13 0	54 0	2 56·1	56·4	0·500	29·22	34·9	34·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 64·6	65·0	0·500	......	......	......	......	......	......	......	......
April 11	......	Nadir	......	11 5 0	54 0	2 53·1	55·9	0·500	29·78	48·0	42·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 61·7	65·8	0·500	......	......	......	......	......	......	......	......
	3996	......	......	11 42 35	284 0	2 37·6	46·8	0·637	29·77	......	41·3	5, W.	0	6	+49 59 49·4	−17·5
	4364	......	......	12 55 22	267 55	4 40·8	49·6	0·493	29·77	......	41·0	......	......	7	+33 56 48·1	−14·7
	4421	(a) β Comæ	......	......	261 25	0 56·7	65·1	0·500	29·77	......	41·0	......	......	3	+27 23 2·9	−14·0
	4457	......	......	13 13 14	254 5	4 31·3	40·6	0·499	29·76	......	41·0	......	......	6	+20 6 38·2	−13·3
	4503	......	......	13 22 47	285 20	4 39·0	48·8	0·500	29·76	......	41·0	......	......	5	+51 21 47·9	−15·4
	4550	......	......	13 31 37	236 35	2 26·7	36·8	0·539	29·76	......	41·0	......	......	6	+ 2 34 33·6	−11·7
	4575	......	......	13 37 45	266 35	1 36·3	46·1	0·573	29·76	......	41·0	......	......	7	+32 33 45·7	−14·3
	......	Nadir	......	13 44 0	54 0	2 53·7	55·1	0·500	29·76	43·0	41·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 64·3	66·4	0·500	......	......	......	......	......	......	......	......
April 12	......	Nadir	......	10 45 0	54 0	2 52·0	55·0	0·500	29·85	47·9	43·7	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·0	66·6	0·500	......	......	......	......	......	......	......	......
	3836	......	6·0	11 7 21	286 55	3 40·4	49·3	0·603	29·83	......	43·3	2, W.	0	6	+52 55 51·5	−18·4
	3869	......	......	11 15 49	271 45	3 45·0	52·8	0·583	29·83	......	43·3	......	......	7	+37 45 54·3	−15·1

(a) Seen rather late

Date.	Star or other Object Observed. No. in British Assoc.'s Catalogue	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1 1864.
1864.				h. m. s.	° '	' "	"	revs.	inches.	°	°				° ' "	"
April 12	3996	(a)	......	11 42 36	284 0	2 40·3	50·3	0·578	29·83	......	43·2	......	......	8	+49 59 50·8	-17·5
	4153	......	......	12 13 56	262 35	2 13·2	23·1	0·500	29·83	......	43·0	......	......	7	+28 34 20·5	-13·6
	4364	......	......	12 55 22	267 55	4 40·3	48·7	0·500	29·83	......	43·0	......	......	6	+33 56 47·6	-14·5
	4421	β Comæ	......	13 5 58	261 20	5 55·2	64·8	0·500	29·83	......	43·0	......	......	6	+27 23 3·0	-13·9
	......	Nadir ‖ |	......	13 27 0	54 0	2 53·2	54·1	0·500	29·83	44·7	43·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 63·2	65·1	0·500	......	......	......	......	......	......	......	......
April 13	......	Nadir ‖ |	......	11 15 0	54 0	2 52·2	54·3	0·500	29·70	48·6	46·8	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 62·0	65·0	0·500	......	......	......	......	......	......	......	......
	3996	......	......	11 42 37	284 0	2 42·2	51·9	0·500	29·70	......	46·8	1, E.	0	7	+49 59 50·5	-17·4
	4153	......	......	12 13 56	262 35	2 13·1	23·1	0·561	29·70	......	46·8	......	......	6	+28 34 22·2	-13·3
	4421	β Comæ	......	13 5 58	261 20	5 53·0	62·3	0·559	29·70	......	48·7	......	......	6	+27 23 2·4	-13·6
	4470	......	6·0	13 15 14	287 5	6 1·7	11·8	0·579	29·70	......	48·9	......	......	5	+53 8 13·3	-13·4
	4513	......	6·0	13 24 52	265 0	3 33·6	42·8	0·500	29·70	......	48·9	1, W.	......	7	+31 0 41·0	-14·4
	4555	......	......	13 32 19	236 40	3 10·7	21·1	0·500	29·70	......	48·9	......	......	5	+ 2 40 16·8	-11·3
	......	Nadir ‖ |	......	13 50 0	54 0	2 53·7	56·9	0·500	29·70	48·9	48·1	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 63·1	66·7	0·500	......	......	......	......	......	......	......	......
April 19	......	Nadir ‖ |	......	11 22 0	54 0	2 53·3	56·3	0·500	29·47	48·3	47·2	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 63·6	65·8	0·500	......	......	......	......	......	......	......	......
	3869	......	......	11 15 51	271 45	3 44·8	52·2	0·580	29·45	......	51·2	......	......	6	+37 45 54·1	-14·3
	3996	......	......	11 42 40	284 0	2 41·0	52·0	0·600	29·45	......	51·2	......	......	7	+49 59 53·0	-17·1
	4153	......	......	12 13 56	262 35	2 9·8	20·4	0·590	29·45	......	51·2	......	......	6	+28 34 20·2	-12·5
	4199	......	......	12 21 20	263 15	4 59·8	69·2	0·558	29·45	......	51·2	......	......	7	+29 17 9·3	-12·6
	4364	......	......	12 55 24	267 55	4 33·8	42·8	0·760	29·45	......	51·7	......	......	6	+33 56 48·9	-13·4
	4421	β Comæ	......	13 6 2	261 20	5 51·1	60·7	0·622	29·45	......	51·9	......	......	7	+27 23 2·6	-12·5
	4503	......	......	13 22 50	285 20	4 42·4	52·4	0·500	29·45	......	52·0	......	......	6	+51 21 51·7	-14·3
	4550	......	......	13 31 40	236 35	2 22·8	32·2	0·577	29·45	......	52·1	......	......	7	+ 2 34 30·6	- 9·4
	......	Nadir ‖ |	......	14 12 0	54 0	2 52·7	53·7	0·500	29·50	52·0	52·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 62·2	63·8	0·500	......	......	......	......	......	......	......	......
April 20	......	Nadir ‖ |	......	12 32 0	54 0	2 51·2	54·0	0·500	29·66	52·5	55·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 63·8	66·4	0·500	......	......	......	......	......	......	......	......
	4364	......	......	12 55 26	267 55	4 39·4	47·6	0·500	29·66	......	54·9	0	5	......	+33 56 47·2	-13·3
	4421	β Comæ	......	13 6 1	261 25	0 50·8	59·8	0·626	29·66	......	54·9	......	......	6	+27 23 1·4	-12·3
	......	Nadir ‖ |	......	13 17 0	54 0	2 53·0	53·9	0·500	29·66	......	54·8	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 61·9	64·0	0·500	......	......	......	......	......	......	......	......
April 21	......	Nadir ‖ |	......	12 57 0	54 0	2 53·2	52·3	0·500	29·98	52·4	52·4	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 63·4	63·4	0·500	......	......	......	......	......	......	......	......
	4457	......	......	......	254 5	4 36·8	47·2	0·522	29·98	......	52·5	1, E.	0	3	+20 6 45·6	-11·1
	4729	α Bootis	......	14 9 58	270 5	1 13·7	23·1	0·500	29·98	......	52·5	......	......	7	+36 3 21·7	-13·0
	......	Nadir ‖ |	......	14 29 0	54 0	2 53·1	54·0	0·500	29·98	51·6	52·5	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 61·5	62·7	0·500	......	......	......	......	......	......	......	......
April 29	......	Nadir ‖ |	......	12 12 0	54 0	2 52·1	56·9	0·500	29·98	50·0	48·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 62·6	66·9	0·500	......	......	......	......	......	......	......	......
	4457	......	......	13 13 21	251 5	4 25·6	32·2	0·758	29·98	......	48·4	0	2	5	+20 6 38·4	- 9·3
	4513	......	......	13 24 58	265 0	3 30·3	38·2	0·500	29·98	......	48·4	......	......	5	+31 0 37·1	-11·3
	4575	......	......	13 36 54	266 35	1 37·2	47·4	0·402	29·98	......	48·4	......	......	6	+32 33 42·3	-11·2
	4729	α Bootis	......	14 10 0	270 5	1 10·4	20·0	0·697	29·98	......	48·3	......	......	6	+36 3 23·4	-11·6
	......	Nadir ‖ |	......	14 36 0	54 0	2 53·0	57·0	0·500	29·98	50·7	48·3	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 62·3	65·5	0·500	......	......	......	......	......	......	......	......

(a) Good definition.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1864.
1864.				h. m. s.	° '	' "	"	revols.	inches.	°	°				° ' "	"
May 3	......	Nadir ||	......	13 14 0	54 0	2 52·3	53·1	0·500	29·57	52·0	49·1	......	......	......	......	......
	......	Nadir ||	......	......	54 0	2 62·7	64·7	0·500	......	......	......	......	......	......	......	......
	4550	......	......	13 31 45	236 35	2 16·2	25·8	0·650	29·57	......	49·0	......	......	6	+ 2 34 26·5	− 5·6
	4628	......	......	13 45 39	254 35	3 11·0	21·0	0·519	29·57	......	49·0	......	......	6	+20 35 19·2	− 8·6
	4678	......	......	13 57 6	257 35	5 56·4	65·5	0·590	29·57	......	49·0	......	......	6	+23 38 6·8	− 9·0
	4723	......	......	14 8 27	260 10	5 22·1	33·3	0·500	29·57	......	49·0	......	......	5	+26 12 31·1	− 9·3
	4797	......	......	14 23 13	253 10	1 39·7	49·3	0·581	29·57	......	49·0	......	......	5	+19 8 49·2	− 8·4
	......	Nadir ||	......	15 0 0	54 0	2 52·7	52·9	0·500	29·57	......	49·0	......	......	......	......	......
	......	Nadir ||	......	......	54 0	2 63·0	64·4	0·500	......	......	......	......	......	......	......	......
May 9	......	Nadir ||	......	14 0 0	54 0	2 52·9	55·9	0·500	29·78	50·0	44·0	......	......	......	......	......
	......	Nadir ||	......	......	54 0	2 63·3	66·9	0·500	......	......	......	......	......	......	......	......
	5071	(a)	......	15 16 44	237 30	3 15·0	25·0	0·700	29·78	......	44·0	......	......	5	+ 3 30 26·3	− 5·5
May 16	......	Nadir ||	......	13 27 0	54 0	2 52·8	54·4	0·500	29·91	59·3	65·9	......	......	......	......	......
	......	Nadir ||	......	......	54 0	2 63·0	64·6	0·500	......	......	......	......	......	......	......	......
	4621	......	......	13 44 19	270 40	1 18·9	29·8	0·458	29·91	......	65·9	3, S.	4	6	+36 38 26·3	− 9·0
	4652	......	6·5	13 50 50	257 15	3 4·9	15·1	0·580	29·91	......	65·9	......	......	6	+23 15 14·6	− 6·2
	4678	......	8·0	13 57 14	257 40	0 54·2	64·4	0·500	29·91	......	65·9	......	......	5	+23 38 1·5	− 6·2
	4723	......	7·0	14 8 31	260 15	0 18·1	30·1	0·500	29·91	......	65·3	......	......	6	+26 12 26·6	− 6·5
	4756	......	......	14 14 27	237 15	5 35·4	47·1	0·600	29·91	......	65·3	......	......	7	+ 3 17 45·4	− 2·7
	4797	......	......	14 23 19	253 10	1 35·7	46·7	0·581	29·91	......	65·2	......	......	6	+19 8 45·5	− 5·2
	4863	......	......	14 37 51	252 35	4 41·9	53·0	0·700	29·91	......	65·0	......	......	6	+18 36 55·2	− 5·1
	4934	......	......	14 51 33	248 15	3 51·7	63·0	0·693	29·91	......	65·0	......	......	7	+14 16 4·6	− 4·4
	4992	......	......	15 3 5	234 55	0 24·3	36·1	0·635	29·91	......	65·0	......	......	7	+ 0 52 34·7	− 2·9
	......	Nadir ||	......	15 40 0	54 0	2 52·3	53·8	0·500	29·91	62·5	65·0	......	......	......	......	......
	......	Nadir ||	......	......	54 0	2 63·0	65·0	0·500	......	......	......	......	......	......	......	......
May 17	......	Nadir ||	......	13 50 0	54 0	2 51·9	56·7	0·500	29·97	62·2	65·0	......	......	......	......	......
	......	Nadir ||	......	......	54 0	2 61·3	66·3	0·500	......	......	......	......	......	......	......	......
	4723	......	......	14 8 35	260 10	5 19·6	27·4	0·500	29·98	......	63·0	5, S.	2	5	+26 12 26·4	− 6·3
	4797	......	......	14 23 22	253 10	1 38·5	46·9	0·500	29·98	......	63·0	......	......	6	+19 8 41·6	− 5·0
	4863	......	......	14 37 52	252 35	4 46·1	55·4	0·500	29·98	......	63·0	......	......	6	+18 36 53·0	− 4·8
	4942	......	......	14 54 55	249 45	3 50·5	60·3	0·612	29·98	......	63·0	......	......	7	+15 46 0·4	− 4·4
	5000	......	......	15 5 51	256 20	4 12·3	22·7	0·500	29·98	......	63·0	......	......	7	+22 21 19·8	− 5·0
	5071	......	......	15 16 46	237 30	3 19·0	29·0	0·500	29·98	......	63·0	......	......	6	+ 3 30 25·1	− 3·1
	5284	γ Serpentis	......	15 50 55	273 50	3 1·8	13·2	0·500	29·98	......	62·9	......	......	7	+39 50 10·8	− 5·3
	......	Nadir ||	......	16 15 0	54 0	2 51·0	53·8	0·500	29·98	61·5	62·1	......	......	......	......	......
	......	Nadir ||	......	......	54 0	2 63·9	66·8	0·500	......	......	......	......	......	......	......	......
May 24	......	Nadir ||	......	13 30 0	54 0	2 54·0	56·0	0·500	29·86	55·5	53·0	......	......	......	......	......
	......	Nadir ||	......	......	54 0	2 63·1	66·3	0·500	......	......	......	......	......	......	......	......
	4652	......	6·0	13 50 56	257 15	3 3·7	13·9	0·500	29·86	......	52·0	12, S.W.	1	7	+23 15 10·6	− 4·5
	4694	......	7·0	14 1 10	258 25	4 46·8	56·1	0·600	29·86	......	52·0	......	......	7	+24 26 56·3	− 4·6
	4723	(b)	......	14 8 39	260 10	5 19·8	31·2	0·442	29·86	......	52·0	......	......	7	+26 12 26·3	− 4·9
	4797	......	......	14 23 24	253 10	1 37·7	46·9	0·440	29·86	......	52·0	......	......	6	+19 8 42·0	− 3·3
	4820	......	......	14 29 11	256 50	2 1·4	9·8	0·477	29·86	......	52·0	20	......	6	+22 49 6·6	− 3·9
	4863	......	......	14 37 56	252 35	4 45·6	55·2	0·500	29·86	......	52·0	......	......	8	+18 36 52·1	− 3·1
	4934	......	......	14 51 38	248 15	3 56·8	65·6	0·472	29·80	......	51·8	......	......	6	+14 16 1·7	− 2·3
	4992	......	......	15 3 10	234 55	0 24·6	35·4	0·618	29·80	......	51·8	......	......	8	+ 0 52 33·5	− 0·6
	5071	......	......	15 16 51	237 30	3 7·8	17·4	0·850	29·80	......	51·8	......	......	7	+ 3 30 22·8	− 1·0

(a) Definition very bad. (b) Definition good.

Date.	Star or other Object Observed. No. in British Assn. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1864.
1864.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
May 24	5284	γ Serpentis	......	15 50 58	273 50	2 59·8	70·0	0·640	29·80	......	51·8	......	......	8	+39 50 11·6	− 4·0
	5415	......	......	16 7 9	231 40	2 44·5	55·4	0·598	29·80	......	51·0	......	......	7	− 2 20 6·8	− 0·9
	......	Nadir	......	16 12 0	54 0	2 52·4	54·4	0·500	29·80	51·0	51·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 64·8	67·8	0·500	......	......	......	......	......	......	......	......
May 25	......	Nadir	......	13 34 0	54 0	2 51·1	55·0	0·500	29·77	55·5	48·8					
	......	Nadir	......	......	54 0	2 62·9	67·7	0·500	......	......	......	......	......	......	......	......
	4652	......	......	13 50 56	257 15	3 8·0	16·5	0·364	29·77	......	48·7	10, N.	0	6	+23 15 10·9	− 4·3
	4694	......	......	14 1 11	258 25	4 44·2	53·6	0·609	29·77	......	48·7	......	......	7	+24 26 51·7	− 4·4
	4723	......	......	14 8 39	260 10	5 16·7	26·0	0·548	29·77	......	48·7	......	......	6	+26 12 25·8	− 4·7
	4756	......	......	14 14 32	237 15	5 35·2	44·8	0·500	29·77	......	48·7	......	......	8	+ 3 17 41·5	− 0·3
	4797	......	......	14 23 25	253 10	1 33·1	44·0	0·582	29·77	......	48·7	......	......	8	+19 8 43·0	− 3·1
	4820	......	......	14 29 12	256 50	1 55·3	64·8	0·596	29·77	......	48·7	......	......	6	+22 49 6·1	− 3·7
	4863	......	......	14 37 56	252 35	4 43·0	52·0	0·500	29·80	......	47·3	......	......	6	+18 36 49·9	− 2·5
	4942	......	......	14 55 0	249 45	3 49·7	59·9	0·500	29·80	......	47·3	......	......	7	+15 45 56·9	− 2·2
	4992	......	......	15 3 9	234 50	5 24·6	35·9	0·611	29·80	......	47·1	......	......	8	+ 0 52 34·7	− 0·3
	5071	......	......	15 16 52	237 30	3 16·8	27·2	0·449	29·80	......	47·1	......	......	7	+ 3 30 21·8	− 0·7
	......	Nadir	......	16 10 0	54 0	2 52·0	53·8	0·500	29·80	51·6	47·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 62·1	65·3	0·500	......	......	......	......	......	......	......	......
May 26	......	Nadir	......	14 0 0	54 0	2 50·0	53·2	0·500	29·89	55·0	47·6					
	......	Nadir	......	......	54 0	2 63·0	66·6	0·500	......	......	......	......	......	......	......	......
	4797	......	......	14 23 26	253 10	1 33·8	42·1	0·626	29·87	......	47·7	2, W.	0	6	+19 8 43·4	− 2·9
	4876	ι Bootis	......	......	262 20	0 54·7	63·9	0·500	29·87	......	47·7	......	......	5	+28 18 1·6	− 4·2
	4934	......	......	14 51 40	248 15	3 51·0	60·0	0·658	29·87	......	47·6	......	......	6	+14 16 1·7	− 1·8
	4965	......	......	14 59 5	244 45	4 25·8	35·4	0·533	29·87	......	47·5	......	......	7	+10 46 33·2	− 1·3
	5000	......	......	15 5 56	256 20	4 13·0	21·3	0·341	29·87	......	47·5	......	......	6	+22 21 15·1	− 2·8
	5071	......	......	15 16 52	237 30	3 13·7	23·5	0·582	29·87	......	47·4	......	......	7	+ 3 30 22·0	− 0·4
	5415	......	......	16 7 10	231 40	2 45·9	55·3	0·500	29·87	......	47·4	......	......	[illegible]	− 2 20 6·4	− 0·3
	5452	......	......	16 14 59	268 30	1 51·1	60·0	0·500	29·87	......	47·4	......	......	6	+34 28 56·4	− 2·4
	......	Nadir	......	16 53 0	54 0	2 53·6	55·8	0·500	29·87	47·4	47·4	......	......	......	......	......
	......	Nadir	......	......	54 0	2 64·0	66·4	0·500	......	......	......	......	......	......	......	......
May 30	......	Nadir	......	13 34 0	54 0	2 53·0	56·0	0·500	29·40	48·0	39·2					
	......	Nadir	......	......	54 0	2 63·5	67·0	0·500	......	......	......	......	......	......	......	......
	4809	......	......	14 27 10	262 40	2 56·3	65·7	0·600	29·40	......	38·9	7, N.W.	0	6	+28 40 6·4	− 3·8
	4876	ι Bootis	......	14 39 54	262 20	0 50·4	61·4	0·500	29·40	......	38·8	......	......	6	+28 17 58·3	− 3·4
	5001	......	......	15 6 2	260 10	5 3·9	16·0	0·439	29·40	......	38·8	......	......	5	+26 12 11·0	− 2·4
	5284	γ Serpentis	......	15 51 2	273 50	2 54·1	63·4	0·505	29·40	......	37·7	......	......	7	+39 50 10·5	− [illegible]
	5414	δ Ophiuchi	......	16 8 5	293 15	4 10·6	17·0	0·440	29·40	......	36·4	......	......	6	+59 16 16·2	− 3·4
	5527	......	......	16 25 31	269 10	2 50·0	60·0	0·570	29·40	......	36·4	......	......	7	+35 9 59·6	− 1·2
	......	Nadir	......	17 2 0	54 0	2 52·2	53·1	0·500	29·40	39·2	36·3	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·3	65·7	0·500	......	......	......	......	......	......	......	......
May 31	......	Nadir	......	13 45 0	54 0	2 52·2	54·8	0·500	29·46	49·5	45·8					
	......	Nadir	......	......	54 0	2 62·9	66·2	0·500	......	......	......	......	......	......	......	......
	4694	......	7·0	......	258 25	4 47·5	56·5	0·500	29·46	......	45·6	10, W.	0	4	+24 26 54·3	− 3·2
	4809	......	......	14 27 10	262 40	2 57·7	67·0	0·570	29·46	......	45·6	......	......	6	+28 40 6·7	− 3·6
	4876	ι Bootis	......	14 39 55	262 15	5 50·7	58·8	0·580	29·46	......	45·5	......	......	7	+28 17 59·7	− 3·3
	5001	......	......	15 6 3	260 10	5 4·8	12·4	0·421	29·46	......	44·0	......	......	6	+26 12 8·9	− 2·2
	5284	γ Serpentis	......	15 51 3	273 50	3 2·8	12·4	0·500	29·46	......	43·4	......	......	8	+39 50 10·6	− 2·6

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1864.
1864.				h m s	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
May 31	5414	δ Ophiuchi	......	16 8 7	293 15	4 11·3	18·4	0·500	29·44	......	43·4	......	......	8	+59 16 18·7	− 3·3
	5537	......	......	16 28 0	279 15	4 49·0	58·3	0·469	29·44	......	43·4	......	......	6	+45 16 56·1	− 1·4
	5686	......	......	16 48 4	274 20	1 21·0	30·6	0·500	29·44	......	43·4	......	......	5	+40 18 28·7	− 0·4
	......	Nadir ‖	......	17 6 0	54 0	2 53·1	54·5	0·500	29·44	44·0	43·4	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 65·0	66·7	0·500	......	......	......	......	......	......	......	......
July 4	......	Nadir ‖	......	16 43 0	54 0	2 51·6	53·2	0·500	29·58	56·1	52·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 64·0	66·6	0·500	......	......	......	......	......	......	......	......
	5732	......	6·0	......	274 50	0 16·7	26·7	0·490	29·58	......	51·8	12, S.W.	0	5	+40 47 24·2	+ 6·7
	5787	......	6·0	17 2 49	279 45	1 0·9	12·1	0·500	29·58	......	51·8	......	......	6	+45 43 9·5	+ 8·3
	5821	α Herculis	2·5	17 8 0	275 25	1 28·2	38·0	0·437	29·58	......	51·8	......	......	7	+41 23 34·3	+ 7·2
	5863	ω Herculis	4·0	17 15 7	257 20	1 1·3	10·1	0·500	29·58	......	51·7	......	......	6	+23 18 7·8	+ 9·7
	5917	......	6·0	......	229 50	0 25·7	34·3	0·500	29·58	......	51·6	......	......	5	− 4 12 29·4	+11·7
	6035	......	......	17 43 17	280 5	0 34·0	43·8	0·440	29·59	......	51·0	......	......	6	+46 2 40·2	+ 8·6
	6123	70 Ophiuchi	......	17 58 9	287 25	1 43·9	53·4	0·593	29·59	......	51·0	......	......	6	+53 23 54·6	+ 8·9
	6213	......	......	18 12 8	282 45	1 33·0	43·1	0·500	29·59	......	51·0	......	......	7	+48 43 41·2	+10·0
	6429	β Lyræ	3·0	18 44 37	256 45	2 15·5	25·3	0·610	29·58	......	49·4	......	......	7	+22 44 25·4	+11·5
	6480	......	......	18 51 29	257 15	0 54·1	63·3	0·684	29·58	......	49·3	......	......	6	+23 13 5·6	+11·6
	6528	ζ Aquilæ	......	18 58 43	276 15	4 21·4	31·0	0·500	29·58	......	49·2	......	......	8	+42 16 29·5	+12·1
	6567	......	......	19 5 7	258 30	4 46·1	54·7	0·500	29·58	......	49·3	......	......	6	+24 31 52·9	+11·8
	......	Nadir ‖	......	19 12 0	54 0	2 52·1	54·3	0·500	......	50·8	......	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 64·4	67·8	0·500	......	......	......	......	......	......	......	......
July 5	......	Nadir ‖	......	16 16 0	54 0	2 51·8	54·4	0·500	29·86	56·0	54·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 63·8	63·4	0·500	......	......	......	......	......	......	......	......
	5620	......	......	16 39 45	273 55	4 25·7	35·1	0·500	29·86	......	54·0	2, N.	3	6	+39 56 33·8	+ 6·1
	5863	ω Herculis	......	17 15 8	257 20	1 2·9	11·5	0·500	29·86	......	53·5	......	......	6	+23 18 9·1	+10·0
	......	Nadir ‖	......	19 6 0	54 0	2 53·6	55·8	0·500	29·87	53·8	52·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 63·7	67·1	0·500	......	......	......	......	......	......	......	......
July 6	......	Nadir ‖	......	17 31 0	54 0	2 51·0	54·9	0·500	29·94	58·0	53·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 63·2	66·8	0·500	......	......	......	......	......	......	......	......
	6035	......	......	17 43 17	280 5	0 28·4	37·8	0·668	29·94	......	52·7	0	0	6	+46 2 40·8	+ 8·9
	6137	......	......	18 0 5	287 30	0 43·4	53·8	0·577	29·94	......	52·7	......	......	7	+53 27 54·2	+ 9·3
	6213	......	......	18 12 10	282 45	1 29·8	40·8	0·500	29·94	......	52·4	......	......	6	+48 43 38·7	+10·3
	......	Nadir ‖	......	18 30 0	54 0	2 52·2	55·0	0·500	29·94	......	52·3	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 63·0	66·7	0·500	......	......	......	......	......	......	......	......
July 7	......	Nadir ‖	......	17 0 0	54 0	2 51·9	55·7	0·500	29·98	57·8	54·5	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 62·8	67·0	0·500	......	......	......	......	......	......	......	......
	5917	......	......	17 23 27	229 50	0 22·4	32·2	0·500	29·98	......	54·0	0	5	5	− 4 12 32·0	+12·6
July 8	......	Nadir ‖	......	17 18 0	54 0	2 53·0	54·2	0·500	29·97	57·3	54·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 63·0	65·2	0·500	......	......	......	......	......	......	......	......
	6035	......	......	17 43 17	280 5	0 38·7	48·3	0·200	29·97	......	54·0	......	......	6	+46 2 38·3	+ 9·3
	6213	......	......	18 12 9	282 45	1 32·2	43·2	0·500	29·97	......	53·7	......	......	7	+48 43 41·0	+10·7
	......	Nadir ‖	......	19 0 0	54 0	2 53·2	55·4	0·500	29·96	53·8	53·6	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 62·7	65·3	0·500	......	......	......	......	......	......	......	......

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. (Max. = 10.)	Est. Value of Obs. (Max. = 10.)	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1864.
1864.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
July 13	......	Nadir	......	17 4 0	54 0	2 50·2	54·4	0·500	29·88	58·0	54·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·5	68·0	0·500	......	......	......	......	......	......	......	......
	5917	(a)	6·0	......	229 50	0 25·8	33·0	0·500	29·88	......	54·0	1, N.	3	6	− 4 12 30·0	+ 14·3
	6035	......	......	17 43 11	280 5	0 33·4	42·8	0·500	29·88	......	54·0	......	......	4	+ 46 2 41·1	+ 10·1
	6213	......	......	18 12 0	282 45	1 30·4	40·8	0·564	29·88	......	54·0	......	......	5	+ 48 43 40·6	+ 11·5
	6429	β Lyræ	......	18 44 30	256 45	2 12·8	21·2	0·497	29·88	......	54·0	......	......	6	+ 22 44 18·9	+ 14·1
	6574	(b)	......	19 6 12	268 35	4 40·4	49·7	0·500	29·88	......	54·0	......	......	7	+ 34 36 48·1	+ 14·4
	6644	b Aquilæ	......	19 17 55	278 15	4 41·8	50·0	0·500	29·88	......	54·0	......	......	6	+ 44 16 49·4	+ 14·6
	......	Nadir	......	19 31 0	54 0	2 51·3	54·9	0·500	......	56·8	......	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·7	67·8	0·500	......	......	......	......	......	......	......	......
July 15	......	Nadir	......	17 22 0	54 0	2 51·8	56·2	0·500	29·90	59·8	57·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 62·8	68·2	0·500	......	......	......	......	......	......	......	......
	6035	......	......	17 43 9	280 5	0 32·7	41·3	0·500	29·90	......	57·0	0	4	6	+ 46 2 39·8	+ 10·4
	6480	......	......	......	257 15	0 55·7	65·0	0·500	29·90	......	56·4	......	......	5	+ 23 13 2·0	+ 14·6
	6602	......	......	19 11 24	267 10	2 24·7	35·0	0·540	29·90	......	56·2	......	......	7	+ 33 9 33·3	+ 15·1
	6762	......	......	19 37 46	263 10	0 41·8	52·4	0·573	29·90	......	56·2	......	......	5	+ 29 7 51·1	+ 15·5
	6855	......	......	19 51 29	273 50	1 26·6	37·8	0·500	29·90	......	56·2	......	......	6	+ 39 48 34·9	+ 16·2
	......	Nadir	......	20 0 0	54 0	2 52·1	56·4	0·500	29·90	57·6	56·2	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·0	67·9	0·500	......	......	......	......	......	......	......	......
July 18	......	Nadir	......	17 17 0	54 0	2 52·7	54·1	0·500	29·86	66·2	64·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 62·9	64·2	0·500	......	......	......	......	......	......	......	......
	6035	......	......	......	280 5	0 30·9	41·1	0·450	29·86	......	64·0	......	......	5	+ 46 2 38·0	+ 10·9
	6245	......	......	18 16 1	272 10	3 39·8	49·8	0·500	29·85	......	62·2	6, W.	0	7	+ 38 10 46·3	+ 13·4
	6429	β Lyræ	2·0	18 44 16	256 45	2 10·2	20·6	0·526	29·85	......	62·0	......	......	6	+ 22 44 18·5	+ 15·5
	6542	......	......	19 0 10	265 55	1 53·7	63·7	0·500	29·85	......	62·0	......	......	7	+ 31 54 1·6	+ 15·5
	6729	......	5·5	19 31 42	284 50	3 17·0	27·8	0·760	29·85	......	60·0	......	......	6	+ 50 50 33·7	+ 16·4
	6852	......	......	19 50 18	230 35	4 2·0	12·8	0·748	29·85	......	59·8	......	......	7	− 3 23 44·2	+ 16·6
	......	Nadir	......	20 15 0	54 0	2 53·0	54·3	0·500	29·85	59·9	59·7	......	......	......	......	......
	......	Nadir	......	......	54 0	2 63·0	64·0	0·500	......	......	......	......	......	......	......	......
July 21	......	Nadir	......	18 0 0	54 0	2 51·0	56·5	0·500	29·47	62·0	57·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 61·8	65·8	0·500	......	......	......	......	......	......	......	......
	6245	......	......	18 16 0	272 10	3 38·3	47·6	0·549	29·47	......	56·8	5, S.W.	0	6	+ 38 10 47·9	+ 14·2
	6429	β Lyræ	3·0	18 44 16	256 45	2 13·1	23·1	0·500	29·47	......	56·4	......	......	7	+ 22 44 20·6	+ 16·3
	6527	......	7·0	......	271 0	2 47·2	58·0	0·500	29·47	......	56·3	......	......	7	+ 36 59 56·0	+ 16·0
	6617	......	......	19 12 42	278 40	1 54·4	65·0	0·500	29·47	......	56·1	......	......	8	+ 44 39 3·4	+ 16·2
	6652	......	......	19 18 40	269 55	3 57·0	68·3	0·500	29·47	......	56·1	......	......	7	+ 35 56 6·2	+ 16·7
	6762	......	......	19 37 35	263 10	0 42·0	53·2	0·510	29·47	......	56·0	......	......	6	+ 29 7 50·6	+ 17·1
	......	Nadir	......	20 2 0	54 0	2 51·7	54·3	0·500	29·47	57·4	56·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 62·0	65·9	0·500	......	......	......	......	......	......	......	......
July 23	......	Nadir	......	18 18 0	54 0	2 51·1	56·7	0·500	29·54	60·0	54·0	......	......	......	......	......
	......	Nadir	......	......	54 0	2 62·1	65·7	0·500	......	......	......	......	......	......	......	......
	6852	......	......	......	230 35	4 9·7	19·1	0·500	29·52	......	53·0	12, S.	6	5	− 3 23 44·0	+ 16·4
	......	Nadir	......	21 0 0	54 0	2 50·9	56·5	0·500	29·51	......	52·9	......	......	......	......	......
	......	Nadir	......	......	54 0	2 62·7	66·0	0·500	......	......	......	......	......	......	......	......

(a) Definition bad. (b) Definition improving.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1864.
1864.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
July 26	......	Nadir ‖	......	18 10 0	54 0	2 52·0	54·0	0·500	29·68	58·1	53·3	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 62·9	64·7	0·500	......	......	......	......	......	......	......	......
	6966	......	......	......	264 45	3 43·8	52·2	0·500	29·68	......	53·1	......	......	5	+30 45 51·2	+18·6
	7086	......	......	20 25 16	234 20	3 17·0	26·6	0·500	29·68	......	53·0	......	......	5	+ 0 20 23·1	+16·7
	......	Nadir ‖	......	20 41 0	54 0	2 51·9	53·7	0·500	29·68	53·2	53·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 63·3	64·9	0·500	......	......	......	......	......	......	......	......
July 28	......	Nadir ‖	......	17 47 0	54 0	2 51·9	54·2	0·500	29·45	59·8	57·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 63·3	65·0	0·500	......	......	......	......	......	......	......	......
	6468	......	......	18 49 7	256 10	1 48·0	56·9	0·500	29·46	......	57·0	10, S.	4	6	+22 8 54·0	+18·2
	6729	......	......	19 31 44	284 50	3 23·3	35·0	0·500	29·46	......	56·9	......	......	6	+50 50 32·7	+17·9
	6941	......	7·0	20 4 18	269 15	0 22·3	34·1	0·545	29·46	......	56·4	......	......	7	+35 12 31·8	+19·3
	7014	......	6·0	20 15 42	285 0	4 7·0	18·0	0·581	29·46	......	56·2	......	......	7	+51 1 18·4	+19·8
	7086	......	......	20 25 16	234 20	3 13·8	23·4	0·590	29·46	......	56·0	......	......	8	+ 0 20 21·7	+17·4
	7150	......	......	20 32 35	279 10	2 50·7	61·9	0·682	29·46	......	56·0	......	......	7	+45 10 4·4	+20·2
	7220	η Cephei	......	20 41 44	228 40	1 24·9	33·3	0·620	29·48	......	55·8	......	......	6	− 5 21 27·2	+16·4
	......	Nadir ‖	......	20 52 0	54 0	2 50·5	53·3	0·500	29·48	56·8	55·8	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 67·6	71·4	0·500	......	......	......	......	......	......	......	......
Aug. 1	......	Nadir ‖	......	20 20 0	54 0	2 52·0	54·4	0·500	29·66	56·7	56·5	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 63·1	66·0	0·500	......	......	......	......	......	......	......	......
	7086	......	......	20 25 18	234 20	3 15·3	24·3	0·500	29·66	......	56·4	......	......	6	+ 0 20 20·7	+18·8
	7150	......	......	20 32 37	279 10	2 52·8	63·0	0·510	29·66	......	56·4	......	......	5	+45 10 1·6	+20·9
Aug. 2	......	Nadir ‖	......	18 25 0	54 0	2 52·7	54·7	0·500	29·85	58·0	52·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 62·9	66·2	0·500	......	......	......	......	......	......	......	......
	6429	β Lyræ	5·0	18 44 19	256 45	2 9·3	17·7	0·527	29·85	......	52·0	5, W.	4	6	+22 44 16·4	+19·3
	6852	......	......	19 50 24	230 35	4 4·6	14·2	0·500	29·84	......	51·7	......	......	5	− 3 23 49·3	+19·8
	7220	η Cephei	......	20 41 46	228 40	1 25·2	33·7	0·500	29·84	......	51·5	......	......	7	− 5 21 29·9	+18·2
	......	Nadir ‖	......	21 0 0	54 0	2 53·1	55·0	0·500	29·84	51·0	51·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 61·7	65·8	0·500	......	......	......	......	......	......	......	......
Aug. 4	......	Nadir ‖	......	19 45 0	54 0	2 51·9	53·9	0·500	29·69	59·2	57·5	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 63·9	67·0	0·500	......	......	......	......	......	......	......	......
	6855	......	......	19 51 19	273 50	1 21·3	32·3	0·500	29·69	......	57·4	6, W.	0	5	+39 48 29·8	+20·5
	6941	......	......	20 4 20	269 15	0 24·8	35·4	0·431	29·69	......	57·4	......	......	6	+35 12 30·8	+20·9
	7014	......	......	20 15 43	285 0	4 6·7	17·7	0·500	29·69	......	56·4	......	......	7	+51 1 16·2	+20·9
	7086	......	......	20 25 17	234 20	3 13·0	23·3	0·548	29·70	......	55·8	......	......	5	+ 0 20 20·4	+19·9
	7220	η Cephei	......	20 41 47	228 40	1 21·2	30·8	0·650	29·70	......	55·5	......	......	6	− 5 21 29·2	+18·9
Aug. 5	......	Nadir ‖	......	20 46 0	54 0	2 52·1	54·0	0·500	29·78	57·5	53·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 64·2	66·7	0·500	......	......	......	......	......	......	......	......
	7285	......	7·0	20 52 40	282 55	4 27·6	41·6	0·500	29·78	......	53·0	2, W.	4	5	+48 56 38·4	+22·2
	7410	......	......	21 14 12	266 40	2 12·8	23·2	0·500	29·78	......	53·0	......	......	6	+32 39 20·7	+21·6
Aug. 8	......	Nadir ‖	......	18 44 0	54 0	2 50·4	52·4	0·500	29·59	56·7	52·0	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 64·6	68·0	0·500	......	......	......	......	......	......	......	......
	6527	......	......	......	271 0	2 41·4	50·8	0·580	29·59	......	52·0	1, W.	1	5	+36 59 51·0	+19·5
	6602	......	......	19 11 15	267 10	2 20·3	30·0	0·520	29·60	......	52·0	......	......	7	+33 9 28·2	+20·5
	......	Nadir ‖	......	21 15 0	54 0	2 52·0	55·5	0·500	29·60	52·1	51·8	......	......	......	......	......
	......	Nadir ‖	......	......	54 0	2 64·7	67·3	0·500	......	......	......	......	......	......	......	......

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	[illegible]	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer	Interior Thermometer Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South	Corr. to Mean N. Polar Dist. Jan. 1, 1864.
1864.				h m s	° ′	′ ″	″	revols	inches	°	°				° ′ ″	″
Aug. 9	......	Nadir ‖ |	......	19 11 0	54 0	2 52·3	56·3	0·500	29·41	53·6	47·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 64·0	68·0	0·500	......	......	......	......	......	......	......	......
	6729	......	......	19 31 47	284 50	3 21·0	32·1	0·500	29·41	......	47·0	10, W.	3	7	+50 50 29·5	+19·6
	7066	......	......	20 25 19	231 20	3 13·3	23·1	0·500	29·41	......	46·1	......	......	7	+ 0 20 18·1	+21·6
	7220	η Cephei	......	20 41 48	228 40	1 17·4	26·0	0·740	29·41	......	46·1	......	......	6	− 5 21 32·0	+20·7
	7336	61¹ Cygni	......	21 0 6	251 50	4 41·0	50·4	0·500	29·41	......	46·0	......	......	......	+17 51 46·9	+23·6
	7410	......	......	......	266 40	2 5·4	16·0	0·800	29·41	......	46·0	......	......	7	+32 39 20·5	+22·4
	7528	......	......	21 32 59	270 20	0 0·0	9·2	0·500	29·41	......	46·0	......	......	8	+36 17 6·2	+22·7
	......	Nadir ‖ |	......	21 41 0	54 0	2 63·5	55·9	0·500	29·41	46·9	45·9	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 65·7	69·3	0·500	......	......	......	......	......	......	......	......
Aug. 10	......	Nadir ‖ |	......	19 50 0	54 0	2 51·7	55·1	0·500	29·95	54·0	51·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 63·1	67·3	0·500	......	......	......	......	......	......	......	......
	6941	......	......	20 5 22	269 15	0 19·0	29·0	0·500	29·95	......	51·2	0	0	7	+35 12 26·3	+22·2
	7006	......	......	20 14 59	253 15	2 14·8	24·0	0·500	29·95	......	51·0	......	......	7	+19 14 21·0	+22·6
	7150	......	......	20 33 38	279 10	2 50·5	60·9	0·500	29 95	......	51·0	......	......	6	+45 9 58·9	+22·5
	7285	......	......	20 53 41	282 55	4 27·9	39·0	0·565	29·95	......	51·0	......	......	6	+48 56 38·8	+23·0
	7566	......	......	21 37 39	252 25	0 39·0	49·9	0·500	29·95	......	51·0	......	......	5	+18 22 45·6	+21·1
	......	Nadir ‖ |	......	21 50 0	54 0	2 50·7	55·0	0·500	29·95	53·0	51·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 63·0	67·0	0·500	......	......	......	......	......	......	......	......
Aug. 31	......	Nadir ‖ |	......	21 31 0	54 0	2 51·1	54·3	0·500	29·47	57·5	56·6	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 62·0	66·0	0·500	......	......	......	......	......	......	......	......
	7561	ι Pegasi	......	21 37 52	280 40	3 37·4	47·2	0·510	29·47	......	56·6	3, S.W.	3	6	+46 40 46·4	+25·9
	7644	......	......	21 50 39	218 5	4 16·7	24·7	0·500	29·47	......	56·6	......	......	6	−15 53 38·1	+21·4
	7759	......	......	22 8 2	229 50	4 42·2	51·0	0·584	29·47	......	56·6	......	......	7	− 4 8 9·5	+21·6
	7908	ζ Pegasi	......	22 35 3	279 50	1 28·0	33·9	0·805	29·47	......	56·5	......	......	7	+45 49 42·9	+26·9
	7996	......	......	22 51 0	286 50	3 34·8	45·4	0·500	29·47	......	56·4	......	......	5	+52 50 44·3	+27·0
	......	Nadir ‖ |	......	23 17 0	54 0	2 50·8	53·8	0·500	29·47	54·6	54·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 63·0	65·7	0·500	......	......	......	......	......	......	......	......
Sept. 5	......	Nadir ‖ |	......	20 46 0	54 0	2 50·3	55·9	0·500	29·57	55·0	52·0	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 63·8	67·3	0·500	......	......	......	......	......	......	......	......
	7336	61¹ Cygni	......	21 1 12	251 50	4 31·7	40·7	0·522	29·57	......	52·0	30, W.	0	6	+17 51 38·3	[illegible]
	7410	......	......	21 15 20	266 40	2 3·8	13·4	0·682	29·57	......	52·0	......	......	6	+32 39 15·8	+27·2
	7501	......	7·0	21 28 36	244 40	4 35·2	44·3	0·500	29·57	......	51·9	......	......	5	+10 41 41·1	+25·8
	7708	......	......	22 1 20	228 20	2 48·4	57·4	0·500	29·56	......	51·8	......	......	7	− 5 40 6·9	+25·3
	7908	ζ Pegasi	......	22 35 5	279 50	1 30·3	40·0	0·458	29·56	......	51·8	......	......	7	+45 48 36·6	+27·6
	7977	......	......	22 47 20	288 50	1 14·3	24·3	0·383	29·56	......	51·7	......	......	8	+54 48 19·1	+27·5
	8024	......	......	22 56 10	233 35	2 19·7	29·1	0·688	29·56	......	51·7	......	......	6	− 0 25 30·2	+23·6
	8091	......	......	23 8 44	262 35	4 25·5	35·9	0·644	29·56	......	51·7	......	......	6	+28 36 37·0	+25·5
	8147	......	......	23 16 23	270 10	0 22·1	31·7	0·419	29·56	......	51·7	......	......	7	+36 7 26·7	+26·1
	......	Nadir ‖ |	......	23 30 0	54 0	2 53·0	55·5	0·500	29·56	51·4	51·7	......	......	......	......	......
	......	Nadir | ‖	......	......	54 0	2 64·0	67·1	0·500	......	......	......	......	......	......	......	......
Sept. 6	......	Nadir ‖ |	......	21 10 0	54 0	2 52·9	55·7	0·500	29·43	54·9	50·9	......	......	......	......	...
	......	Nadir | ‖	......	......	54 0	2 66·0	70·0	0·500	......	......	......	......	......	......	......	......
	7436	......	7·0	21 27 46	242 5	4 6·5	16·3	0·459	29·43	......	50·9	15, W.	0	5	+ 8 6 10·4	[illegible]
	7561	ι Pegasi	......	21 37 55	280 40	3 34·4	44·1	0·590	29·43	......	50·0	......	......	6	+46 40 43·9	[illegible]
	7708	......	......	22 1 21	228 20	2 48·3	58·0	0·500	29·45	......	49·0	......	......	6	− 5 40 7·3	[illegible]

Digitiz

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1864.
1864.				h m s	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Sept. 6	7908	ζ Pegasi......	......	22 35 4	279 50	1 27·8	37·4	0·600	29·45	......	48·7	......	......	7	+45 48 37·2	+27·8
	8139	......	......	23 15 11	252 5	4 17·1	26·7	0·500	29·50	......	48·3	......	......	8	+18 6 22·6	+24·7
	......	Nadir ǁǀ......	......	23 21 0	54 0	2 52·6	55·8	0·500	29·50	48·8	48·2	......	......	......	......	......
	......	Nadir ǀǁ......	......	......	54 0	2 65·9	69·1	0·500	......	......	......	......	......	......	......	......
Sept. 7	......	Nadir ǁǀ......	......	21 6 0	54 0	2 52·0	55·0	0·500	29·41	57·2	61·8	......	......	......	......	......
	......	Nadir ǀǁ......	......	......	54 0	2 63·7	67·2	0·500	......	......	......	......	......	......	......	......
	7590	......	......	21 41 2	273 25	0 1·3	12·2	0·500	29·41	......	62·0	20, W.	4	6	+39 22 8·6	+28·3
Sept. 9	......	Nadir ǁǀ......	......	21 9 0	54 0	2 51·8	55·1	0·500	29·46	56·2	52·0	......	......	......	......	......
	......	Nadir ǀǁ......	......	......	54 0	2 64·8	66·8	0·500	......	......	......	......	......	......	......	......
	7590	......	......	21 41 2	273 20	4 55·4	64·4	0·700	29·46	......	52·0	15, S.W.	1	6	+39 22 8·2	+28·6
	7759	......	......	22 7 57	229 50	4 38·0	47·5	0·638	29·48	......	51·5	......	......	6	− 4 8 12·7	+27·7
	7908	ζ Pegasi......	......	22 35 6	279 50	1 32·1	42·3	0·500	29·48	......	51·0	......	......	7	+45 48 39·7	+28·1
	......	Nadir ǁǀ......	......	23 6 0	54 0	2 52·2	56·0	0·500	29·49	51·1	50·4	......	......	......	......	......
	......	Nadir ǀǁ......		......	54 0	2 64·1	66·3	0·500	......	......	......	......	......	......	......	......
Sept. 12	......	Nadir ǁǀ......	......	21 21 0	54 0	2 52·2	55·1	0·500	29·68	53·1	49·5	......	......	......	......	......
	......	Nadir ǀǁ......	......	......	54 0	2 64·8	66·8	0·500	......	......	......	......	......	......	......	......
	7590	......	......	21 41 3	273 20	4 58·0	68·0	0·500	29·68	......	49·5	3, S.W.	1	7	+39 22 5·8	+29·0
	7708	......	......	22 1 22	228 20	2 41·7	51·4	0·710	29·68	......	49·5	......	......	7	− 5 10 7·5	+28·9
	7759	(a)	......	22 7 58	229 50	4 41·0	49·0	0·500	29·68	......	49·5	......	......	8	− 4 8 14·3	+28·6
	......	Nadir ǁǀ......	......	23 35 0	54 0	2 52·2	55·8	0·500	29·64	52·0	49·0	......	......	......	......	......
	......	Nadir ǀǁ......	......	......	54 0	2 64·4	68·8	0·500	......	......	......	......	......	......	......	......
Sept. 21	......	Nadir ǁǀ......	......	23 29 0	54 0	2 52·8	55·4	0·500	29·30	54·8	55·0	......	......	......	......	......
	......	Nadir ǀǁ......	......	......	54 0	2 63·7	67·9	0·500	......	......	......	......	......	......	......	......
	7908	ζ Pegasi......	4·0	22 35 24	279 50	1 29·4	40·6	0·462	29·30	......	54·2	0	1	6	+45 48 36·3	+29·4
	7977	......	......	22 47 39	288 50	1 11·1	22·9	0·550	29·30	......	54·0	......	......	7	+54 48 21·3	+28·5
	8024	......	......	22 56 30	233 35	2 15·8	26·1	0·664	29·30	......	54·0	......	......	7	− 0 25 34·5	+28·8
	8083	......	6·0	23 7 28	233 30	4 45·0	54·2	0·540	29·30	......	53·8	......	......	6	− 0 28 8·9	+28·1
	8135	......	6·0	23 15 3	246 35	2 12·7	23·3	0·525	29·30	......	53·8	......	......	6	+12 34 19·4	+28·4
	8247	......	......	......	272 0	4 13·8	24·4	0·500	29·30	......	54·0	......	......	3	+38 1 21·7	+28·0
	8315	......	......	23 49 24	282 30	0 44·8	55·4	0·484	29·30	......	54·6	5, S.W.	......	6	+48 27 52·0	+27·6
	8338	......	......	23 54 34	228 30	4 46·0	55·0	0·567	29·30	......	54·6	......	......	5	− 5 28 7·2	+23·5
	8372	......	......	23 59 54	232 15	4 13·0	21·9	0·612	29·30	......	54·5	......	......	6	− 1 43 39·1	+23·5
	26	γ Pegasi......	......	0 6 59	275 30	3 20·6	29·3	0·584	29·30	......	54·2	......	......	8	+41 30 29·9	+26·7
	83	......	......	0 18 30	237 40	2 19·1	29·9	0·500	29·30	......	54·2	......	......	7	+ 3 39 24·6	+23·3
	149	(b)	......	0 20 36	277 30	1 5·4	16·6	0·597	29·30	......	54·0	......	......	......	+43 28 16·0	+27·2
	......	Nadir ǁǀ......	......	0 41 0	54 0	2 52·5	55·1	0·500	29·30	55·7	54·0	......	......	......	......	......
	......	Nadir ǀǁ......	......	......	54 0	2 64·8	67·8	0·500	......	......	......	......	......	......	......	......
Sept. 22	......	Nadir ǁǀ......	......	21 48 0	54 0	2 50·9	54·7	0·500	29·38	55·5	52·2	......	......	......	......	......
	......	Nadir ǀǁ......	......	......	54 0	2 65·1	69·4	0·500	......	......	......	......	......	......	......	......
Oct. 2	......	(c) Nadir ǁǀ......	......	12 22 0	254 0	1 22·7	34·0	0·500	30·24	51·3	49·9	......	......	......	......	......
	......	Nadir ǀǁ......	......	......	254 0	1 33·9	45·0	0·500	......	......	......	......	......	......	......	......
Oct. 14	......	Nadir ǁǀ......	......	22 51 0	254 0	1 23·8	35·2	0·500	29·90	50·7	45·0	......	......	......	......	......
	......	Nadir ǀǁ......	......	......	254 0	1 35·4	46·1	0·500	......	......	......	......	......	......	......	......
	8138	......	7·0	23 15 26	68 30	0 18·1	22·9	0·644	29·90	......	44·7	0	0	7	− 5 31 10·9	+34·1

(a) Sky getting cloudy. (b) Stars very well defined. (c) Circle cleaned and telescope moved into the present position.

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1864.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Oct. 14	8204	....	7·0	23 27 33	58 40	3 35·5	48·7	0·609	29·90	......	44·4	....	......	7	− 15 17 50·7	+32·7
	8269	....	8·0	23 41 40	126 30	1 54·2	58·8	0·500	29·90	......	44·4	....	......	5	+ 52 30 23·2	+28·6
	8315	....	......	....	122 25	4 16·0	22·4	0·568	29·90	......	44·4	....	......	6	+ 46 27 48·1	+28·9
	8364	....	......	23 58 44	72 10	1 51·8	54·8	0·606	29·90	......	44·4	....	......	7	− 1 49 33·2	+30·7
	83	(a)	......	0 18 34	77 40	0 43·3	48·5	0·711	29·90	......	44·2	....	......	6	+ 3 39 17·2	+29·0
	538	....	......	1 40 1	113 10	3 53·7	58·4	0·500	29·90	......	43·5	....	......	6	+ 39 12 23·3	−22·5
	......	Nadir	......	1 56 0	254 0	1 23·8	35·0	0·500	29·90	47·8	43·4	....	......	......	....	......
	......	Nadir	......	....	254 0	1 35·0	46·0	0·500	......	......	......	....	......	......	....	......
Oct. 17	......	Nadir	......	0 20 0	254 0	1 23·8	35·6	0·500	29·03	48·7	47·0	....	......	......	....	......
	......	Nadir	......	....	254 0	1 34·0	46·2	0·500	......	......	......	....	......	......	....	......
	177	....	7·0	0 35 0	121 20	0 44·8	50·6	0·500	29·02	......	47·0	15, W.	4	5	+ 47 19 14·4	+27·1
	218	(b) η Cassiopeæ	......	0 41 44	72 50	2 54·2	58·4	0·500	29·02	......	47·0	....	......	7	− 1 8 38·7	+27·3
	259	....	......	0 50 2	92 10	2 25·8	29·8	0·690	29·03	......	46·9	....	......	8	+ 18 10 59·3	+27·0
	314	μ Cassiopeæ	......	0 60 5	75 40	3 22·4	26·9	0·550	29·03	......	46·9	....	......	7	+ 1 41 51·3	+25·3
	562	....	......	1 45 0	79 10	0 27·1	31·1	0·529	29·03	......	46·8	....	......	6	+ 5 8 55·3	+20·1
	......	Nadir	......	2 2 0	254 0	1 22·7	34·9	0·500	29·03	47·2	46·8	....	......	......	....	......
	......	Nadir	......	....	254 0	1 35·7	47·6	0·500	......	......	......	....	......	......	....	......
Oct. 18	......	Nadir	......	23 25 0	254 0	1 23·8	35·6	0·500	29·25	48·0	45·0	....	......	......	....	......
	......	Nadir	......	....	254 0	1 34·5	45·2	0·500	......	......	......	....	......	......	....	......
	8350	85 Pegasi	......	23 55 54	103 35	1 5·6	8·4	0·617	29·25	......	45·0	4, W.	5	6	+ 29 34 36·9	+31·0
Oct. 20	......	Nadir	......	23 40 0	254 0	1 24·9	35·8	0·500	29·05	46·0	39·2	....	......	......	....	......
	......	Nadir	......	....	254 0	1 34·9	45·9	0·500	......	......	......	....	......	......	....	......
	8338	....	......	23 54 39	68 30	3 14·0	17·3	0·683	29·05	......	39·1	....	......	6	− 5 26 15·1	+32·7
	8372	....	......	....	72 15	2 50·7	53·5	0·500	29·05	......	39·0	....	......	4	− 1 43 43·6	+32·3
	83	....	......	0 18 38	77 40	0 49·4	52·0	0·500	29·06	......	39·0	7, W.	2	7	+ 3 39 15·4	+30·5
	133	....	8·0	0 27 24	110 15	1 46·0	47·4	0·593	29·06	......	39·0	....	......	6	+ 36 15 15·6	+25·5
	218	(b) η Cassiopeæ	......	0 41 44	72 50	2 54·1	56·3	0·563	29·06	......	38·9	....	......	7	− 1 8 38·6	+25·1
	299	....	......	0 57 53	101 0	2 4·5	7·3	0·577	29·06	......	38·6	....	......	6	+ 27 0 33·9	+24·8
	482	....	7·5	1 30 7	72 40	1 40·4	43·0	0·500	29·06	......	38·7	....	......	7	− 1 19 53·9	+22·3
	645	....	......	....	104 45	2 14·0	16·1	0·500	29·13	......	39·0	....	......	5	+ 30 45 41·2	+20·8
	718	....	......	2 12 18	73 25	1 48·2	51·0	0·665	29·13	......	39·0	....	......	8	− 0 34 41·5	+16·4
	......	Nadir	......	2 30 0	254 0	1 25·9	36·3	0·500	29·13	40·4	39·0	....	......	......	....	......
	......	Nadir	......	....	254 [illegible]	1 37·0	47·4	0·500	......	......	......	....	......	......	....	......
Oct. 24	......	Nadir	......	1 6 0	254 0	1 24·2	35·1	0·500	29·35	45·8	42·0	....	......	......	....	......
	......	Nadir	......	....	254 0	1 36·1	47·1	0·500	......	......	......	....	......	......	....	......
	455	....	......	1 25 35	113 40	2 35·2	38·2	0·450	29·35	......	42·0	0	0	5	+ 39 41 2·1	+24·4
	538	....	......	1 40 5	113 10	3 54·9	57·1	0·512	29·35	......	42·0	....	......	6	+ 39 12 23·2	+23·2
	694	....	......	2 9 14	66 10	1 11·0	14·9	0·628	29·35	......	41·4	....	......	7	− 7 50 19·3	+17·1
	776	....	......	2 25 [illegible]	128 15	2 28·6	32·4	0·500	29·35	......	41·0	....	......	5	+ 54 15 56·7	+19·4
	......	Nadir	......	2 39 0	254 0	1 23·4	35·0	0·500	29·35	44·9	41·0	....	......	......	....	......
	......	Nadir	......	....	254 0	1 35·6	46·2	0·500	......	......	......	....	......	......	....	......
Nov. 2	......	Nadir	......	0 10 0	254 0	1 23·8	35·0	0·500	30·08	46·2	44·0	....	......	......	....	......
	......	Nadir	......	....	254 0	1 34·2	44·8	[illegible]·500	......	......	......	....	......	......	....	......
	962	ι Persei	......	3 0 8	80 50	3 7·2	9·6	0·640	30·00	......	44·0	0	3	7	+ 6 51 38·2	−13·5
	......	Nadir	......	3 40 0	254 [illegible]	1 24·2	34·9	0·500	29·98	45·1	44·0	....	......	......	....	......
	......	Nadir	......	....	254 0	1 34·6	44·6	0·500	......	......	......	....	......	......	....	......

(a) Cloudy (b) Double.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1864.
1864.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Nov. 4	......	Nadir	......	1 32 0	254 0	1 25·8	35·8	0·500	29·98	49·1	50·6	......	......	......	......	......
	......	Nadir	......	......	254 0	1 35·3	45·0	0·500	......	......	......	......	......	......	......	......
	645	......	6·0	1 59 51	104 45	2 9·0	12·9	0·481	29·98	......	50·3	10, W.	5	5	+30 45 37·3	+22·3
	721	(a)	......	2 13 48	74 45	0 19·3	23·7	0·537	29·98	......	50·2	......	......	6	+ 0 43 47·3	+20·5
	......	Nadir	......	2 50 0	254 0	1 23·0	33·7	0·500	29·98	50·0	50·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 34·0	45·4	0·500	......	......	......	......	......	......	......	......
Nov. 8	......	Nadir	......	0 9 0	254 0	1 25·9	37·3	0·500	30·02	44·9	42·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 35·0	45·8	0·500	......	......	......	......	......	......	......	......
	120	......	......	0 25 3	97 5	3 8·5	12·7	0·500	30·02	......	41·2	0	0	6	+23 6 36·7	+32·2
	259	......	......	0 50 3	92 10	2 24·1	27·9	0·561	30·02	......	41·0	......	......	6	+18 10 53·4	+30·8
	299	......	......	0 57 54	101 0	2 0·2	1·7	0·540	30·02	......	41·0	......	......	7	+27 0 28·1	+29·0
	376	......	7·0	1 9 33	57 45	4 7·8	11·0	0·500	30·02	......	41·0	......	......	7	−16 12 26·7	+29·8
	455	......	......	1 25 34	113 40	2 30·9	33·3	0·500	30·02	......	41·0	......	......	6	+39 40 58·7	+25·0
	694	......	......	2 9 15	66 10	1 7·7	10·7	0·620	30·02	......	40·0	......	......	5	− 7 50 23·6	+21·9
	764	......	......	2 23 10	121 0	0 8·4	13·6	0·477	30·02	......	40·0	......	......	8	+46 58 36·2	+19·2
	834	......	......	2 36 48	104 50	4 35·7	38·1	0·500	30·02	......	39·0	......	......	7	+30 53 3·6	+18·5
	962	ι Persei	......	2 0 8	80 50	3 2·8	6·0	0·677	30·02	......	38·8	......	......	7	+ 6 51 34·5	+14·8
	1055	......	......	3 17 32	108 20	4 40·3	41·7	0·500	30·02	......	38·0	......	......	6	+34 23 7·9	+13·6
	......	Nadir	......	3 30 0	254 0	1 24·8	34·9	0·500	30·02	39·0	37·4	......	......	......	......	......
	......	Nadir	......	......	254 0	1 37·1	47·2	0·500	......	......	......	......	......	......	......	......
Nov. 9	......	Nadir	......	0 50 0	254 0	1 25·4	36·0	0·500	29·90	43·0	38·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 35·3	46·0	0·500	......	......	......	......	......	......	......	......
	314	μ Cassiopeæ	......	1 0 5	75 40	3 15·2	18·2	0·630	29·90	......	37·9	3, W.	0	7	+ 1 41 45·2	+31·2
	455	......	8·0	1 25 34	113 40	2 32·4	33·8	0·500	29·90	......	37·9	......	......	6	+39 40 59·7	+25·1
	524	......	8·5	......	114 50	2 14·0	17·0	0·500	29·90	......	37·9	......	......	5	+40 50 42·1	+24·0
	694	(b)	......	2 9 14	66 10	1 11·0	13·8	0·500	29·90	......	37·9	......	......	6	− 7 50 23·7	+22·1
	891	......	......	2 46 18	121 0	2 34·8	37·7	0·500	29·90	......	37·9	......	......	7	+50 1 2·3	+16·9
	980	......	......	3 3 13	103 35	0 44·0	44·6	0·500	29·90	......	37·9	......	......	8	+29 34 11·1	+15·3
	1055	......	......	3 17 31	108 20	4 41·8	43·0	0·500	29·90	......	37·9	......	......	7	+34 23 9·3	+13·6
	1101	......	......	3 28 1	98 40	4 48·1	50·0	0·750	29·90	......	37·9	......	......	6	+24 43 22·4	+11·9
	......	Nadir	......	3 35 0	254 0	1 25·1	37·0	0·500	29·90	38·9	37·9	......	......	......	......	......
	......	Nadir	......	......	254 0	1 35·9	45·4	0·500	......	......	......	......	......	......	......	......
Nov. 21	......	Nadir	......	1 15 0	254 0	1 23·4	33·8	0·500	29·30	46·0	47·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 35·7	45·1	0·500	......	......	......	......	......	......	......	......
	562	(c)	......	1 45 12	79 10	0 18·2	20·8	0·560	29·30	......	47·0	5, W	4	5	+ 5 8 46·4	+28·1
	776	......	......	2 25 26	128 15	2 31·9	34·9	0·500	29·30	......	47·0	......	......	7	+54 16 0·0	+17·5
	793	......	......	......	123 40	3 21·0	24·3	0·500	29·30	......	46·6	......	......	6	+49 41 49·5	+17·8
	891	......	8·0	2 46 27	124 0	2 37·4	42·1	0·500	29·30	......	46·0	......	......	7	+50 1 6·6	+16·2
	949	α Ceti	......	2 56 9	126 20	4 11·2	15·0	0·500	29·30	......	45·9	......	......	8	+52 22 40·2	+14·8
	1055	......	......	3 17 39	108 20	4 41·7	43·7	0·500	29·30	......	45·9	......	......	7	+34 23 10·2	+14·1
	1101	......	......	3 28 10	98 40	4 50·2	53·6	0·600	29·30	......	45·7	......	......	7	+24 43 21·8	+13·0
	1166	η Tauri	......	3 40 24	106 15	2 12·8	14·4	0·500	29·30	......	45·6	......	......	9	+32 15 40·5	+11·1
	1282	(d)	......	4 4 38	81 10	4 16·1	19·1	0·500	29·30	......	45·0	......	......	8	+ 7 12 43·7	+ 7·2
	1347	......	......	4 16 17	105 50	3 6·7	9·1	0·498	29·30	......	45·0	......	......	7	+31 51 34·8	+ 6·4
	......	Nadir	......	4 23 0	254 0	1 24·0	34·0	0·500	29·30	45·0	45·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 34·9	44·7	0·500	......	......	......	......	......	......	......	......

(a) Sky getting overcast. (b) Stars getting unsteady. c) Time taken from old Transit Clock, as Controlled Clock has stopped. (d) Good definition.

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1864.				h m s	° ′	′ ″	″	revols.	inches		°				° ′ ″	″
Nov. 23	......	Nadir ǁǀ	......	1 53 0	254 0	1 24·7	35·0	0·500	29·25	43·7	41·0	....	......	......	....	......
	......	Nadir ǀǁ	......	....	254 0	1 33·6	44·0	0·500	......	......	......	....	......	......	....	......
	728	....	......	2 16 58	119 40	4 39·7	41·5	0·510	29·25	......	30·2	....	......	6	+45 43 8·4	−19·6
Nov. 28	......	Nadir ǁǀ	......	2 51 0	254 0	1 23·9	34·0	0·500	29·40	43·8	41·0	....	......	......	....	......
	......	Nadir ǀǁ	......	....	254 0	1 36·3	46·3	0·500	......	......	......	....	......	......	....	......
	980	....	......	3 2 36	103 35	0 43·8	44·6	0·500	29·40	......	41·0	7, W.	0	6	+29 34 10·0	+16·5
	1055	....	......	....	108 20	4 36·8	42·0	0·500	29·40	......	41·0	....	......	5	+34 23 7·2	+14·2
	1101	....	......	3 27 24	98 40	4 54·6	58·2	0·500	29·40	......	40·8	....	......	7	+24 43 22·8	+13·6
	1166	η Tauri	......	3 39 37	106 15	2 17·4	18·4	0·448	29·40	......	40·9	....	......	8	+32 15 42·6	+11·4
	1282	....	......	4 3 53	81 10	4 7·6	12·0	0·784	29·40	......	40·9	....	......	6	+ 7 12 43·2	+ 6·4
	1361	....	......	4 17 15	111 10	4 31·8	33·4	0·500	29·40	......	40·9	....	......	7	+37 12 59·4	+ 6·3
	1459	....	......	4 37 14	74 35	2 34·2	36·6	0·593	29·40	......	40·0	....	......	8	+ 0 36 2·5	+ 2·6
	1501	....	......	4 45 52	74 20	2 49·8	52·1	0·611	29·40	......	40·0	....	......	7	+ 0 21 18·7	+ 1·0
	......	Nadir ǁǀ	......	5 0 0	254 0	1 25·8	36·7	0·500	29·40	40·3	40·0	....	......	......	....	......
	......	Nadir ǀǁ	......	....	254 0	1 37·2	47·1	0·500	......	......	......	....	......	......	....	......
Dec. 1	......	Nadir ǁǀ	......	1 35 0	254 0	1 21·9	34·8	0·500	29·78	43·8	41·0	....	......	......	....	......
	......	Nadir ǀǁ	......	....	254 0	1 36·0	46·2	0·500	......	......	......	....	......	......	....	......
	721	....	5·0	2 13 14	74 45	0 14·0	17·4	0·500	29·78	......	42·0	4, W.	0	6	+ 0 43 40·0	+26·5
	764	....	......	2 22 38	121 0	0 12·2	16·6	0·406	29·78	......	42·0	....	......	7	+46 56 37·7	+15·4
	793	....	......	2 28 55	123 40	3 18·0	21·4	0·578	29·78	......	42·0	....	......	6	+49 41 48·4	+17·5
	1055	....	......	3 17 0	108 20	4 38·7	42·9	0·637	29·80	......	43·0	....	......	7	+34 23 11·8	+14·3
	1166	η Tauri	......	3 39 43	106 15	2 13·4	14·4	0·500	29·80	......	42·9	....	......	9	+32 15 40·4	+11·5
	......	Nadir ǁǀ	......	4 12 0	254 0	1 26·0	35·0	0·500	29·80	42·7	42·9	....	......	......	....	......
	......	Nadir ǀǁ	......	....	254 0	1 35·8	44·7	0·500	......	......	......	....	......	......	....	......
Dec. 5	......	Nadir ǁǀ	......	2 41 0	254 0	1 24·7	34·3	0·500	29·44	49·3	48·2	....	......	......	....	......
	......	Nadir ǀǁ	......	....	254 0	1 34·6	44·8	0·500	......	......	......	....	......	......	....	......
	1055	....	......	3 17 25	108 20	4 40·0	42·0	0·500	29·44	......	48·2	12, W.	3	6	+34 23 8·5	+14·4
	1166	η Tauri	......	3 40 8	106 15	2 17·3	18·4	0·320	29·44	......	48·2	....	......	7	+32 15 39·6	+11·6
	1282	....	6·0	4 4 24	81 10	4 10·1	13·8	0·550	29·44	......	48·0	....	......	7	+ 7 12 39·5	+ [illegible]
	1318	....	......	4 11 45	73 45	3 17·7	20·7	0·469	29·44	......	47·4	....	......	8	− 0 13 16·3	+ 5·6
	1361	....	......	4 17 46	111 10	4 29·9	32·5	0·500	29·44	......	47·1	....	......	8	+37 12 58·8	+ 6·3
	1434	....	......	4 31 17	117 40	3 50·3	53·9	0·500	29·44	......	47·0	....	......	7	+43 42 19·4	+ 4·2
	1491	....	......	4 43 55	121 15	3 2·4	6·2	0·500	29·44	......	47·0	....	......	6	+47 16 31·3	+ 2·6
	......	Nadir ǁǀ	......	5 0 0	254 0	1 25·0	34·9	0·500	29·44	47·[illegible]	47·0	....	......	......	....	......
	......	Nadir ǀǁ	......	....	254 0	1 35·2	45·8	0·500	......	......	......	....	......	......	....	......
Dec. 7	......	Nadir ǁǀ	......	3 13 0	254 0	1 24·7	34·3	0·500	29·30	47·8	44·7	....	......	......	....	......
	......	Nadir ǀǁ	......	....	254 0	1 34·9	44·8	0·500	......	......	......	....	......	......	....	......
	1055	....	......	3 17 24	108 20	4 40·9	44·1	0·500	29·30	......	44·7	....	......	6	+34 23 10·2	+14·4
	1101	....	......	3 27 54	98 40	4 49·8	53·3	0·500	29·30	......	44·7	....	......	6	+24 43 19·0	+14·3
	1166	η Tauri	......	3 40 8	106 15	2 12·7	15·0	0·500	29·30	......	44·6	....	......	7	+32 15 40·8	+11·6
	1282	....	......	4 4 23	81 10	4 9·9	14·4	0·551	29·30	......	44·0	....	......	8	+ 7 12 39·9	+10·0
	1361	....	......	4 16 24	113 35	4 31·1	34·2	0·477	29·30	......	43·9	....	......	5	+39 37 59·8	+ 6·3
	1434	....	......	4 31 17	117 40	3 50·5	55·1	0·496	29·30	......	43·9	....	......	7	+43 42 20·3	+ 4·1
	1501	....	......	4 46 22	74 20	2 47·7	51·5	0·590	29·30	......	43·9	....	......	6	+ 0 21 17·5	+ 2·3
	......	Nadir ǁǀ	......	5 20 0	254 0	1 24·0	35·0	0·500	29·30	46·6	43·9	....	......	......	....	......
	......	Nadir ǀǁ	......	....	254 0	1 34·8	45·8	0·500	......	......	......	....	......	......	....	......

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1864.
1864.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Dec. 8	……	Nadir ‖	……	2 50 0	254 0	1 24·0	34·0	0·500	29·29	45·6	40·0	……	……	……	……	……
	……	Nadir ‖	……	……	254 0	1 34·9	44·4	0·500	……	……	……	……	……	……	……	……
	962	ι Persei	……	3 0 1	80 50	3 2·0	5·2	0·500	29·29	……	40·0	1, S.	0	7	+ 6 51 29·7	+ 20·5
	1055	……	……	3 17 24	108 20	4 41·1	42·8	0·500	29·29	……	39·9	……	……	6	+ 34 23 9·8	+ 14·4
	1101	……	……	3 27 55	98 40	4 50·8	53·5	0·490	29·29	……	39·9	……	……	6	+ 24 43 19·4	+ 14·6
	1166	η Tauri	……	3 40 8	106 15	2 11·8	13·4	0·590	29·29	……	40·0	……	……	7	+ 32 15 42·2	+ 11·6
	1434	……	……	4 31 17	117 40	3 44·8	47·6	0·693	29·29	……	39·6	……	……	6	+ 43 42 19·1	+ 4·1
	1459	……	……	4 37 44	74 35	2 26·6	29·4	0·760	29·29	……	39·5	……	……	6	+ 0 36 0·7	+ 4·6
	……	Nadir ‖	……	4 54 0	254 0	1 24·0	35·0	0·500	29·29	43·1	39·3	……	……	……	……	……
	……	Nadir ‖	……	……	254 0	1 35·3	45·7	0·500	……	……	……	……	……	……	……	……
Dec. 21	……	Nadir ‖	……	3 46 0	254 0	1 25·7	34·0	0·500	30·22	39·0	36·2	……	……	……	……	……
	……	Nadir ‖	……	……	254 0	1 36·7	46·5	0·500	……	……	……	……	……	……	……	……
	1282	(a) ……	……	4 4 22	81 10	4 12·1	14·6	0·406	30·22	……	36·1	3, N.	4	6	+ 7 12 36·9	+ 12·2
	1361	……	……	4 17 44	111 10	4 31·6	33·4	0·480	30·22	……	36·0	……	……	6	+ 37 12 59·5	+ 6·1
	1434	……	……	4 31 16	117 40	3 40·7	52·2	0·495	30·22	……	36·0	……	……	7	+ 43 42 18·2	+ 3·4
	1459	……	……	4 37 43	74 35	2 27·0	28·6	0·650	30·22	……	36·1	……	……	6	+ 0 35 57·1	+ 7·2
	……	Nadir ‖	……	4 44 0	254 0	1 26·0	33·9	0·500	30·22	36·0	36·0	……	……	……	……	……
	……	Nadir ‖	……	……	254 0	1 36·9	46·0	0·500	……	……	……	……	……	……	……	……
Dec. 29	……	Nadir ‖	……	4 4 0	254 0	1 24·4	33·3	0·500	29·49	43·1	44·4	……	……	……	……	……
	……	Nadir ‖	……	……	254 0	1 34·6	13·2	0·500	……	……	……	……	……	……	……	……
	1361	……	6·0	4 17 41	111 10	4 30·8	32·7	0·500	29·49	……	44·4	25, S.W.	3	5	+ 37 13 0·4	+ 5·9
	1434	……	……	4 31 12	117 40	3 51·5	53·3	0·500	29·49	……	44·4	……	……	6	+ 43 42 20·7	+ 2·9
Dec. 30	……	Nadir ‖	……	4 6 0	254 0	1 25·0	34·0	0·500	29·58	40·8	36·4	……	……	……	……	……
	……	Nadir ‖	……	……	254 0	1 35·8	44·8	0·500	……	……	……	……	……	……	……	……
	1434	……	……	4 31 13	117 40	3 49·8	52·0	0·500	29·58	……	36·0	……	……	6	+ 43 42 19·4	+ 2·9
	1491	……	……	4 43 52	121 15	3 1·2	5·2	0·500	29·58	……	36·0	0	0	7	+ 47 16 31·4	+ 0·6
	1930	……	……	5 55 41	112 15	3 30·7	33·3	0·500	29·58	……	35·0	……	……	6	+ 38 17 0·5	− 7·6
	2022	……	……	6 10 16	119 55	3 45·0	47·1	0·500	29·58	……	35·0	……	……	7	+ 45 57 14·4	− 9·9
	2046	……	……	6 15 39	73 35	2 59·3	61·7	0·411	29·58	……	34·9	……	……	8	− 0 23 35·5	− 8·6
	……	Nadir ‖	……	6 39 0	254 0	1 24·8	33·8	0·500	29·58	37·1	34·8	……	……	……	……	……
	……	Nadir ‖	……	……	254 0	1 36·3	35·0	0·500	……	……	……	……	……	……	……	……

(a) Frequent showers of sleet.

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ROYAL OBSERVATORY, EDINBURGH.

Individual Observations of Mean North Polar Distances of Stars observed at the Royal Observatory, Edinburgh, in the Year 1864, reduced to January 1, 1864.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
B.A.C. 26, γ Pegasi.				
Sept. 21	0·72	(2·0) (a)	h. m. 0 6	° ′ ″ 73 34 23·3
B.A.C. 83.				
Sept. 21	0·72	(6·0)	0 18	37 42 28·3
Oct. 14	0·79			26·8
20	0·80			26·5
B.A.C. 120.				
Nov. 8	0·85	(6·0)	0 24	57 10 11·1
B.A.C. 133.				
Oct. 20	0·80	8·0	0 26	70 19 3·3
B.A.C. 149.				
Sept. 21	0·72	(6·0)	0 29	77 32 13·5
B.A.C. 177.				
Oct. 17	0·79	7·0	0 34	81 23 19·7
B.A.C. 218, η Cassiopeæ.				
Oct. 17	0·79	(4·0)	0 41	32 54 24·3
20	0·80			25·1
B.A.C. 259.				
Oct. 17	0·79	(4·0)	0 49	52 14 21·7
Nov. 8	0·85			20·5
B.A.C. 299.				
Oct. 20	0·80	(6·0)	h. m. 0 57	° ′ ″ 61 4 6·9
Nov. 8	0·85			4·2
B.A.C. 314, μ Cassiopeæ.				
Oct. 17	0·79	(5·5)	0 59	35 44 55·1
Nov. 9	0·86			55·0
B.A.C. 376.				
Nov. 8	0·85	7·0	1 8	17 50 22·6
B.A.C. 455.				
Oct. 24	0·81	8·0	1 25	73 44 51·4
Nov. 8	0·85			49·8
9	0·86			51·0
B.A.C. 482.				
Oct. 20	0·80	7·5	1 29	32 43 3·9
B.A.C. 524.				
Nov. 9	0·86	8·5	1 35	74 54 34·3
B.A.C. 538.				
Oct. 14	0·79	(6·5)	1 39	73 16 10·6
24	0·81			10·4
B.A.C. 562.				
Oct. 17	0·79	(6·5)	1 44	39 11 57·3
Nov. 21	0·89			56·5
B.A.C. 645.				
Oct. 20	0·80		h. m. 1 59	° ′ ″ 64 49 13·2
Nov. 4	0·84	6·0		11·0
B.A.C. 694.				
Oct. 24	0·81	(7·5)	2 8	26 12 26·9
Nov. 8	0·85			26·9
9	0·86			27·0
B.A.C. 721.				
Nov. 4	0·84		2 13	34 46 45·3
Dec. 1	0·92	5·0		44·0
B.A.C. 728.				
Nov. 23	0·90	(6·5)	2 15	79 47 4·3
B.A.C. 764.				
Nov. 8	0·85	(7·0)	2 22	81 2 35·9
Dec. 1	0·92			35·9
B.A.C. 776.				
Oct. 24	0·81	(6·0)	2 24	88 20 13·5
Nov. 21	0·89			13·7
B.A.C. 793.				
Nov. 21	0·89	(6·5)	2 28	83 45 51·6
Dec. 1	0·92			51·6
B.A.C. 834.				
Nov. 8	0·85	(6·5)	2 36	64 56 34·6

(a) Magnitudes in parenthesis are the tabular ones of the British Association Catalogue.

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
B.A.C. 891.				
			h. m.	° ′ ″
Nov. 9	0·86		2 45	64 5 6·9
21	0·89	8·0		7·9
B.A.C. 949, α Ceti.				
Nov. 21	0·89	(2·5)	2 55	86 26 46·2
B.A.C. 962, ι Persei.				
Nov. 2	0·84	(4·0)	2 59	40 54 35·6
6	0·85			33·3
Dec. 8	0·94			34·0
B.A.C. 980.				
Nov. 9	0·86	(6·5)	3 2	63 37 37·0
28	0·91			36·3
B.A.C. 1055.				
Nov. 6	0·85	(7·5)	3 16	68 26 39·2
9	0·86			40·4
21	0·89			40·4
28	0·91			38·0
Dec. 1	0·92			43·1
5	0·93			39·0
7	0·93			40·8
8	0·94			40·8
B.A.C. 1101.				
Nov. 9	0·86	(6·5)	3 27	58 46 38·5
21	0·89			38·0
28	0·91			40·0
Dec. 7	0·93			36·6
8	0·94			37·6
B.A.C. 1166, η Tauri.				
Nov. 21	0·89	(3·0)	3 39	66 19 4·6
28	0·91			7·5
Dec. 1	0·92			5·8
5	0·93			4·2
7	0·93			5·5
8	0·94			7·3
B.A.C. 1282.				
			h. m.	° ′ ″
Nov. 21	0·89		4 3	41 15 35·0
28	0·91			35·8
Dec. 5	0·93	6·0		33·2
7	0·93			34·0
21	0·97			33·5
B.A.C. 1318.				
Dec. 5	0·93	(6·0)	4 11	33 49 28·9
B.A.C. 1347.				
Nov. 21	0·89	(8·0)	4 15	65 54 53·8
B.A.C. 1351.				
Dec. 7	0·93	(6·5)	4 16	73 41 30·6
B.A.C. 1361.				
Nov. 28	0·91		4 17	71 16 26·7
Dec. 5	0·93			25·6
21	0·97	6·0		28·3
29	0·99			27·1
B.A.C. 1434.				
Dec. 5	0·93	(5·0)	4 31	77 45 55·4
7	0·93			56·2
8	0·94			55·5
21	0·97			56·1
29	0·99			55·7
30	1·00			55·6
B.A.C. 1459.				
Nov. 28	0·91	(6·5)	4 37	34 38 42·5
Dec. 8	0·94			42·7
21	0·97			41·7
B.A.C. 1491.				
Jan. 5	0·01	(5·0)	4 43	81 20 11·2
Dec. 5	0·93			13·0
30	1·00			12·8
B.A.C. 1501.				
			h. m.	° ′ ″
Jan. 4	0·01	(6·0)	4 46	34 23 57·7
Nov. 28	0·91			56·9
Dec. 7	0·93			57·5
B.A.C. 1623, β Orionis.				
Jan. 14	0·04	(1·0)	5 8	98 21 40·2
B.A.C. 1626.				
Jan. 4	0·01		5 9	49 41 8·1
12	0·03	7·5		7·2
B.A.C. 1656.				
Jan. 5	0·01	(6·0)	5 14	81 42 33·1
12	0·03			33·2
14	0·04			34·2
B.A.C. 1683.				
Jan. 4	0·01	(6·0)	5 18	55 43 54·7
11	0·03			56·2
B.A.C. 1696.				
Jan. 12	0·03	8·0	5 19	87 11 7·3
B.A.C. 1703.				
Jan. 5	0·01	(7·0)	5 20	73 40 36·6
14	0·04			34·5
B.A.C. 1730, δ Orionis.				
Jan. 12	0·03	(2·0)	5 25	90 24 10·0
B.A.C. 1751.				
Jan. 14	0·04	(5·5)	5 29	24 22 56·5
B.A.C. 1765, ι Orionis.				
Jan. 5	0·01	2·0	5 29	91 17 31·0

B.A.C. 1772.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Jan. 11	0·03	6·0	h. m. 5 31	° ′ ″ 60 52 3·5
12	0·03			1·0

B.A.C. 1813.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Jan. 12	0·03	6·0	5 38	21 34 27·8
14	0·04			27·3

B.A.C. 1826.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Jan. 4	0·01	(6·0)	5 39	80 31 50·4
5	0·01			50·3

B.A.C. 1883, α Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Jan. 4	0·01		5 48	82 37 18·8
5	0·01			17·6
11	0·03			16·5
12	0·03	2·0		17·5

B.A.C. 1930.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Dec. 30	0·99	(6·5)	5 55	72 20 16·5

B.A.C. 1932.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Jan. 5	0·01	(7·5)	5 55	51 25 30·4
12	0·03			30·1

B.A.C. 2022.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Jan. 4	0·01	6·0	6 9	80 0 41·8
5	0·01	6·0		41·9
12	0·03			42·4
27	0·07	6·0		38·9
Feb. 2	0·09			41·6
Dec. 30	1·00			42·5

B.A.C. 2046.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Jan. 12	0·03	7·0	6 15	33 38 51·4
Feb. 2	0·09			51·9
Dec. 30	1·00			52·3

B.A.C. 2083.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Jan. 12	0·03	(6·0)	h. m. 6 21	° ′ ″ 16 12 24·1

B.A.C. 2101.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Jan. 4	0·01		6 22	67 22 5·3
5	0·01	8·5		5·6
27	0·07			4·2
Feb. 2	0·09			4·5

B.A.C. 2184.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Jan. 4	0·01	(7·0)	6 33	73 28 45·4
5	0·01			45·2
12	0·03			45·2
27	0·07			45·1

B.A.C. 2238.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Jan. 12	0·03	(6·0)	6 44	66 14 27·8
27	0·07			27·8
Feb. 3	0·09			27·4
4	0·09			25·2

B.A.C. 2292.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Jan. 4	0·01	(6·0)	6 53	79 11 12·0
12	0·03			13·2
27	0·07			13·6
Feb. 4	0·09			12·0
5	0·10			10·6

B.A.C. 2306.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Jan. 5	0·01		6 56	78 51 7·5
18	0·05			7·2
Feb. 3	0·09	6·0		8·5

B.A.C. 2334.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Jan. 27	0·07	(6·0)	7 1	39 59 30·4
Feb. 5	0·10			29·6

B.A.C. 2363.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Jan. 4	0·01	(7·5)	7 6	65 3 35·1
5	0·01			35·7
12	0·03			36·6

B.A.C. 2379.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Feb. 3	0·09	(5·0)	h. m. 7 8	° ′ ″ 40 17 49·7

B.A.C. 2410, δ Geminorum.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Jan. 5	0·01	(3·0)	7 12	67 46 17·2
12	0·03			14·0
18	0·05			13·9
27	0·07			13·9
Feb. 5	0·10			12·0

B.A.C. 2463.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Jan. 12	0·03	(7·0)	7 20	62 10 31·4
19	0·05			31·6
Feb. 3	0·09			30·4
4	0·09			28·6
5	0·10			30·0
15	0·12			31·3
19	0·13			31·4

B.A.C. 2488.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Jan. 12	0·03	(6·0)	7 26	43 31 25·5
19	0·05			26·5
Feb. 2	0·09			26·2
5	0·10			25·1
15	0·12			25·9
19	0·13			26·1

B.A.C. 2522, α Canis Minoris.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Jan. 12	0·03	(1·0)	7 32	84 25 46·2
18	0·05			48·3
27	0·07			46·0
Feb. 3	0·09			48·9
4	0·09			44·0
12	0·12			48·0
15	0·12			44·1

B.A.C. 2586.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Jan. 12	0·03		7 41	61 27 49·7
Feb. 2	0·09			51·0
3	0·09	7·0		49·1
4	0·09			47·8
5	0·10			48·8

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
B.A.C. 2586.				
Feb. 12	0·12		h. m. 7 41	° ′ ″ 61 27 49·4
15	0·12			50·5
19	0·13			49·1
24	0·15			49·1
B.A.C. 2683.				
Jan. 18	0·05		7 57	70 46 32·5
Feb. 2	0·09			32·8
3	0·09			32·8
4	0·09			33·0
8	0·10			32·9
12	0·12			33·4
15	0·13			34·7
24	0·15	9·0		34·4
B.A.C. 2737.				
Feb. 2	0·09	(7·0)	8 3	74 58 15·6
3	0·09			15·8
5	0·10			14·5
8	0·10			16·3
B.A.C. 2748.				
Feb. 4	0·09	(7·0)	8 5	75 35 35·0
B.A.C. 2867.				
Feb. 2	0·09	(6·5)	8 25	79 28 32·9
3	0·09			31·5
4	0·09			30·5
5	0·10			30·5
8	0·10			30·3
15	0·12			32·2
Mar. 11	0·19			31·6
B.A.C. 2882.				
Feb. 24	0·15	(7·0)	8 28	20 35 22·1
B.A.C. 2971, ε Hydræ.				
Feb. 3	0·09	(4·0)	8 39	83 5 4·7
4	0·09			4·6
5	0·10			2·7
8	0·10			3·8
12	0·12			3·5

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
B.A.C. 2971, ε Hydræ.				
Feb. 19	0·13	(4·0)	h. m. 8 39	° ′ ″ 83 5 1·9
Mar. 11	0·19			4·0
B.A.C. 3013.				
Feb. 15	0·12	(6·0)	8 45	84 9 2·0
19	0·13			1·8
B.A.C. 3053.				
Feb. 4	0·09	(6·0)	8 50	80 5 25·3
5	0·10			24·8
8	0·10			24·2
12	0·12			25·9
26	0·15			26·5
Mar. 11	0·19			27·2
B.A.C. 3083.				
Feb. 4	0·09	(6·5)	8 56	38 38 13·0
19	0·13			11·8
24	0·15			12·0
Mar. 11	0·19			12·3
B.A.C. 3133.				
Feb. 19	0·13		9 5	85 34 37·9
25	0·15	6·0		39·1
Mar. 11	0·19			38·9
B.A.C. 3157.				
Feb. 5	0·10	(7·0)	9 10	29 38 54·5
24	0·15			55·5
25	0·15			58·0
B.A.C. 3242, θ Ursæ Majoris.				
Feb. 8	0·10	(3·0)	9 24	37 42 17·3
19	0·13			17·0
24	0·15			18·0
25	0·15			19·0
Mar. 9	0·19			17·7
16	0·21			17·9
B.A.C. 3325.				
Mar. 11	0·19	(6·0)	9 37	26 7 21·4

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
B.A.C. 3331, ε Leonis.				
Feb. 24	0·15	(3·0)	h. m. 9 38	° ′ ″ 65 36 5·0
25	0·15			6·7
Mar. 17	0·21			4·9
B.A.C. 3375.				
Feb. 24	0·15	(6·5)	9 45	54 22 40·6
Mar. 11	0·19			40·0
15	0·20			42·2
17	0·21			40·0
B.A.C. 3380.				
Feb. 12	0·12		9 47	83 24 8·3
19	0·13			7·8
25	0·15	9·0		11·1
B.A.C. 3420.				
Feb. 24	0·15	(7·0)	9 54	57 48 49·3
B.A.C. 3427.				
Feb. 25	0·15	(7·0)	9 56	56 41 50·5
Mar. 17	0·21			49·7
B.A.C. 3431.				
Feb. 19	0·13	(7·0)	9 56	56 53 24·2
Mar. 15	0·20			25·2
B.A.C. 3438.				
Feb. 15	0·12	(6·5)	9 57	84 20 15·3
B.A.C. 3484.				
Feb. 19	0·13	7·0	10 6	57 54 3·1
25	0·15	8·0		4·6
Mar. 15	0·20			6·4
17	0·21	7·0		5·2
B.A.C. 3529.				
Feb. 16	0·12		10 13	82 53 9·3
19	0·13	8·0		10·2
25	0·15			11·8
Mar. 11	0·19			10·6
17	0·21			11·1

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
B.A.C. 3592.				
Feb. 25	0·15	6·0	h. m. 10 23	° ′ ″ 87 48 34·5
Mar. 11	0·19			33·0
15	0·20			36·3
17	0·21			33·9
30	0·24			34·5
B.A.C. 3662.				
Feb. 25	0·15	(7·5)	10 35	78 33 4·8
Mar. 11	0·19			3·5
15	0·20			4·4
18	0·21			3·2
30	0·24			4·0
B.A.C. 3726.				
Mar. 9	0·19	(6·0)	10 45	88 15 14·5
15	0·20			16·0
17	0·21			13·5
30	0·24			13·8
April 1	0·25			13·2
B.A.C. 3780.				
Mar. 9	0·19	(7·5)	10 57	81 41 8·9
15	0·20			8·7
18	0·21			6·7
28	0·24			9·2
30	0·24			9·3
B.A.C. 3821. (a)				
Mar. 11	0·19	(6·0)	11 3	20 54 27·9
B.A.C. 3834, δ Leonis.				
Mar. 9	0·19	(2·5)	11 7	68 43 56·2
15	0·20			54·7
17	0·21			55·2
18	0·21			54·9
23	0·22			54·6
28	0·24			53·1
B.A.C. 3836. (b)				
Mar. 24	0·23	6·0	11 7	86 59 26·2
April 12	0·28			27·5
B.A.C. 3869.				
Mar. 11	0·19		h. m. 11 15	° ′ ″ 71 48 60·1
15	0·20			61·0
17	0·21			62·2
23	0·22			59·8
24	0·23			61·3
28	0·24			60·1
30	0·24			60·1
April 1	0·25			62·4
12	0·28			61·5
19	0·30			60·8
B.A.C. 3996.				
Mar. 15	0·20	6·0	11 42	84 3 19·3
17	0·21			17·9
23	0·22			17·4
24	0·23			18·1
28	0·24			19·3
30	0·24			18·8
April 1	0·25			19·9
11	0·28			18·8
12	0·28			20·0
13	0·28			19·0
19	0·30			20·6
B.A.C. 4153.				
Mar. 23	0·22	(6·0)	12 13	62 37 16·4
24	0·23			16·6
30	0·24			16·1
31	0·25			16·2
April 12	0·28			15·7
13	0·28			17·1
19	0·30			15·6
B.A.C. 4199.				
Mar. 24	0·23	7·0	12 21	63 20 2·7
30	0·24			6·1
31	0·25			4·9
April 1	0·25			8·4
19	0·30			5·5
B.A.C. 4205.				
Mar. 23	0·22	(6·0)	12 22	63 1 13·8
B.A.C. 4231.				
Mar. 24	0·23	(7·0)	h. m. 12 27	° ′ ″ 64 48 1·3
30	0·24			1·5
B.A.C. 4244. (c)				
Mar. 23	0·22	6·5	12 28	52 49 23·0
B.A.C. 4364.				
Mar. 30	0·24	(6·0)	12 55	67 59 48·8
31	0·25			48·8
April 1	0·25			49·2
11	0·28			49·9
12	0·28			49·5
19	0·30			50·7
20	0·30			49·1
B.A.C. 4421, β Comæ.				
Mar. 31	0·25	(4·5)	13 5	61 25 56·1
April 1	0·25			57·1
11	0·28			56·2
12	0·28			56·4
13	0·28			55·6
19	0·30			56·4
20	0·30			55·4
B.A.C. 4457.				
April 11	0·28	(6·5)	13 13	54 9 23·3
21	0·30			32·5
29	0·33			27·3
B.A.C. 4470.				
April 13	0·28	6·0	13 15	87 11 51·5
B.A.C. 4503.				
April 11	0·28	(7·0)	13 22	85 25 22·9
19	0·30			24·8
B.A.C. 4513.				
April 13	0·28	6·0	13 24	65 3 38·6
29	0·33			37·8

(a) Tab. N. P. D. differs by 4′.

(b) Tab. N. P. D. differs by 1′.

(c) A star of a straggling cluster, called a nebula in B.A.C.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
B.A.C. 4550.				
April 11	0·28	(7·5)	h m 13 31	° ′ ″ 36 37 1·4
19	0·30			0·6
May 3	0·34			0·3
B.A.C. 4555.				
April 13	0·28	(7·5)	13 32	36 42 45·1
B.A.C. 4575.				
April 11	0·28	(6·0)	13 37	66 36 45·8
29	0·33			45·2
B.A.C. 4621.				
May 16	0·37	(6·0)	13 43	70 41 35·9
B.A.C. 4628. (a)				
May 3	0·34	(6·0)	13 45	54 38 9·0
B.A.C. 4652.				
May 16	0·37	6·5	13 50	57 18 9·4
24	0·39	6·0		7·6
25	0·40			8·3
B.A.C. 4678.				
May 3	0·34		13 57	57 40 59·8
16	0·37	8·0		56·7
B.A.C. 4694.				
May 24	0·39	7·0	14 0	58 29 54·8
25	0·40			53·5
31	0·41			54·2
B.A.C. 4723.				
May 3	0·34		14 8	60 15 26·9
16	0·37	7·0		24·8
17	0·38			24·8
24	0·39			26·6
25	0·40			26·4
B.A.C. 4729, α Bootis.				
April 21	0·30	(1·0)	h m 14 9	° ′ ″ 70 6 27·7
29	0·33			30·9
B.A.C. 4756.				
May 16	0·37	(6·0)	14 14	37 20 22·7
25	0·40			21·4
B.A.C. 4797.				
May 3	0·34	(6·0)	14 23	53 11 37·6
16	0·37			36·7
17	0·38			36·1
24	0·39			35·6
25	0·40			36·8
26	0·40			37·5
B.A.C. 4809.				
May 30	0·41	(6·0)	14 26	62 43 11·4
31	0·41			11·5
B.A.C. 4820.				
May 24	0·39	(6·0)	14 28	56 52 3·8
25	0·40			2·6
B.A.C. 4863.				
May 16	0·37	(6·0)	14 37	52 39 45·9
17	0·38			44·1
24	0·39			45·3
25	0·40			43·5
B.A.C. 4876, ε Bootis.				
May 26	0·40	(3·0)	14 39	62 21 5·8
30	0·41			3·2
31	0·41			4·3
B.A.C. 4934.				
May 16	0·37	(6·5)	14 51	48 18 51·3
24	0·39			50·9
26	0·40			51·5
B.A.C. 4942.				
May 17	0·38	(6·0)	h m 14 54	° ′ ″ 49 48 48·8
25	0·40			47·9
B.A.C. 4965.				
May 26	0·40	(5·5)	14 58	44 49 19·8
B.A.C. 4992.				
May 16	0·37	(5·5)	15 2	34 55 9·5
24	0·39			10·6
25	0·40			12·1
B.A.C. 5000.				
May 17	0·38	(6·5)	15 5	56 24 14·9
26	0·40			13·1
B.A.C. 5001.				
May 30	0·41	(6·5)	15 5	60 15 14·1
31	0·41			12·0
B.A.C. 5071. (b)				
May 9	0·35	(6·0)	15 16	37 33 1·2
17	0·38			2·3
24	0·39			2·1
25	0·40			1·5
26	0·40			2·0
B.A.C. 5284, γ Serpentis.				
May 17	0·38	(3·0)	15 50	73 53 29·6
24	0·39			32·5
30	0·41			33·3
31	0·41			33·2
B.A.C. 5415. (c)				
May 24	0·39	(6·0)	16 7	31 42 26·7
26	0·40			25·7
B.A.C. 5414, δ Ophiuchi.				
May 30	0·41	(3·0)	16 7	93 20 28·1
31	0·41			29·4

(a) Tab. N. P. D. differs by 1′. (b) Tab. N. P. D. differs by 2′. (c) Tab. N. P. D. differs by 7′.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
B.A.C. 5452.				
May 26	0·40	(6·0)	h. m. 16 14	° ′ ″ 68 32 12·8
B.A.C. 5527.				
May 30	0·41	(5·5)	16 25	69 13 16·8
B.A.C. 5537.				
May 31	0·41	(6·0)	16 27	79 20 30·0
B.A.C. 5620.				
July 5	0·51	(6·0)	16 39	74 0 4·9
B.A.C. 5686.				
May 31	0·41	(9·0)	16 47	74 21 54·2
B.A.C. 5732.				
July 4	0·51	6·0	16 55	74 50 57·1
B.A.C. 5787.				
July 4	0·51	6·0	17 3	79 46 53·3
B.A.C. 5821, ε Herculis.				
July 4	0·51	(3·5)	17 8	75 27 8·8
B.A.C. 5863, ω Herculis.				
July 4	0·51	4·0	17 15	57 21 19·0
5	0·51			20·7
B.A.C. 5917.				
July 4	0·51	6·0	17 24	29 50 14·9
7	0·51			13·1
13	0·53	6·0		16·9
B.A.C. 6035.				
July 4	0·51	(6·5)	17 44	80 6 25·1
6	0·51			26·7
8	0·52			24·3
13	0·53			27·7
15	0·54			26·4
18	0·54			24·1

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
B.A.C. 6123, 70 Ophiuchi.				
July 4	0·51	(4·5)	h. m. 17 58	° ′ ″ 87 27 57·4
B.A.C. 6137.				
July 6	0·51	(7·5)	18 0	87 31 58·2
B.A.C. 6213. (a)				
July 4	0·51	(6·0)	18 12	82 47 33·3
6	0·51			31·7
8	0·52			34·3
13	0·53			34·4
B.A.C. 6245.				
July 18	0·54	(6·0)	18 17	72 14 23·2
21	0·55			23·3
B.A.C. 6429, β Lyræ.				
July 4	0·51	(3·0)	18 45	56 47 37·8
13	0·53			33·9
18	0·54			34·5
21	0·55			37·4
Aug. 2	0·59			36·7
B.A.C. 6468.				
July 28	0·57	(6·0)	18 50	56 12 12·0
B.A.C. 6480.				
July 4	0·51	(5·5)	18 52	57 16 18·7
15	0·54			18·2
B.A.C. 6527.				
July 21	0·55	7·0	18 59	71 3 31·4
Aug. 8	0·60			30·4
B.A.C. 6528, ζ Aquilæ.				
July 4	0·51	(3·0)	18 59	76 20 10·7
B.A.C. 6542.				
July 18	0·54	(6·5)	19 1	65 57 29·1

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
B.A.C. 6567.				
July 4	0·53	(8·0)	h. m. 19 5	° ′ ″ 58 35 7·8
B.A.C. 6574.				
July 13	0·53	(6.0)	19 7	68 40 18·0
B.A.C. 6602.				
July 15	0·54	(5·5)	19 12	67 13 2·7
Aug. 8	0·60			2·9
B.A.C. 6617.				
July 21	0·55	(7·0)	19 13	78 42 52·2
B.A.C. 6644.				
July 13	0·53	(5·0)	19 19	78 20 37·1
B.A.C. 6652.				
July 21	0·55	(7·0)	19 19	69 59 40·7
B.A.C. 6729.				
July 18	0·54	5·5	19 32	84 54 36·6
28	0·57			36·6
Aug. 9	0·61			36·4
B.A.C. 6762.				
July 15	0·54	(6·0)	19 38	63 11 15·4
21	0·55			16·0
B.A.C. 6852.				
July 18	0·54	(5·5)	19 51	30 39 3·8
23	0·56			5·8
Aug. 2	0·59			3·9
B.A.C. 6855				
July 15	0·54	(7·5)	19 52	73 52 15·7
Aug. 4	0·59			14·4

(a) Tab. N. P. D. differs by 1′.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension. h	m	Mean North Polar Distance, January 1, 1864. °	′	″
B.A.C. 6941.							
July 28	0·57	7·0	20	5	69	18	7·8
Aug. 4	0·59						8·6
10	0·61						6·3
B.A.C. 6966.							
July 26	0·57	(5·0)	20	9	64	49	20·9
B.A.C. 7006.							
Aug. 10	0·61	(7·0)	20	15	53	17	40·7
B.A.C. 7014.							
July 28	0·57	6·0	20	16	85	5	24·7
Aug. 4	0·59						24·2
B.A.C. 7086.							
July 26	0·57	(6·0)	20	26	34	23	16·9
28	0·57						19·2
Aug. 1	0·58						16·6
4	0·59						17·4
9	0·61						16·8
B.A.C. 7150.							
July 28	0·57	(7·0)	20	33	79	13	58·2
Aug. 1	0·58						56·5
10	0·61						56·6
B.A.C. 7220, η Cephei.							
July 28	0·57	(3·5)	20	42	28	41	20·7
Aug. 2	0·59						19·7
4	0·59						21·2
9	0·61						20·1
B.A.C. 7285.							
Aug. 5	0·59	7·0	20	53	83	0	43·4
10	0·61						45·0
B.A.C. 7336, 61 Cygni.							
Aug. 9	0·61	4·0	21	1	51	55	6·1
Sept. 5	0·68						4·9
B.A.C. 7410.							
Aug. 5	0·59	(5·5)	21	15	66	42	55·9
9	0·61						57·1
Sept. 5	0·68						56·5
B.A.C. 7496 (a).							
Sept. 6	0·68	7·0	21	27	42	9	24·3
B.A.C. 7501.							
Sept. 5	0·68	7·0	21	28	44	44	57·5
B.A.C. 7528.							
Aug. 9	0·61	(5·5)	21	33	70	20	48·0
B.A.C. 7561, ε Pegasi.							
Aug. 31	0·67	(2·5)	21	37	80	44	50·0
Sept. 6	0·68						48·9
B.A.C. 7590.							
Sept. 7	0·68	(7·5)	21	40	73	25	59·6
9	0·69						60·3
12	0·70						58·9
B.A.C. 7644.							
Aug. 31	0·67	(7·0)	21	50	18	9	7·0
B.A.C. 7708.							
Sept. 5	0·68	(5·5)	22	1	28	22	50·7
6	0·68						50·6
12	0·70						52·5
B.A.C. 7759.							
Aug. 31	0·67	(6·0)	22	7	29	54	47·8
Sept. 9	0·69						47·7
12	0·70						46·9
B.A.C. 7908, ζ Pegasi.							
Aug. 31	0·67		22	34	79	52	44·7
Sept. 5	0·68						39·8
6	0·68						40·8
9	0·69						43·4
21	0·72	4·0					40·5
B.A.C. 7977.							
Sept. 5	0·68	(7·5)	22	47	88	52	44·4
21	0·72						46·5
B.A.C. 7996.							
Aug. 31	0·67	(6·0)	22	50	86	55	2·5
B.A.C. 8024.							
Sept. 5	0·68	(6·5)	22	56	33	37	29·8
21	0·72						30·7
B.A.C. 8083.							
Sept. 21	0·72	6·0	23	7	33	34	55·6
B.A.C. 8091.							
Sept. 5	0·68	(7·0)	23	8	62	40	10·8
B.A.C. 8135.							
Sept. 21	0·72	6·0	23	14	46	37	37·2
B.A.C. 8138.							
Oct. 14	0·79	7·0	23	15	28	31	54·3
B.A.C. 8139.							
Sept. 6	0·68	(7·5)	23	15	52	9	42·9
B.A.C. 8147.							
Sept. 5	0·68	(6·5)	23	16	70	11	11·3
B.A.C. 8204.							
Oct. 14	0·79	7·0	23	27	18	45	2·7

(a) A star of a group called a nebula in B.A.C.

B.A.C. 8247.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Sept. 21	0·72	(7·5)	h. m. 23 35	° ′ ″ 72 5 10·6

B.A.C. 8315.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Sept. 21	0·72	(7·0)	23 45	82 32 0·0
Oct. 14	0·79			0·1

B.A.C. 8338.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Sept. 21	0·72	(7·0)	h. m. 23 54	° ′ ″ 28 31 17·7
Oct. 20	0·80			16·9

B.A.C. 8350, 85 Pegasi.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Oct. 18	0·80	(6·0)	23 55	63 38 17·3

B.A.C. 8364.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Oct. 14	0·79	(7·0)	h. m. 23 57	° ′ ″ 32 13 32·1

B.A.C. 8372.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1864.
Sept. 21	0·72	(6·5)	23 59	32 19 19·5
Oct. 20	0·80			23·5

EXPLANATIONS OF THE MURAL CIRCLE OBSERVATIONS IN 1864.

The observations with the Mural Circle in 1864 were taken by Mr Peter Williamson, Second Assistant Astronomer, under the supervision of the Astronomer.

The subjects observed were chiefly stars remarkable for proper motion. They are designated as far as possible by the number in the British Association Catalogue in col. 2, and by proper name or description in col. 3, assisted if necessary by notes at the foot of the page, as well as by approximate estimate of the magnitude in col. 4, and time of transit past centre of field (by an uncorrected sidereal journeyman clock, but showing fairly differences from star to star) in col. 5.

In Polar distance the star was always carefully bisected when crossing the centre of the field, either at the precise instant if its motion was steady, or in its mean path through several seconds if unsteady or undulatory, as was too often the case. Such bisection being performed by bringing the stellar image between two parallel lines about 7 seconds of space apart: the lines being illuminated in a dark field.

The same general principles of observation as in former years have been kept up with improved details described in 1860. The completion of every observation therefore in Polar distance still depends largely on the Telescope micrometer, whose numbers are a necessary addition to the readings both of the Pointer on the Limb of the Circle and of the two horizontal Microscopes A, B; all which numerical particulars are given in columns 6, 7, 8, and 9.

In columns 10 and 12, the readings of the Barometer and exterior thermometer are noted for refraction purposes: the interior thermometer being assumed to be practically the same as the exterior, for all star-observations when a thorough draught was kept up through the observing room, as was always the case during star observations. During observations for the Nadir-point, on the contrary, all shutters and windows were closed to prevent disturbance to the mercury, and then a sensible difference between the thermometers usually occurred, and is shown by the figures in the narrow column 11, compared with those in column 12.

Columns 13, 14, and 15 contain various points connected with the meteorologic and other circumstances of the observations, as they appeared to the observer at the time; and column 16 contains the reduction of the angular observations in columns 6 to 9, to the stage of "Apparent Zenith Distance South."

To this end, the readings of the Microscopes have been corrected for the error of their runs, as ascertained over 5′ spaces on the limb of the Circle, with the telescope directed first to the Zenith and then to the Nadir: also for the difference between the mean of two and the mean of six Microscopes as ascertained by examination in 1855 (see p. 76, vol. xii.); also for the Telescope micrometer readings converted into arc on the estimate of one revolution being equal to 27·704″, as ascertained by observations in the Mercury trough with the collimating eye-piece, combined with readings of all the six circumferential Microscopes. The Circle positions are then converted into Apparent Zenith Distances, by the application of a reading for the Zenith point derived from observation of the Nadir, as shown by making the bisecting wire cover its illuminated image in the Mercury trough, an observation made generally both at the beginning and conclusion of every series of star measures. The chief data of these several corrections are contained in the following Tables I., II., and III.

TABLE I.

CORRECTION FOR RUNS OF MICROSCOPES IN 1864.

Date.	Thermometer.		Runs Correction observed.				Adopted Runs Correction.	For Period.
	Interior.	Exterior.	Nadir.	Zenith.	Means of Obs.	Collected Means.		
1864.	°F.	°F.						1864.
Jan. 4	34·5	27·1	+1″·2	+1″·5	+1″·4	+1″·4	+1″·4	Jan. 2 to Jan. 27.
Feb. 29	38·1	29·0	+2·5 +2·1	+0·7 −0·2	+1·6 +1·0	+1·3	+1·3	Feb. 2 to March 31.
April 11	48·0	43·3	+0·8	+1·2	+1·0	+1·0	+1·0	April 1 to April 29.
May 16	58·0	66·0	+1·0 +0·7	−0·1 +0·5	+0·4 +0·6	+0·5	+0·5	May 3 to May 31.
July 4	56·0	52·0	+1·9 +1·0	−0·7 +0·7	+0·6 +0·8	+0·7	+0·7	July 4 to July 28.
Aug. 1	57·0	56·6	+2·1 +0·7 +0·8	+0·3 +0·6 +0·2	+1·2 +0·6 +0·6	+0·8	+0·8	Aug. 1 to Aug. 31.
Sept. 6	55·0	52·0	+0·9 +1·3	−0·2 +0·9	+0·4 +1·1	+0·8	+0·8	Sept. 5 to Sept. 22.
Oct. 6	51·4	51·2	−1·1 +0·2	+1·3 +1·2	+0·1 +0·7	+0·4	+0·4	Oct. 2 to Oct. 24.
Dec. 29	43·8	45·0	+1·2 +1·5	+1·3 +1·3	+1·2 +1·4	+1·3	+0·9 +1·3	Nov. 2 to Nov. 28. Dec. 1 to Dec. 30.

TABLE II.

CORRECTION TO REDUCE THE MEAN OF THE TWO HORIZONTAL, TO THE MEAN OF THE WHOLE SIX, MICROSCOPES FOR THE YEAR 1864.

Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.
° ° 0 & 180	" +1.0	° ° 30 & 210	" +0.2	° ° 60 & 240	" +0.5	° ° 90 & 270	" +2.4	° ° 120 & 300	" +3.1	° ° 150 & 330	" +2.4
1 181	+0.9	31 211	+0.2	61 241	+0.6	91 271	+2.4	121 301	+3.1	151 331	+2.4
2 182	+0.8	32 212	+0.1	62 242	+0.7	92 272	+2.5	122 302	+3.0	152 332	+2.3
3 183	+0.8	33 213	+0.1	63 243	+0.7	93 273	+2.5	123 303	+3.0	153 333	+2.3
4 184	+0.7	34 214	0.0	64 244	+0.8	94 274	+2.6	124 304	+2.9	154 334	+2.2
5 185	+0.6	35 215	0.0	65 245	+0.9	95 275	+2.6	125 305	+2.9	155 335	+2.2
6 186	+0.6	36 216	0.0	66 246	+0.9	96 276	+2.6	126 306	+2.9	156 336	+2.1
7 187	+0.6	37 217	+0.1	67 247	+1.0	97 277	+2.7	127 307	+2.9	157 337	+2.1
8 188	+0.5	38 218	+0.1	68 248	+1.0	98 278	+2.7	128 308	+2.8	158 338	+2.0
9 189	+0.5	39 219	+0.2	69 249	+1.1	99 279	+2.8	129 309	+2.8	159 339	+2.0
10 190	+0.5	40 220	+0.2	70 250	+1.1	100 280	+2.8	130 310	+2.8	160 340	+1.9
11 191	+0.4	41 221	+0.2	71 251	+1.2	101 281	+2.9	131 311	+2.8	161 341	+1.9
12 192	+0.4	42 222	+0.2	72 252	+1.2	102 282	+2.9	132 312	+2.8	162 342	+1.9
13 193	+0.3	43 223	+0.1	73 253	+1.3	103 283	+3.0	133 313	+2.7	163 343	+1.8
14 194	+0.3	44 224	+0.1	74 254	+1.3	104 284	+3.0	134 314	+2.7	164 344	+1.8
15 195	+0.2	45 225	+0.1	75 255	+1.4	105 285	+3.1	135 315	+2.7	165 345	+1.8
16 196	+0.2	46 226	+0.2	76 256	+1.5	106 286	+3.1	136 316	+2.7	166 346	+1.7
17 197	+0.2	47 227	+0.2	77 257	+1.6	107 287	+3.2	137 317	+2.7	167 347	+1.6
18 198	+0.2	48 228	+0.3	78 258	+1.7	108 288	+3.2	138 318	+2.8	168 348	+1.6
19 199	+0.2	49 229	+0.3	79 259	+1.8	109 289	+3.3	139 319	+2.8	169 349	+1.5
20 200	+0.2	50 230	+0.4	80 260	+1.9	110 290	+3.3	140 320	+2.8	170 350	+1.4
21 201	+0.2	51 231	+0.4	81 261	+1.9	111 291	+3.3	141 321	+2.8	171 351	+1.4
22 202	+0.2	52 232	+0.3	82 262	+2.0	112 292	+3.3	142 322	+2.8	172 352	+1.3
23 203	+0.2	53 233	+0.3	83 263	+2.0	113 293	+3.4	143 323	+2.7	173 353	+1.3
24 204	+0.2	54 234	+0.2	84 264	+2.1	114 294	+3.4	144 324	+2.7	174 354	+1.2
25 205	+0.2	55 235	+0.2	85 265	+2.1	115 295	+3.4	145 325	+2.7	175 355	+1.2
26 206	+0.2	56 236	+0.3	86 266	+2.2	116 296	+3.3	146 326	+2.6	176 356	+1.2
27 207	+0.2	57 237	+0.3	87 267	+2.2	117 297	+3.3	147 327	+2.6	177 357	+1.1
28 208	+0.2	58 238	+0.4	88 268	+2.3	118 298	+3.2	148 328	+2.5	178 358	+1.1
29 209	+0.2	59 239	+0.4	89 269	+2.3	119 299	+3.2	149 329	+2.5	179 359	+1.0

TABLE III.

NADIR AND ZENITH POINTS ON MURAL CIRCLE IN 1864.

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1864.				
Jan. 4	34.8°	54° 3′ 14.6″ 15.2	234° 3′ 14.9″	15.0″
5	34.8	14.8 14.8	14.8	15.0
7	34.0	15.2	15.2	15.0
11	41.4	14.4 12.6	13.5	14.0
12	40.4	15.0 14.4	14.7	14.7
14	38.8	14.5 14.4	14.4	14.7
18	40.0	15.2 15.2	15.2	14.9
19	42.6	15.2 14.2	14.7	14.7
27	44.8	14.7	14.7	14.6
Feb. 2	40.7	14.8 13.2	14.0	14.4
3	36.9	14.4 16.0	15.2	15.2
4	35.7	15.9 15.8	15.8	15.7
5	34.9	16.0 15.7	15.9	15.8
8	35.4	15.8 15.4	15.6	15.6
10	35.0	15.1	15.1	15.2
12	38.5	14.6 15.0	14.8	14.8
1864.				
Feb. 15	43.8°	54° 3′ 15.6″ 13.8	234° 3′ 14.7″	14.8″
16	39.5	14.6	14.6	14.6
19	34.8	15.6 15.6	15.6	15.5
24	33.2	15.6 15.5	15.6	15.3
25	35.4	14.1 14.3	14.2	14.5
26	35.7	13.2	13.2	13.6
Mar. 7	35.6	15.2	15.2	15.0
9	35.4	15.8 14.7	15.2	15.2
11	37.4	15.5 15.4	15.5	15.3
15	39.6	14.0 13.6	13.8	14.3
16	41.1	15.5	15.5	15.0
17	42.0	14.6 13.8	14.2	14.5
18	41.6	13.0 15.2	14.1	14.1
23	42.0	14.8 13.2	14.0	14.0
24	42.5	13.6 14.8	14.2	14.2
28	39.0	14.8 14.9	14.8	14.7

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1864.				
Mar. 30	41°·4	54° 3′ 14″·3 14·6	234° 3′ 14″·4	14″·5
31	39·8	13·8 14·4	14·1	14·3
April 1	38·2	15·1 15·2	15·2	14·8
11	45·5	13·8 14·6	14·2	14·0
12	46·3	13·8 13·6	13·7	14·0
13	48·8	13·0 14·8	13·9	13·9
19	50·2	14·4 12·8	13·6	13·7
20	52·5	13·6 12·9	13·2	13·4
21	52·0	12·8 12·6	12·7	13·2
29	50·1	14·4 14·2	14·3	13·8
May 3	52·0	12·6 12·6	12·6	13·0
9	50·0	14·2	14·2	13·6
16	60·9	13·1 12·9	13·0	13·4
17	61·8	13·4 13·3	13·4	13·5
21	53·2	14·2 14·2	14·2	14·0
25	53·6	13·5 12·7	13·1	13·3
26	51·2	12·6 14·4	13·5	13·5
30	43·6	14·2 13·0	13·6	13·6
31	46·8	13·4 14·2	13·8	13·8
July 4	53·4	13·4 14·2	13·8	13·8

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1864				
July 5	54°·9	54° 3′ 12″·8 14·6	234° 3′ 13″·7	13″·7
6	58·0	13·5 13·7	13·6	13·7
7	57·8	13·8	13·8	13·7
8	55·6	13·4 13·6	13·5	13·7
13	57·4	13·6 14·0	13·8	13·8
15	58·7	14·2 14·3	14·2	14·0
18	63·0	13·0 13·0	13·0	13·4
21	59·7	13·3 13·0	13·2	13·3
23	60·0	13·4 13·6	13·5	13·3
26	55·6	12·9 13·0	13·0	13·3
28	58·3	13·1 15·2	14·2	14·0
Aug. 1	56·7	13·5	13·5	13·7
2	54·5	13·8 13·5	13·6	13·7
4	59·2	13·8	13·8	13·7
5	57·5	13·8	13·8	13·8
8	54·4	13·4 14·5	14·0	14·0
9	50·2	14·8 15·7	15·2	14·7
10	53·5	13·9 13·5	13·7	14·0
31	55·8	13·0 13·0	13·0	13·5
Sept. 5	53·2	14·0 14·5	14·2	14·3
6	51·8	15·8 15·4	15·6	15·1

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.	Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1864. Sept. 7	57·2°	54° 3′ 14″·0	234° 3′ 14″·0	14″·4	1864. Nov. 8	42·0°	254° 1′ 51″·6 51·6	74° 1′ 51″·6	51·1
9	53·6	14·2 14·2	14·2	14·4	9	41·0	51·4 51·4	51·4	51·1
12	52·6	14·3 14·9	14·6	14·4	21	45·5	50·1 50·0	50·0	50·5
21	55·2	14·6 14·6	14·6	14·5	23	43·7	49·9	49·9	50·4
22	55·5	14·6	14·6	14·5	28	42·0	50·8 52·3	51·6	51·2
Oct. 2	51·3	254 1 49·3	74 1 49·3	49·8	Dec. 1	43·2	51·2 51·0	51·1	51·1
14	49·2	50·6 50·4	50·5	50·3	5	48·4	50·3 51·0	50·6	50·8
17	48·0	50·3 50·6	50·4	50·4	7	47·2	50·4 50·6	50·5	50·6
18	48·0	50·2	50·2	50·4	8	44·4	50·0 50·7	50·4	50·5
20	43·2	50·8 52·0	51·4	51·0	21	37·5	51·2 51·4	51·3	50·8
24	45·4	51·0 50·4	50·7	50·7	29	49·6	43·1	49·6	49·8
Nov. 2	45·6	50·0 50·2	50·1	50·4	30	39·0	50·6 48·2	49·4	49·6
4	49·6	51·1 49·6	50·4	50·6					

For the remaining reductions, the refractions have been computed by Bessel's Table, as represented in the Rev. R. Sheepshank's compendious forms; the Latitude of the Observatory has been assumed as in former years $=55° 57' 23''·2$; and the *Apparent* N. Polar Distances on the day of observation have been converted into *Mean* North Polar Distances for the beginning of the year of observation, by applying the corrections for precession, nutation, aberration, and proper motions, taken from the elements and subsidiary tables given in the Nautical Almanac and the British Association Catalogue; and whose sum is represented in the last column of each observation-page. The individual results for magnitude and place of each star are collected on pp. 394 to 402.

ROYAL OBSERVATORY, EDINBURGH.

CATALOGUE

OF

THE MEAN PLACES OF ALL STARS

OBSERVED WITH

EITHER THE TRANSIT INSTRUMENT OR MURAL CIRCLE,

DURING

THE YEAR, AND

REDUCED TO JANUARY 1,

1864.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
4	α Andromedæ	(1·0) (a)	......	0 1 21·78	0·56	61 40 ...	......	10	0
18	......	7·0	......	0 3 27·28	0·79	31 3 ...	......	1	0
26	γ Pegasi	(2·0)	......	0 6 14·09	0·54	75 34 23·3	0·72	9	1
57	......	7·0	......	0 10 48·55	0·79	89 4 ...	......	1	0
68	......	(7·0)	......	0 14 11·22	0·79	22 56 ...	......	1	0
83	......	6·0	......	0 17 46·15	0·79	37 42 27·2	0·77	1	3
105	......	6·0	......	0 22 15·93	0·79	13 44 ...	......	1	0
120	......	......	(6·0)	0 24 ...	......	57 10 11·1	0·85	0	1
133	......	......	8·0	0 26 ...	......	70 19 3·3	0·80	0	1
149	......	7·0	......	0 28 52·24	0·79	77 32 13·5	0·72	1	1
177	......	......	7·0	0 34 ...	......	81 23 19·7	0·79	0	1
218	η Cassiopeæ	......	(4·0)	0 41 ...	......	32 54 24·7	0·80	0	2
259	......	......	(4·0)	0 49 ...	......	52 14 21·1	0·82	0	2
288	ε Piscium	(4·0)	......	0 55 53·15	0·50	82 51 ...	......	5	0
299	......	......	(6·0)	0 57 ...	......	61 4 5·6	0·82	0	2
314	μ Cassiopeæ	......	(5·5)	0 59 ...	......	35 44 55·0	0·82	0	2
376	......	......	7·0	1 8 ...	......	17 50 22·6	0·85	0	1
420	θ Ceti	(3·0)	......	1 17 13·45	0·28	98 53 ...	......	4	0
453	η Piscium	(4·0)	......	1 24 12·60	0·70	75 21 ...	......	15	0
455	......	......	8·0	1 25 ...	......	73 44 50·7	0·84	0	3
482	......	......	7·5	1 29 ...	......	32 43 3·9	0·80	0	1
518	ν Piscium	(5·0)	......	1 34 21·40	0·88	85 12 ...	......	5	0
524	......	......	8·5	1 35 ...	......	74 54 34·3	0·86	0	1
538	......	......	(6·5)	1 39 ...	......	73 16 10·5	0·80	0	2
562	......	......	(6·5)	1 44 ...	......	39 11 56·9	0·84	0	2
577	β Arietes	(3·0)	......	1 47 7·93	0·85	69 52 ...	......	9	0
645	......	6·0	......	1 59 ...	......	64 49 12·1	0·82	0	2
648	α Arietis	(2·0)	......	1 59 30·77	0·70	67 11 ...	......	11	0
694	......	......	(7·5)	2 8 ...	......	26 12 26·9	0·84	0	3
704	67 Ceti	(6·0)	......	2 10 12·03	0·86	97 3 ...	......	3	0
721	......	......	5·0	2 13 ...	......	34 46 44·6	0·88	0	2
728	......	......	(6·5)	2 15 ...	......	79 47 4·3	0·90	0	1
760	ξ^2 Ceti	(4·0)	......	2 20 55·89	0·87	82 9 ...	......	4	0
764	......	......	(7·0)	2 22 ...	......	81 2 35·9	0·88	0	2
776	......	......	(6·0)	2 24 ...	......	88 20 13·6	0·85	0	2
793	......	......	(6·5)	2 28 ...	......	83 45 51·6	0·90	0	2
834	......	......	(6·5)	2 36 ...	......	64 56 34·6	0·85	0	1
837	γ Ceti	(3·0)	......	2 36 15·33	0·82	87 20 ...	......	11	0
891	......	......	8·0	2 45 ...	......	84 5 7·4	0·88	0	2
949	α Ceti	(2·5)	......	2 55 10·29	0·81	86 26 46·2	0·89	10	1
962	......	......	(4·0)	2 59 ...	......	40 54 34·3	0·88	0	3
980	......	......	(6·5)	3 2 ...	......	63 37 36·6	0·88	0	2
986	δ Arietis	(4·0)	......	3 3 51·44	0·89	70 47 ...	......	7	0
1055	......	......	(7·5)	3 16 ...	......	68 26 40·2	0·90	0	8
1101	......	......	(6·5)	3 27 ...	......	58 46 38·1	0·91	0	5
1166	η Tauri	(3·0)	......	3 39 24·29	0·90	66 19 5·8	0·92	13	6
1262	......	......	8·0	4 3 ...	......	41 15 34·3	0·93	0	5
1318	......	......	(6·0)	4 11 ...	......	33 49 28·9	0·93	0	1
1347	......	8·0	......	4 15 17·69	0·01	65 54 53·8	0·89	1	1
1351	......	......	(6·5)	4 16 ...	......	73 41 30·6	0·[illegible]	0	1
1361	......	......	6·0	4 17 1·97	0·01	71 16 26·9	0·95	1	4

(a) Numbers in parenthesis, are the magnitudes of the British Association Catalogue.

Stars. No. in B. A. C.	Stars. Name or Description.	Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension. h. m. s.	Fraction of Year.	Mean North Polar Distance. ° ′ ″	Fraction of Year.	No. of Observations for Place. R. A.	No. of Observations for Place. N. P. D.
1376	ε Tauri	(3·5)	......	4 20 40·71	0·79	71 7 ...	......	12	0
1420	α Tauri	(1·0)	......	4 28 7·13	0·73	73 46 ...	......	13	0
1434	......	5·5	......	4 30 33·56	0·01	77 45 55·8	0·96	1	6
1459	......	......	(6·5)	4 37 ...	......	34 38 42·3	0·94	0	3
1463	......	7·5	......	4 37 30·28	0·01	66 38 ...	......	1	0
1491	......	......	(5·0)	4 43 ...	......	81 20 12·3	0·65	0	3
1501	......	......	(6·0)	4 46 ...	......	34 23 57·4	0·62	0	3
1520	ι Aurigæ	(4·0)	......	4 48 8·48	0·76	57 3 ...	......	5	0
1623	β Orionis	(1·0)	......	5 8 0·05	0·28	98 21 40·2	0·04	4	1
1626	......	......	7·5	5 9 ...	......	49 41 7·6	0·02	0	2
1656	......	......	(6·0)	5 14 ...	......	81 42 33·5	0·03	0	3
1681	β Tauri	(2·0)	......	5 17 41·82	0·32	61 31 ...	......	10	0
1683	......	......	(6·0)	5 18 ...	......	55 43 55·4	0·02	0	2
1696	......	......	8·0	5 19 ...	......	87 11 7·3	0·03	0	1
1703	......	7·0	......	5 20 19·00	0·01	73 40 35·6	0·02	1	2
1730	δ Orionis	(2·0)	......	5 25 3·54	0·40	90 24 10·0	0·03	5	1
1751	......	......	(5·5)	5 29 ...	......	24 22 56·5	0·04	0	1
1765	ε Orionis	......	2·0	5 29 18·77	0·43	91 17 31·0	0·01	7	1
1772	......	......	6·0	5 31 ...	......	60 52 2·2	0·03	0	2
1813	......	......	6·0	5 38 ...	......	21 34 27·6	0·04	0	2
1826	......	......	(6·0)	5 39 ...	......	80 31 50·4	0·01	0	2
1883	α Orionis	......	2·0	5 47 48·56	0·24	82 37 17·6	0·02	9	4
1930	......	......	(6·5)	5 55 ...	......	72 20 16·5	0·99	0	1
1932	......	......	(7·5)	5 55 ...	......	51 25 30·2	0·02	0	2
1958	ν Orionis	(4·5)	......	5 59 48·44	0·26	75 13 ...	......	5	0
2022	......	......	6·0	6 9 ...	......	60 0 41·5	0·04	0	6
2046	......	......	7·0	6 15 ...	......	33 38 51·9	0·37	0	3
2083	......	......	(6·0)	6 21 ...	......	18 12 24·1	0·03	0	1
2101	......	......	8·5	6 22 ...	......	67 22 4·9	0·04	0	4
2163	......	(2·5)	......	6 29 51·30	0·06	73 29 ...	......	6	0
2184	......	......	(7·0)	5 33 ...	......	73 28 45·2	0·03	0	4
2238	......	......	(6·0)	6 44 ...	......	66 14 27·0	0·07	0	4
2292	......	......	(6·0)	6 53 ...	......	79 11 12·3	0·06	0	5
2306	......	......	6·0	6 56 ...	......	78 51 7·7	0·05	0	3
2334	......	......	(6·0)	7 1 ...	......	39 59 30·0	0·03	0	2
2363	......	......	(7·5)	7 6 ...	......	65 3 35·8	0·02	0	3
2379	......	......	(5·0)	7 8 ...	......	40 17 49·7	0·09	0	1
2410	δ Geminorum	(3·0)	......	7 12 0·00	0·08	67 46 14·2	0·05	10	5
2462	β Canis Minoris	(3·0)	......	7 19 46·46	0·08	81 26 ...	......	2	0
2463	......	......	(7·0)	7 20 ...	......	62 10 30·7	0·09	0	7
2465	α² Geminorum	(1·5)	......	7 25 55·10	0·10	57 49 ...	......	10	0
2488	......	......	(6·0)	7 26 ...	......	43 31 25·9	0·09	0	6
2522	α Canis Minoris	(1·0)	......	7 32 10·87	0·10	84 25 46·5	0·08	11	7
2555	β Geminorum	(2·0)	......	7 36 59·41	0·10	61 39 ...	......	11	0
2586	......	7·2	7·0	7 41 31·38	0·10	61 27 49·4	0·10	4	9
2672	6 Cancri	(5·5)	......	7 55 9·65	0·11	61 50 ...	......	8	0
2683	......	6·2	9·0	7 56 53·53	0·12	70 46 33·3	0·10	4	8
2688	......	(7·0)	......	7 57 16·67	0·10	62 5 ...	......	2	0
2737	......	6·7	......	8 3 20·27	0·09	74 58 15·6	0·10	3	4
2748	......	6·8	......	8 4 45·49	0·09	75 35 35·0	0·09	3	1
2761	......	6·7	......	8 6 47·22	0·09	76 32 ...	......	3	0

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
2778	β Cancri	3·3	......	8 9 8·24	0·09	80 24 ...	......	3	0
2862	η Cancri	(6·0)	......	8 24 50·40	0·07	69 6 ...	......	3	0
2867	....	6·5	......	8 25 15·68	0·14	79 28 31·4	0·11	2	7
2882	....	6·5	......	8 28 4·40	0·10	29 35 22·1	0·15	3	1
2937	γ Cancri	5·5	......	8 35 24·75	0·10	68 3 ...	......	3	0
2971	ι Hydræ	(4·0)	......	8 39 34·30	0·12	83 5 3·6	0·12	11	7
2988	....	7·5	......	8 42 55·33	0·11	34 33 ...	......	3	0
3004	....	7·2	......	8 45 0·12	0·14	23 58 ...	......	2	0
3013	....	6·5	......	8 45 13·15	0·10	84 9 1·9	0·12	3	2
3048	ι Ursæ Majoris	3·0	......	8 49 53·07	0·14	41 26 ...	......	2	0
3053	....	6·5	......	8 50 21·84	0·10	80 5 25·6	0·12	3	6
3055	α Cancri	4·5	......	8 51 2·81	0·15	77 37 ...	......	3	0
3083	....	7·0	......	8 55 43·55	0·10	38 38 12·3	0·14	3	4
3086	....	6·7	......	8 56 7·92	0·13	30 6 ...	......	3	0
3093	....	8·0	......	8 56 54·44	0·16	64 51 ...	......	2	0
3103	....	7·2	......	8 58 37·95	0·10	72 21 ...	......	3	0
3111	κ Cancri	5·5	......	9 0 22·73	0·13	78 47 ...	......	3	0
3133	....	6·5	6·0	9 5 6·49	0·12	85 34 38·6	0·16	3	3
3157	....	7·5	......	9 10 3·31	0·12	29 38 56·0	0·13	1	3
3171	83 Cancri	6·0	......	9 11 23·30	0·14	71 43 ...	......	7	0
3223	α Hydræ	(2·0)	......	9 20 54·15	0·13	98 4 ...	......	5	0
3242	θ Ursæ Majoris	(3·0)	......	9 23 44·68	0·13	37 42 17·8	0·16	1	6
3312	....	4·0	......	9 33 53·31	0·15	79 29 ...	......	2	0
3325	....	......	(6·0)	9 37 ...	......	26 7 21·4	0·19	0	1
3331	ε Leonis	(3·0)	......	9 38 7·60	0·16	65 36 5·5	0·17	16	3
3371	μ Leonis	3·8	......	9 45 1·44	0·14	63 21 ...	......	4	0
3375	....	7·5	......	9 45 30·10	0·18	54 22 40·7	0·19	3	4
3380	....	6·0	9·0	9 46 34·34	0·14	83 24 9·1	0·13	3	3
3415	π Leonis	5·0	......	9 53 1·44	0·15	81 18 ...	......	11	0
3416	....	7·8	......	9 53 48·34	0·16	80 24 ...	......	3	0
3420	....	......	(7·0)	9 54 ...	......	57 48 49·3	0·15	0	1
3427	....	7·7	......	9 56 2·74	0·16	56 41 50·1	0·18	3	2
3430	....	8·0	......	9 56 5·68	0·16	81 7 ...	......	3	0
3431	....	......	(7·0)	9 56 ...	......	56 53 24·7	0·16	0	2
3438	....	7·3	......	9 57 41·35	0·14	84 20 15·3	0·12	3	1
3439	....	7·0	......	9 57 47·76	0·19	54 20 ...	......	4	0
3459	....	......	......	10 1 7·55	0·18	77 22 ...	......	15	0
3484	α Leonis	7·5	7·3	10 6 21·43	0·14	57 54 4·8	0·17	3	4
3523	....	(2·0)	......	10 12 28·22	0·16	69 28 ...	......	5	0
3528	γ¹ Leonis	6·0	......	10 14 11·42	0·21	6 45 ...	......	2	0
3529	....	7·0	8·0	10 13 25·12	0·16	82 53 10·6	0·16	3	5
3592	....	6·0	6·0	10 22 43·33	0·1[illegible]	87 48 34·2	0·20	3	5
3609	....	(4·0)	......	10 25 38·86	0·18	80 0 ...	......	10	0
3662	ρ Leonis	8·0	......	10 34 31·11	0·16	78 33 4·0	0·20	3	5
3667	....	6·0	......	10 35 35·08	0·18	85 42 ...	......	3	0
3708	34 Sextantis	5·0	......	10 42 6·45	0·18	78 44 ...	......	6	0
3726	l Leonis	6·0	......	10 45 14·51	0·16	88 15 14·2	0·22	3	5
3768	....	4·8	......	10 53 32·20	0·16	85 39 ...	......	3	0
3780	....	7·0	......	10 56 37·08	0·17	81 41 8·6	0·22	4	5
3788	χ Leonis	(4·5)	......	10 58 0·03	0·20	81 56 ...	......	11	0
3821	(a)	6·1	......	11 3 27·59	0·20	20 54 27·9	0·19	4	1

(a) Tab. N. P. D. differs by 4′.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
3834	δ Leonis	(2·5)	......	11 6 52·31	0·22	68 43 54·8	0·21	13	6
3836	(a)	7·2	6·0	11 6 54·15	0·24	86 59 26·8	0·26	3	2
3869		7·2	......	11 15 21·79	0·20	71 49 0·9	0·24	3	10
3900	τ Leonis	5·5	......	11 20 56·56	0·19	86 24 ...	......	3	0
3946	υ Leonis	(4·5)	......	11 29 59·12	0·24	90 4 ...	......	13	0
3995	β Leonis	(2·5)	......	11 42 7·24	0·26	74 40 ...	......	11	0
3996		6·3	6·0	11 42 8·86	0·24	84 3 19·0	0·25	3	11
4005		6·3	......	11 43 56·53	0·21	76 58 ...	......	3	0
4010		6·0	......	11 45 8·01	0·26	51 17 ...	......	4	0
4052		5·5	......	11 53 54·21	0·20	82 37 ...	......	3	0
4111		6·5	......	12 5 21·94	0·24	11 48 ...	......	4	0
4145	η Virginis	(3·5)	......	12 12 56·92	0·24	89 55 ...	......	6	0
4153		6·0	......	12 13 29·42	0·26	62 37 16·2	0·26	2	7
4199		7·0	7·0	12 20 50·15	0·26	63 20 5·5	0·25	3	5
4205		7·0	......	12 21 50·50	0·21	63 1 13·8	0·22	1	1
4231		7·8	......	12 26 45·50	0·23	64 48 1·4	0·24	3	2
4244	(b)	7·0	6·5	12 28 32·24	0·24	52 49 28·0	0·22	2	1
4268	γ^1 Virginis	(4·0)	......	12 34 46·15	0·25	90 42 ...	......	3	0
4340	δ Virginis	(3·0)	......	12 48 45·25	0·25	85 52 ...	......	1	0
4364	(c)	8·0	......	12 54 55·73	0·25	67 59 49·4	0·27	1	7
4401	θ Virginis	(4·5)	......	13 2 54·64	0·33	94 49 ...	......	3	0
4421	β Comæ	(4·5)	......	13 5 31·62	0·28	61 25 56·2	0·28	2	7
4457		7·0	......	13 12 48·93	0·33	54 9 27·7	0·30	4	3
4468		8·0	......	13 14 40·19	0·33	75 8 ...	......	1	0
4470		......	6·0	13 15 ...	......	87 11 51·5	0·28	0	1
4480	α Virginis	(1·0)	......	13 18 1·82	0·27	100 27 ...	......	3	0
4503		(7·0)	......	13 22 20·77	0·25	85 25 23·8	0·29	1	2
4513		7·0	6·0	13 24 25·34	0·29	65 3 38·2	0·30	2	2
4526	(c)	6·0	......	13 26 21·58	0·25	64 56 ...	......	1	0
4532	ζ Virginis	(4·0)	......	13 27 45·90	0·32	89 54 ...	......	15	0
4550		7·0	......	13 31 11·89	0·36	36 37 0·8	0·31	3	3
4555		......	(7·5)	13 32 ...	......	36 42 45·1	0·28	0	1
4575		6·0	......	13 37 19·59	0·36	66 36 45·5	0·30	3	2
4597	τ Bootis	5·0	......	13 40 47·96	0·36	71 52 ...	......	3	0
4610		6·0	......	13 42 30·44	0·33	58 8 ...	......	1	0
4621		6·0	......	13 43 36·86	0·30	70 41 35·0	0·37	3	1
4627		7·5	......	13 45 4·31	0·33	54 33 ...	......	1	0
4628	(a)	......	(6·0)	13 45 ...	......	54 38 9·0	0·34	0	1
4632		(6·0)	......	13 45 47·51	0·39	54 52 ...	......	3	0
4648	η Bootis	(3·0)	......	13 48 12·54	0·35	70 55 ...	......	13	0
4652		......	6·2	13 50 ...	......	57 18 8·4	0·39	0	3
4672	τ Virginis	(4·5)	......	13 54 43·58	0·33	87 48 ...	......	10	0
4676		8·0	......	13 55 20·44	0·30	57 47 ...	......	3	0
4678		......	8·0	13 57 ...	......	57 40 58·2	0·36	0	2
4694		......	7·0	14 0 ...	......	58 29 54·2	0·40	0	3
4696	α Draconis	(3·5)	......	14 0 42·73	0·86	24 58 ...	......	1	0
4716	κ Virginis	(4·0)	......	14 5 38·74	0·37	99 38 ...	......	1	0
4723	(d)	......	7·0	14 7 51·91	0·37	60 15 25·9	0·38	1	5
4729	α Bootis	(1·0)	......	14 9 27·54	0·43	70 6 29·3	0·32	13	2
4737		(6·5)	......	14 10 58·49	0·38	74 6 ...	......	1	0
4756		(6·0)	......	14 13 45·46	0·36	37 20 22·0	0·36	2	2

(a) Tab. N. P. D. differs by 1′. (b) A star in a straggling cluster, called a nebula in B. A. C. (c) Tab. R. A. differs by 1 sec.
(d) Tab. R. A. differs by 1·4 sec.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.			h. m. s.		° ′ ″		R. A.	N. P. D.
4797	....	(6·0)	......	14 22 38·66	0·38	53 11 36·7	0·38	2	6
4806	ρ Bootis	(4·0)	......	14 25 58·19	0·38	59 2 ...	......	6	0
4809	....	(6·0)	......	14 26 19·13	0·38	62 43 11·4	0·41	2	2
4820	....	(6·0)	......	14 28 24·[illegible]	0·38	56 52 3·2	0·40	3	2
4863	....	(6·0)	......	14 37 9·62	0·38	52 39 44·7	0·38	2	4
4876	ε Bootis	(3·0)	......	14 39 2·87	0·49	62 21 4·4	0·41	11	3
4934	....	6·2	......	14 50 52·27	0·40	48 18 51·2	0·39	3	3
4942	....	6·0	......	14 54 13·20	0·40	49 48 48·4	0·39	2	2
4965	....	(5·5)	......	14 58 18·46	0·39	44 49 19·8	0·40	2	1
4969	ψ Bootis	(5·0)	......	14 58 37·19	0·38	62 31 ...	......	4	0
4992	....	(5·5)	......	15 2 23·85	[illegible]	34 55 10·7	0·39	3	3
5000	....	6·8	......	15 5 8·45	0·40	56 24 14·[illegible]	0·39	3	2
5001	....	(6·5)	......	15 5 ...	......	60 15 13·0	0·41	0	2
5034	β Libræ	(2·5)	......	15 9 41·48	0·39	98 52 ...	......	7	0
5071	(a)	6·0	......	15 16 5·39	[illegible]	37 33 1·8	0·38	3	5
5091	....	6·0	......	15 20 23·04	[illegible]	26 10 ...	......	3	0
5143	α Coronæ Borealis	(2·5)	......	15 28 55·85	0·45	62 49 ...	......	10	0
5196	α Serpentis	(2·5)	......	15 37 34·19	0·40	83 9 ...	......	8	0
5245	ε Serpentis	(3·0)	......	15 44 2·33	0·40	85 7 ...	......	4	0
5284	γ Serpentis	(3·0)	......	15 50 10·44	0·40	73 53 32·2	0·40	4	4
5414	δ Ophiuchi	(3·0)	......	16 7 13·20	0·42	93 20 28·8	0·41	8	2
5415	(b)	(6·0)	......	16 7 ...	......	31 42 26·2	0·40	0	2
5452	....	6·0	......	16 14 10·49	0·39	69 32 12·6	0·40	3	1
5466	γ Herculis	(3·5)	......	16 15 55·32	0·40	70 31 ...	......	3	0
5493	....	6·2	......	16 19 59·18	0·40	87 20 ...	......	4	0
5504	....	7·7	......	16 21 53·69	0·40	74 21 ...	......	3	0
5527	....	(5·5)	......	16 24 39·47	0·40	69 13 16·8	0·41	3	1
5537	....	7·0	......	16 27 7·19	0·40	79 20 30·0	0·41	2	1
5597	....	6·0	......	16 35 22·48	0·40	64 53 ...	......	2	0
5604	ζ Herculis	(3·0)	......	16 36 9·61	0·49	58 9 ...	......	7	0
5615	....	7·0	......	16 38 13·59	0·40	53 14 ...	......	3	0
5620	....	......	(6·0)	16 39 ...	......	74 0 4·9	0·51	0	1
5625	....	(7·5)	......	16 40 2·60	0·40	87 31 ...	......	2	0
5634	....	7·0	......	16 41 42·54	0·41	78 38 ...	......	1	0
5647	....	6·0	......	16 43 18·10	0·40	76 30 ...	......	2	0
5686	....	7·5	......	16 47 11·45	0·41	74 21 54·2	0·41	1	1
5708	κ Ophiuchi	(4·0)	......	16 51 13·90	0·42	80 25 ...	......	6	0
5726	....	7·0	......	16 53 51·60	0·41	83 12 ...	......	2	0
5732	....	......	6·0	16 55 ...	......	74 50 57·1	0·51	0	1
5776	....	(6·0)	......	17 1 12·43	0·41	41 [illegible] ...	......	1	0
5787	....	7·0	6·0	17 3 15·42	0·41	79 46 53·3	0·51	1	1
5821	α Herculis	(3·5)	......	17 8 26·66	0·49	75 27 8·8	0·51	11	1
5863	ϖ Herculis	......	4·0	17 15 ...	......	57 21 19·8	0·51	0	2
5917	....	......	6·0	17 24 ...	......	29 50 15·[illegible]	0·52	0	3
5941	α Ophiuchi	(2·0)	......	17 28 37·31	0·49	77 20 ...	......	11	0
6021	μ Herculis	(4·0)	......	17 41 8·27	0·51	62 12 ...	......	4	0
6035	....	......	(6·5)	17 44 ...	......	80 6 25·7	0·52	0	6
6123	70 Ophiuchi	......	(4·5)	17 58 ...	......	87 27 57·4	0·51	0	1
6137	....	......	(7·5)	18 [illegible] ...	......	87 31 58·2	0·51	0	1
6213	(c)	......	(6·0)	18 12 ...	......	82 47 33·4	0·[illegible]	0	4
6245	....	......	(6·0)	18 17 ...	......	72 14 23·2	0·54	0	2

(a) Tab. N. P. D. differs by 2′. (b) Tab. N. P. D. differs by 7′. (c) Tab. N. P. D. differs by 1′.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
6355	α Lyræ	(1·0)	......	18 32 20·02	0·45	51 20 ...	......	9	0
6429	β Lyræ	(3·0)	......	18 45 3·56	0·52	56 47 36·1	0·54	8	5
6468		......	(6·0)	18 50 ...	......	56 12 12·0	0·57	0	1
6480		......	(5·5)	18 52 ...	......	57 16 18·4	0·52	0	2
6527		......	7·0	18 59 ...	......	71 3 30·9	0·58	0	2
6528	ζ Aquilæ	(3·0)	......	18 59 9·56	0·54	76 20 10·7	0·51	9	1
6542		......	(6·5)	19 1 ...	......	65 57 29·1	0·54	0	1
6567		......	(8·0)	19 5 ...	......	58 35 7·8	0·53	0	1
6574		......	(6·0)	19 7 ...	......	68 40 18·0	0·53	0	1
6595	ω Aquilæ	(5·0)	......	19 11 25·98	0·55	78 39 ...	......	8	0
6602		......	(5·5)	19 12 ...	......	67 13 2·8	0·57	0	2
6617		......	(7·0)	19 13 ...	......	78 42 52·2	0·55	0	1
6644		......	(5·0)	19 19 ...	......	78 20 37·1	0·53	0	1
6646	δ Aquilæ	(3·5)	......	19 18 38·43	0·56	87 9 ...	......	9	0
6652		......	(7·0)	19 19 ...	......	69 59 40·7	0·55	0	1
6729		......	5·5	19 32 ...	......	84 54 36·5	0·57	0	3
6762		......	(6·0)	19 38 ...	......	63 11 15·7	0·54	0	2
6772	γ Aquilæ	(3·0)	......	19 39 47·58	0·60	79 43 ...	......	10	0
6802	α Aquilæ	(1·5)	......	19 44 8·79	0·61	81 29 ...	......	12	0
6833	β Aquilæ	(3·5)	......	19 48 37·93	0·61	83 56 ...	......	9	0
6852		......	(5·5)	19 51 ...	......	30 39 4·5	0·56	0	3
6855		......	(7·5)	19 52 ...	......	73 52 15·0	0·56	0	2
6941		......	7·0	20 5 ...	......	69 16 7·6	0·59	0	3
6966		......	(5·0)	20 9 ...	......	64 49 20·9	0·57	0	1
7006		......	(7·0)	20 15 ...	......	53 17 40·7	0·61	0	1
7014		......	6·0	20 16 ...	......	85 5 24·4	0·58	0	2
7086		......	(6·0)	20 26 ...	......	34 23 17·4	0·58	0	5
7150		......	(7·0)	20 33 ...	......	79 13 57·1	0·59	0	3
7171	α Cygni	(1·0)	......	20 36 47·69	0·45	45 18 ...	......	4	0
7220	η Cephei	......	(3·5)	20 42 ...	......	28 41 20·4	0·59	0	4
7256	32 Vulpeculæ	(4·5)	......	20 48 45·80	0·62	62 27 ...	......	9	0
7285		......	7·0	20 53 ...	......	83 0 44·2	0·60	0	2
7336	61¹ Cygni	......	4·0	21 0 48·26	0·76	51 55 5·5	0·64	1	2
7368	ζ Cygni	(3·0)	......	21 7 8·96	0·68	60 20 ...	......	15	0
7410		......	(5·5)	21 15 ...	......	66 42 56·5	0·63	0	3
7478	β Aquarii	(3·0)	......	21 24 23·78	0·62	96 10 ...	......	7	0
7496	(a)	......	7·0	21 27 ...	......	42 9 24·3	0·68	0	1
7501		......	7·0	21 28 ...	......	44 44 57·5	0·68	0	1
7528		......	(5·5)	21 33 ...	......	70 20 48·0	0·61	0	1
7561	ε Pegasi	(2·5)	......	21 37 30·34	0·73	80 44 49·4	0·68	13	2
7590		......	(7·5)	21 40 ...	......	73 25 59·6	0·69	0	3
7627	16 Pegasi	(5·5)	......	21 46 52·58	0·69	64 43 ...	......	11	0
7644		......	(7·0)	21 50 ...	......	18 9 7·0	0·67	0	1
7688	α Aquarii	(3·0)	......	21 58 47·79	0·69	90 59 ...	......	6	0
7708		......	(5·5)	22 1 ...	......	28 22 51·3	0·69	0	3
7759		......	(6·0)	22 7 ...	......	29 54 47·5	0·69	0	3
7773	θ Aquarii	(4·5)	......	22 9 39·13	0·70	98 27 ...	......	1	0
7868	η Aquarii	(4·0)	......	22 28 21·96	0·71	90 49 ...	......	5	0
7908	ζ Pegasi	......	4·0	22 34 40·77	0·68	79 52 41·8	0·69	13	5
7977		......	(7·5)	22 47 ...	......	88 52 45·4	0·70	0	2
7996		......	(6·0)	22 50 ...	......	86 55 2·5	0·67	0	1

(a) A star in a group called a nebula in B. A. C.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
8024	....	......	(6.5)	22 56 ...	......	33 37 30.2	0.70	0	2
8034	α Pegasi	(2.0)	......	22 57 59.27	0.57	75 32 ...	......	11	0
8083	....	......	6.0	23 7 ...	......	33 34 55.6	0.72	0	1
8091	....	......	(7.0)	23 8 ...	......	62 40 10.8	0.68	0	1
8105	γ Piscium	(4.5)	......	23 10 6.89	0.70	87 28 ...	......	4	0
8135	....	......	6.0	23 14 ...	......	46 37 37.2	0.72	0	1
8138	....	......	7.0	23 15 ...	......	28 31 54.3	0.79	0	1
8139	....	......	(7.5)	23 15 ...	......	52 9 42.9	0.68	0	1
8147	....	......	(6.5)	23 16 ...	......	70 11 11.3	0.68	0	1
8169	κ Piscium	(5.5)	......	23 19 57.62	0.72	89 29 ...	......	5	0
8204	....	......	7.0	23 27 ...	......	18 45 2.7	0.79	0	1
8233	ι Piscium	(4.5)	......	23 32 57.36	0.56	85 7 ...	......	9	0
8247	....	......	(7.5)	23 35 ...	......	72 5 10.6	0.72	0	1
8315	....	......	(7.0)	23 48 ...	......	82 32 0.0	0.76	0	2
8331	ω Piscium	(4.5)	......	23 52 19.70	0.76	83 53 ...	......	4	0
8338	....	......	(7.0)	23 54 ...	......	28 34 48.3	0.76	0	2
8350	85 Pegasi	......	(6.0)	23 55 ...	......	63 38 17.3	0.80	0	1
8364	....	......	(7.0)	23 57 ...	......	32 13 32.4	0.79	0	1
8372	....	......	(6.5)	23 59 ...	......	32 19 21.6	0.76	0	2

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OBSERVATIONS

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CALCULATION

OF

APPARENT RIGHT ASCENSIONS.

1865.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1865.
1865.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Jan. 6	7908	ζ Pegasi	....	79 50	1·6	10·0	18·7	27·0	35 35·4	22 35 18·54	− 0·07	− 34·76	− 34·65	+ 0·03
	8034	α Pegasi	....	75 29	20·0	28·3	37·2	45·5	58 54·1	22 58 37·02	− 0·06	− 34·59	− 34·65	− 0·12
	288	ε Piscium	....	82 48	15·0	23·4	32·0	40·1	56 48·4	0 56 31·78	− 0·08	− 34·60	− 34·65	− 0·76
	360	α Ursæ Minoris	....	1 25	18·0	56·5	42·0	17·0	21 54·0	1 10 37·50	+ 2·83	....	− 34·65	− 27·27
	453	η Piscium	....	75 19	34·3	43·0	51·8	0·1	25 8·7	1 24 51·58	− 0·06	− 34·72	− 34·65	− 1·03
	1765	ε Orionis	....	91 17	41·9	50·0	58·4	6·8	30 15·0	5 29 58·42	− 0·09	− 34·58	− 34·65	− 1·95
	1883	α Orionis	....	82 37	12·0	20·2	28·8	36·9	48 45·1	5 48 28·60	− 0·08	− 34·64	− 34·65	− 2·06
Jan. 8	1520	ι Aurigæ	....	57 2	29·5	39·4	49·5	59·2	49 9·0	4 48 49·32	− 0·00	− 34·62	− 34·53	− 2·36
	1623	β Orionis	....	98 21	22·8	31·0	39·5	47·8	8 56·1	5 8 39·44	− 0·09	− 34·46	− 34·53	− 1·86
	1681	β Tauri	....	61 30	3·7	13·0	22·4	32·0	18 41·3	5 18 22·48	− 0·01	− 34·54	− 34·53	− 2·32
	1730	δ Orionis	....	90 23	26·7	34·9	43·3	51·4	25 59·7	5 25 43·20	− 0·08	− 34·55	− 34·53	− 1·95
	1765	ε Orionis	....	91 17	41·9	50·0	58·4	6·5	30 14·8	5 29 58·32	− 0·08	− 34·49	− 34·53	− 1·95
Jan. 10	288	ε Piscium	....	82 48	15·1	23·4	32·0	40·2	56 48·6	0 56 31·86	− 0·06	− 34·76	− 34·82	− 0·71
	360	α Ursæ Minoris	....	1 25	18·0	53·0	39·0	14·0	21 48·0	1 10 34·40	+ 2·51	....	− 34·82	− 23·82
	420	θ Ceti	....	98 51	35·4	43·6	52·1	0·3	18 8·9	1 17 52·05	− 0·08	− 34·81	− 34·82	− 0·67
	453	η Piscium	....	75 19	34·2	42·6	51·9	0·3	25 9·0	1 24 51·64	− 0·03	− 34·87	− 34·83	− 0·97
	1958	ν Orionis	....	75 14	11·8	20·2	29·0	37·4	0 46·0	6 0 28·88	− 0·05	− 34·82	− 34·83	− 2·17
	6281	δ Ursæ Minoris S. P.	....	3 24	24·0	43·0	1·5	24·0	20 42·5	6 16 3·00	− 1·02	....	− 34·83	− 25·18
	2163	γ Geminorum	....	73 29	14·5	23·0	32·0	40·4	30 49·0	6 30 31·76	− 0·03	− 34·80	− 34·84	− 2·21
	2485	α² Geminorum	....	57 49	16·7	26·4	36·3	46·0	26 55·8	7 26 36·24	+ 0·01	− 34·87	− 34·84	− 2·43
	2555	β Geminorum	....	61 39	21·5	30·8	40·4	49·7	37 59·1	7 37 40·30	+ 0·01	− 34·88	− 34·84	− 2·34
Jan. 16	2163	γ Geminorum	....	73 29	16·4	25·0	33·8	42·2	30 51·0	6 30 33·68	− 0·00	− 36·71	− 36·63	− 2·23
	2410	δ Geminorum	....	67 46	24·6	33·4	42·4	51·3	13 0·3	7 12 42·40	− 0·00	− 36·56	− 36·63	− 2·32
	2485	α² Geminorum	....	57 49	18·5	28·2	38·1	48·0	26 57·6	7 26 38·08	+ 0·03	− 36·68	− 36·63	− 2·45
	2522	α Canis Minoris	....	84 26	36·1	44·4	53·0	1·2	33 9·4	7 32 52·82	− 0·02	− 36·57	− 36·63	− 2·15
	2555	β Geminorum	....	61 39	23·2	32·6	42·3	51·5	38 1·0	7 37 42·12	+ 0·01	− 36·64	− 36·63	− 2·40
Jan. 24	1730	δ Orionis	....	90 23	29·8	37·9	46·3	54·4	26 2·6	5 25 46·20	+ 0·01	− 37·72	− 37·76	− 1·87
	1765	ε Orionis	....	91 17	45·0	53·1	1·5	9·7	30 17·9	5 30 1·44	+ 0·01	− 37·76	− 37·76	− 1·89
	6355	α Lyræ	....	51 20	37·7	48·2	59·0	9·5	33 20·1	18 32 58·90	+ 0·06	− 37·78	− 37·80	+ 0·89
	6429	β Lyræ	....	56 47	23·0	32·8	43·0	52·7	46 2·6	18 45 42·82	+ 0·05	− 37·85	− 37·80	+ 0·75
Jan. 27	4	α Andromedæ	....	61 37	44·4	53·8	3·3	12·8	2 22·8	0 2 3·26	+ 0·06	− 38·12	− 38·14	− 0·33
	26	γ Pegasi	....	75 32	38·5	47·0	55·7	4·2	7 12·6	0 6 55·60	+ 0·05	− 38·16	− 38·14	− 0·21
	1681	β Tauri	....	61 30	7·1	16·3	26·0	35·4	18 44·8	5 18 25·92	+ 0·06	− 38·15	− 38·14	− 2·22
	1730	(a) δ Orionis	....	90 23	30·0	38·2	46·7	54·9	26 3·1	5 25 46·58	+ 0·03	− 38·14	− 38·14	− 1·85
	1765	ε Orionis	....	91 17	45·2	53·4	1·9	10·0	30 18·2	5 30 1·74	+ 0·03	− 38·11	− 38·14	− 1·86
	1883	α Orionis	....	82 37	15·2	23·5	32·0	40·2	48 48·5	5 48 31·88	+ 0·04	− 38·10	− 38·14	− 2·00
	6281	δ Ursæ Minoris S. P.	....	3 24	28·0	47·5	5·5	29·0	20 46·0	6 16 7·20	+ 0·22	....	− 38·14	+ 24·15
	2410	δ Geminorum	....	67 46	26·0	35·1	44·0	53·0	13 1·8	7 12 43·98	+ 0·05	− 38·15	− 38·14	− 2·36
	2485	α² Geminorum	....	57 49	20·0	29·6	39·9	49·4	26 59·1	7 26 39·60	+ 0·06	− 38·17	− 38·14	− 2·54
	6281	δ Ursæ Minoris	....	3 24	26·0	46·0	9·0	26·5	20 46·0	18 16 6·70	− 0·01	....	− 38·14	+ 24·06
Feb. 9	2485	(a) α² Geminorum	....	57 49	22·5	32·2	42·0	52·0	27 1·6	7 26 42·06	+ 0·06	− 40·66	− 40·59	− 2·51
	2522	α Canis Minoris	....	84 26	40·0	48·3	57·0	5·1	33 13·1	7 32 56·70	+ 0·04	− 40·49	− 40·59	− 2·30
	2555	β Geminorum	....	61 39	27·2	36·6	46·1	55·5	38 4·8	7 37 46·04	+ 0·06	− 40·56	− 40·58	− 2·45
	2672	6 Cancri	....	61 50	37·5	47·0	56·4	5·7	56 15·1	7 56 56·34	+ 0·06	− 40·56	− 40·58	− 2·46
	2862	η Cancri	....	69 7	19·0	28·0	37·0	45·6	25 54·4	8 25 36·80	+ 0·06	− 40·61	− 40·58	− 2·37

(a) Definition bad.

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Date.	No. in British Association Catalogue.	OBJECT OBSERVED.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations	Correction of Clock observed.	interpolated.	Correction to Mean R.A. Jan. 1, 1865.
1865.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Feb. 17	360	α Ursæ Minoris	....	1 25	53·0	29·0	14·5	52·0	21 29·0	1 10 11·50	− 0·08	....	−40·16	+ 7·01
	577	β Arietis	....	69 49	34·2	43·0	52·1	0·8	48 9·6	1 47 51·94	+ 0·04	−40·16	−40·16	− 0·63
	648	α Arietis	....	67 9	57·0	5·9	15·1	24·0	0 32·9	2 0 14·98	+ 0·03	−40·19	−40·16	− 0·74
	1166	η Tauri	....	66 17	51·1	0·2	9·4	18·4	40 27·2	3 40 9·26	+ 0·03	−40·14	−40·16	− 1·31
	360	α Ursæ Minoris S. P.	....	1 25	58·0	34·0	5·5	52·5	21 29·5	13 10 11·90	− 0·24	....	−40·16	+ 7·35
Feb. 18	2555	β Geminorum	....	61 39	27·2	36·4	46·0	55·4	38 4·8	7 37 45·96	+ 0·04	−40·52	−40·60	− 2·39
	2672	6 Cancri	....	61 50	37·6	46·9	56·4	5·9	56 15·0	7 55 56·36	+ 0·04	−40·63	−40·61	− 2·43
	2862	η Cancri	....	69 7	19·1	27·9	37·0	45·8	25 54·5	8 25 36·86	+ 0·04	−40·66	−40·61	− 2·36
	2971	ι Hydræ	....	83 6	3·7	12·0	20·4	26·8	40 37·0	8 40 20·38	+ 0·03	−40·62	−40·62	− 2·30
Feb. 20	26	γ Pegasi	....	75 32	41·2	49·8	58·6	7·0	7 15·7	0 6 58·46	+ 0·04	−41·20	−41·08	− 0·10
	360	α Ursæ Minoris	....	1 25	53·0	30·0	16·0	49·5	21 26·0	1 10 10·90	+ 0·53	....	−41·08	+ 9·00
	453	π Piscium	....	75 19	40·1	48·5	57·4	6·0	25 14·4	1 24 57·28	+ 0·04	−41·13	−41·08	− 0·42
	577	β Arietis	....	69 49	35·2	44·0	53·1	1·8	48 10·4	1 47 52·90	+ 0·05	−41·18	−41·08	− 0·58
	1166	η Tauri	....	66 17	52·0	0·9	10·2	19·1	40 28·1	3 40 10·06	+ 0·04	−41·00	−41·08	− 1·26
	2485	ε Geminorum	....	57 49	22·9	32·6	42·4	52·3	27 2·0	7 26 42·44	+ 0·05	−41·11	−41·08	− 2·43
	2522	α Canis Minoris	....	84 26	40·5	48·7	57·1	5·3	33 13·5	7 32 57·02	+ 0·03	−40·87	−41·08	− 2·13
	2555	β Geminorum	....	61 39	27·5	36·9	46·4	55·9	38 5·1	7 37 46·36	+ 0·05	−40·95	−41·08	− 2·37
	3834	δ Leonis	....	68 45	21·0	29·9	39·0	47·7	7 56·4	11 7 38·80	+ 0·05	−41·07	−41·08	− 2·26
	3995	(a) β Leonis	....	74 42	36·6	45·0	53·8	2·1	43 10·6	11 42 53·62	+ 0·04	−41·20	−41·08	− 2·15
Feb. 24	360	(b) α Ursæ Minoris	....	1 25	50·5	26·0	11·5	46·5	21 20·0	1 10 6·90	+ 0·68	....	−40·80	+11·48
	577	β Arietis	....	69 49	35·0	43·7	52·6	1·3	48 10·1	1 47 52·54	− 0·00	−40·82	−40·80	− 0·53
	648	α Arietis	....	67 9	57·5	6·4	15·6	24·5	0 33·4	2 0 15·48	− 0·01	−40·76	−40·80	− 0·62
	3459	α Leonis	....	77 23	36·9	45·3	54·0	2·4	2 10·8	10 1 53·88	− 0·01	−40·73	−40·76	− 2·35
	3464	....	8·0	57 56	48·5	58·1	8·2	17·6	7 27·5	10 7 7·98	+ 0·01	....	−40·76	− 2·38
	3523	γ^1 Leonis	....	69 30	57·0	5·5	14·8	23·3	13 32·2	10 13 14·56	− 0·00	....	−40·76	− 2·38
	3592	....	....	87 50	13·1	21·3	29·7	37·8	23 46·0	10 23 29·58	− 0·04	....	−40·75	− 2·30
	3609	ρ Leonis	....	80 1	8·2	16·5	25·2	33·6	26 42·0	10 26 25·10	+ 0·02	−40·71	−40·75	− 2·35
	3768	d Leonis	6·0	85 41	1·7	9·9	18·4	26·5	54 34·8	10 54 18·26	− 0·03	....	−40·74	− 2·20
	3780	....	8·0	81 43	6·3	14·6	23·3	31·6	57 40·0	10 57 23·16	− 0·03	....	−40·74	− 2·33
	3821	....	7·0	21 0	29·8	52·7	16·2	39·1	5 2·0	11 4 15·96	+ 0·06	....	−40·74	− 3·67
	3834	δ Leonis	....	68 45	20·8	29·6	38·5	47·4	7 56·2	11 7 38·50	− 0·00	−40·68	−40·74	− 2·30
	3900	τ Leonis	6·0	86 26	26·1	34·4	42·8	51·0	21 59·2	11 21 42·70	− 0·03	....	−40·75	− 2·31
	3946	υ Leonis	....	90 6	28·8	37·0	45·4	53·7	31 1·8	11 30 45·34	− 0·04	−40·79	−40·75	− 2·32
	3995	β Leonis	....	74 42	36·0	44·6	53·4	1·8	43 10·3	11 42 53·22	− 0·01	−40·70	−40·76	− 2·20
	4729	α Bootis	....	70 8	55·0	3·8	12·8	21·4	10 30·8	14 10 12·76	− 0·00	−40·90	−40·78	− 1·57
Feb. 26	3223	α Hydræ	....	98 5	23·0	31·2	40·0	48·2	21 56·5	9 21 39·78	− 0·12	−40·13	−40·21	− 2·35
	3331	ι Leonis	....	65 37	35·5	44·4	53·9	2·8	39 12·0	9 38 53·72	− 0·07	−40·19	−40·21	− 2·43
	3415	σ Leonis	....	81 20	30·5	38·9	47·4	55·7	54 4·0	9 53 47·30	− 0·08	−40·22	−40·21	− 2·36
	3459	α Leonis	....	77 23	36·4	45·0	53·5	2·0	2 10·4	10 1 53·46	− 0·08	−40·24	−40·21	− 2·35
	4532	ζ Virginis	....	89 55	14·6	23·0	31·4	39·7	28 47·9	13 28 31·32	− 0·10	−40·25	−40·21	− 2·01
	4672	τ Virginis	....	87 49	12·2	20·4	29·0	37·2	55 45·4	13 55 28·54	− 0·10	−40·20	−40·21	− 1·88
Feb. 28	2555	β Geminorum	....	61 39	26·8	36·0	45·6	55·0	38 4·2	7 37 45·56	− 0·10	−40·09	−40·18	− 2·28
	2672	6 Cancri	....	61 50	37·2	46·5	56·1	5·4	56 14·7	7 55 55·98	− 0·10	−40·20	−40·18	− 2·34
	2971	ι Hydræ	....	83 6	3·5	11·8	20·3	28·4	40 36·5	8 40 20·10	− 0·16	−40·20	−40·18	− 2·25
	3331	ι Leonis	....	65 37	35·5	44·5	54·0	2·8	39 12·0	9 38 53·76	− 0·11	−40·19	−40·18	− 2·43
	3459	α Leonis	....	77 23	36·5	45·0	53·5	2·0	2 10·3	10 1 53·46	− 0·14	−40·17	−40·18	− 2·36

(a) Faint. Overcast.

(b) An apparent inversion of the clock's rate during the time of observation, caused most probably by a swerving of the instrument piers through temperature.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude.	North Polar Distance.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1865.
1865.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Feb. 28	3834	δ Leonis	....	68 45	20·5	29·2	38·2	47·0	7 55·8	11 7 38·14	− 0·12	−40·17	−40·18	− 2·33
	3869	....	7·0	71 51	50·4	59·0	7·8	16·2	16 25·0	11 16 7·68	− 0·12	....	−40·18	− 2·32
	3900	ρ Leonis	5·0	86 26	25·9	34·0	42·4	50·7	21 59·0	11 21 42·40	− 0·17	....	−40·18	− 2·35
	3946	υ Leonis	....	90 6	28·3	36·4	45·0	53·2	31 1·4	11 30 44·86	− 0·18	−40·12	−40·18	− 2·37
	4052	π Virginis	....	82 39	23·2	31·5	40·0	48·2	54 56·4	11 54 39·86	− 0·16	....	−40·18	− 2·27
	4153	....	6·0	62 39	56·1	5·4	14·9	24·2	14 33·4	12 14 14·80	− 0·10	....	−40·18	− 2·16
	4199	....	7·0	63 22	17·0	26·2	35·7	44·9	21 54·1	12 21 35·58	− 0·10	....	−40·18	− 2·11
	4231	....	7·0	61 58	12·8	21·8	31·0	40·2	27 49·3	12 27 31·02	− 0·11	....	−40·18	− 2·12
	4340	δ Virginis	....	[illegible]	14·1	22·4	31·0	39·0	49 47·2	12 49 30·74	− 0·17	....	−40·18	− 2·15
	4364	....	7·0	68 2	23·0	32·0	41·2	50·0	55 58·5	12 55 40·94	− 0·12	....	−40·18	− 2·01
	360	α Ursæ Minoris S. P.	....	1 25	56·0	29·0	4·5	50·0	21 24·0	13 10 8·70	− 4·35	....	−40·18	+14·04
	4648	η Bootis	....	70 56	40·1	48·7	57·8	6·4	49 15·0	13 48 57·60	− 0·12	−40·26	−40·18	− 1·60
	4696	α Draconis	....	24 58	47·0	6·2	26·2	46·0	2 5·1	14 1 26·10	+ 0·08	....	−40·18	− 1·57
Mar. 2	360	α Ursæ Minoris	....	1 25	41·0	19·0	5·0	40·0	....	1 9 59·92	+ 4·23	....	−40·30	+14·84
	577	β Arietis	....	[illegible]	34·6	43·3	52·4	1·0	48 9·9	1 47 52·24	− 0·14	−40·46	−40·30	− 0·45
	2410	δ Geminorum	....	67 46	28·0	36·9	46·0	55·0	13 3·8	7 12 45·94	− 0·15	−40·17	−40·17	− 2·16
	2971	ι Hydræ	....	83 6	3·4	11·6	20·1	28·2	40 36·6	8 40 19·98	− 0·18	−40·07	−40·16	− 2·21
	3331	Leonis	....	64 37	35·6	44·5	54·0	3·0	39 11·9	9 38 53·80	− 0·13	−40·21	−40·15	− 2·43
	3834	δ Leonis	....	68 45	20·4	29·1	38·0	46·9	7 55·8	11 7 38·04	− 0·14	−40·03	−40·14	− 2·35
	3869	....	7·0	71 51	50·1	58·9	7·6	16·3	16 25·0	11 16 7·58	− 0·15	....	−40·14	− 2·34
	3900	ρ Leonis	....	86 26	25·9	34·0	42·4	50·6	21 59·0	11 21 42·38	− 0·20	....	−40·14	− 2·37
	3946	υ Leonis	....	90 6	28·4	36·6	45·0	53·2	31 1·4	11 30 44·92	− 0·20	−40·14	−40·14	− 2·39
	3995	....	7·0	81 5	37·9	46·3	54·6	3·0	43 11·1	11 42 54·58	− 0·18	....	−40·14	− 2·32
	4005	....	7·0	77 0	25·1	33·6	42·2	50·6	44 59·1	11 44 42·12	− 0·17	....	−40·14	− 2·29
	4052	π Virginis	6·0	82 10	23·2	31·5	40·0	48·2	54 56·6	11 54 39·90	− 0·18	....	−40·13	− 2·30
	360	α Ursæ Minoris S. P.	....	1 25	59·0	32·0	4·5	51·5	21 23·0	13 10 10·00	− 4·50	....	−40·13	+15·00
	4648	η Bootis	....	70 56	40·1	48·6	57·7	6·2	49 15·0	13 48 57·52	− 0·14	−40·11	−40·13	− 1·55
	4696	α Draconis	....	24 58	46·6	6·0	26·3	45·6	2 5·1	14 1 25·92	+ 0·07	....	−40·13	− 1·65
Mar. 7	2410	δ Geminorum	....	67 46	28·0	37·0	46·0	54·9	13 3·5	7 12 45·88	− 0·18	−40·16	−40·20	− 2·02
	3523	γ¹ Leonis	....	69 30	56·5	5·4	14·3	23·0	13 32·0	10 13 14·24	− 0·18	....	−40·20	− 2·42
	3708	ι Leonis	....	78 46	35·4	43·8	52·4	0·8	43 9·1	10 42 52·30	− 0·21	−40·17	−40·20	− 2·39
	3788	χ Leonis	....	81 57	29·4	37·6	46·0	54·2	59 2·4	10 58 45·92	− 0·22	−40·22	−40·20	− 2·36
Mar. 8	3523	γ¹ Leonis	....	69 30	56·4	5·2	14·2	23·0	13 31·8	10 13 14·12	− 0·18	....	−40·03	− 2·40
	3708	ι Leonis	....	78 46	35·4	43·7	52·2	0·5	43 9·0	10 42 52·16	− 0·22	−40·02	−40·03	− 2·39
	3788	χ Leonis	....	81 57	29·1	37·3	46·0	54·1	59 2·4	10 58 45·78	− 0·23	−40·07	−40·03	− 2·38
	3834	δ Leonis	....	68 45	20·3	29·1	38·2	47·0	7 55·9	11 7 38·10	− 0·16	−40·02	−40·03	− 2·39
	3946	υ Leonis	....	90 6	28·2	36·4	45·0	53·2	31 1·4	11 30 44·84	− 0·26	−39·96	−40·03	− 2·43
	3995	β Leonis	....	74 42	35·9	44·2	53·0	1·5	43 10·0	11 42 52·92	− 0·20	−40·08	−40·03	− 2·31
Mar. 13	3708	(a) ι Leonis	....	78 46	34·8	43·1	51·7	0·0	43 8·4	10 42 51·60	− 0·25	−39·42	−39·43	− 2·40
	3788	χ Leonis	....	81 57	28·5	36·8	45·2	53·5	59 1·9	10 58 45·18	− 0·26	−39·42	−39·43	− 2·40
	3834	δ Leonis	....	68 45	20·0	28·9	37·6	46·3	7 55·1	11 7 37·58	− 0·21	−39·45	−39·43	− 2·40
	3995	(b) β Leonis	....	74 42	35·2	43·8	52·3	1·0	43 9·4	11 42 52·34	− 0·23	−39·44	−39·43	− 2·36
Mar. 31	3459	α Leonis	....	77 23	34·4	42·9	51·4	0·0	2 8·3	10 1 51·40	− 0·28	−38·12	−38·12	− 2·21
	3834	δ Leonis	....	68 45	18·2	27·4	36·3	45·0	7 54·0	11 7 36·18	− 0·25	−38·04	−38·12	− 2·37
	3946	υ Leonis	....	90 6	26·6	34·8	43·3	51·3	30 59·7	11 30 43·14	− 0·32	−38·16	−38·12	− 2·47
	3995	β Leonis	....	74 42	33·9	42·4	51·2	59·9	43 8·2	11 42 51·12	− 0·27	−38·14	−38·12	− 2·40

(a) Definition bad. (b) Faint. Cloudy.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1865.
1865.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Mar. 31	360	α Ursæ Minoris S. P.	....	1 25	46·0	19·5	52·0	38·5	21 12·0	13 9 57·60	− 4·88	....	−38·12	+23·49
	4696	α Draconis	....	24 58	46·0	5·5	25·4	45·0	2 4·2	14 1 25·22	− 0·03	....	−38·12	− 2·60
April 4	3523	(a) γ^1 Leonis	....	69 30	54·2	3·0	12·0	20·9	13 29·7	10 13 11·96	− 0·32	....	−37·86	− 2·22
	3609	ρ Leonis	....	80 1	5·8	14·0	22·8	30·9	26 39·2	10 26 22·54	− 0·36	−37·88	−37·86	− 2·24
	3788	χ Leonis	....	81 57	27·0	35·2	43·8	52·0	59 0·4	10 58 43·68	− 0·37	−37·88	−37·86	− 2·33
	3834	δ Leonis	....	68 45	18·2	27·0	36·1	45·0	7 53·8	11 7 36·02	− 0·32	−37·83	−37·86	− 2·35
April 6	3946	ν Leonis	....	90 6	26·3	34·5	43·0	51·1	30 59·3	11 30 42·84	− 0·44	−37·76	−37·77	− 2·45
	360	α Ursæ Minoris S. P.	....	1 25	49·5	22·5	55·5	39·5	21 14·0	13 10 0·20	− 7·90	....	−37·77	+23·51
	4532	ζ Virginis	....	89 55	13·1	21·3	30·0	38·1	28 46·2	13 28 29·74	− 0·44	−37·77	−37·77	− 2·57
	4618	η Bootis	....	70 56	38·4	47·0	56·1	4·7	49 13·4	13 48 55·92	− 0·35	−37·75	−37·77	− 2·40
	4672	τ Virginis	....	87 49	10·8	19·0	27·5	35·7	55 44·0	13 55 27·40	− 0·43	−37·78	−37·77	− 2·53
	4696	α Draconis	....	24 58	45·7	5·0	25·3	44·8	2 4·1	14 1 24·98	− [illegible]·00	....	−37·77	− 2·70
	4729	α Bootis	....	70 8	53·3	2·0	10·9	19·5	10 28·2	14 10 10·78	− 0·35	−37·81	−37·77	− 2·33
April 9	3788	χ Leonis	....	81 57	27·0	35·2	43·8	52·0	59 0·4	10 58 43·68	− 0·40	−37·89	−37·93	− 2·29
	3834	δ Leonis	....	68 45	18·4	27·1	36·2	45·0	7 53·9	11 7 36·12	− 0·33	−37·96	−37·93	− 2·31
	3946	ν Leonis	....	90 6	26·3	31·6	43·0	51·2	30 59·5	11 30 42·92	− 0·43	−37·86	−37·[illegible]	− 2·44
	3995	(b) β Leonis	....	74 42	34·0	42·3	51·1	59·8	43 8·2	11 42 51·08	− 0·37	−38·02	−37·93	− 2·36
April 10	3995	β Leonis	....	74 42	34·0	42·3	51·1	59·5	43 8·0	11 42 50·98	− 0·37	−37·93	−37·92	− 2·37
	4145	η Virginis	....	89 56	24·3	32·5	41·0	49·1	13 57·3	12 13 40·84	− 0·43	−37·91	−37·92	− 2·53
	360	α Ursæ Minoris S. P.	....	1 25	48·0	22·0	56·0	41·0	21 14·5	13 10 0·30	− 7·67	....	−37·92	+23·19
	4648	η Bootis	....	70 56	38·7	47·2	56·2	5·0	49 13·6	13 48 56·14	− 0·34	−37·95	−37·92	− 2·43
	4672	τ Virginis	....	87 49	11·0	19·2	27·7	35·9	55 44·0	13 55 27·56	− 0·43	−37·90	−37·92	− 2·57
	4696	α Draconis	....	24 58	45·9	5·2	25·1	44·4	2 4·1	14 1 24·94	− 0·01	....	−37·92	− 2·75
	4729	α Bootis	....	70 8	53·3	2·0	11·1	19·8	10 28·4	14 10 10·92	− 0·34	−37·[illegible]	−37·92	− 2·38
April 11	3708	l Leonis	....	78 46	33·2	41·4	50·0	58·3	43 6·9	10 42 49·96	− 0·38	−37·81	−37·82	− 2·24
	3834	δ Leonis	....	68 45	18·2	27·0	36·2	45·0	7 53·8	11 7 36·04	− 0·33	−37·89	−37·82	− 2·30
	3995	β Leonis	....	74 42	33·8	42·2	51·0	59·5	43 8·0	11 42 50·90	− 0·36	−37·86	−37·82	− 2·37
	360	α Ursæ Minoris S. P.	....	1 25	46·5	22·0	56·5	41·0	21 14·0	13 10 0·40	− 7·43	....	−37·82	+23·07
	4532	ζ Virginis	....	89 55	13·5	21·6	30·0	38·1	28 46·3	13 28 29·90	− 0·43	−37·90	−37·82	− 2·61
	4648	η Bootis	....	70 56	36·6	47·1	56·0	4·9	49 13·5	13 48 56·02	− 0·34	−37·82	−37·82	− 2·44
	4672	τ Virginis	....	87 49	11·0	19·2	27·5	35·9	55 44·1	13 55 27·54	− 0·42	−37·88	−37·82	− 2·58
	4696	α Draconis	....	24 58	45·9	5·2	25·5	44·3	2 4·1	14 1 25·00	− 0·01	....	−37·82	− 2·76
	4720	α Bootis	....	70 [illegible]	53·2	1·9	11·0	19·6	10 28·3	14 10 10·80	− 0·34	−37·78	−37·82	− 2·39
April 15	3946	ν Leonis	....	90 6	26·3	34·4	43·0	51·2	30 59·4	11 30 42·86	− 0·55	−37·71	−37·71	− 2·41
	3995	β Leonis	....	74 42	33·9	42·1	51·0	59·4	43 8·0	11 42 50·88	− 0·46	−37·76	−37·71	− 2·35
	4145	η Virginis	....	89 56	24·2	32·3	40·9	49·0	13 57·3	12 13 40·74	− 0·55	−37·70	−37·71	− 2·52
	360	(c) α Ursæ Minoris S. P.	....	1 25	50·0	25·0	58·5	49·0	21 18·0	13 10 4·10	−11·02	....	−37·71	+22·41
	4532	ζ Virginis	....	89 55	13·3	21·5	30·0	38·1	28 46·3	13 28 29·84	− 0·55	−37·70	−37·71	− 2·63
	4648	η Bootis	....	70 56	38·7	47·2	56·0	4·7	49 13·5	13 48 56·02	− 0·44	−37·70	−37·71	− 2·46
	4672	τ Virginis	....	87 49	11·0	19·1	27·5	35·9	55 44·0	13 55 27·50	− 0·54	−37·69	−37·71	− 2·61
	4696	(d) α Draconis	....	24 58	45·6	4·9	25·5	44·9	2 4·2	14 1 25·02	+ 0·05	....	−37·71	− 2·60
	4729	α Bootis	....	70 8	53·2	2·0	11·0	19·8	10 28·3	14 10 10·86	− 0·43	−37·72	−37·71	− 2·42
April 26	3331	ι Leonis	....	65 37	31·1	40·0	49·4	58·3	39 7·3	9 38 49·22	− 0·33	−36·06	−36·07	− 1·80
	3459	α Leonis	....	77 23	32·1	40·5	49·1	57·7	2 6·1	10 1 49·10	− 0·38	−36·04	−36·07	− 1·89

(a) Bad definition. (b) Faint. Cloudy. (c) Definition bad. Stars blurred. (d) Definition very bad.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed	North Polar Distance.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1865.
1865.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
April 26	360	α Ursæ Minoris S. P.	....	1 25	......	......	59·0	42·0	21 19·5	13 10 2·34	− 7·67	....	−36·06	+19·31
	4532	ζ Virginis	....	89 55	11·7	19·9	28·2	36·4	28 44·6	13 28 28·16	− 0·43	−36·10	−36·06	− 2·67
	4648	η Bootis	....	70 56	36·9	45·5	54·4	3·1	49 11·9	13 48 54·36	− 0·34	−36·08	−36·06	− 2·52
	4672	τ Virginis	....	87 49	9·2	17·4	25·9	34·1	55 42·4	13 55 25·80	− 0·43	−36·03	−36·05	− 2·68
	4696	α Draconis	....	21 58	44·0	3·4	23·5	42·8	2 2·3	14 1 23·20	− 0·01	....	−36·05	− 2·81
	4729	α Bootis	....	70 8	51·6	0·3	9·3	18·0	10 26·8	14 10 9·20	− 0·34	−36·08	−36·05	− 2·49
April 28	1883	α Orionis	....	82 37	12·0	20·4	28·9	37·1	48 45·5	5 48 28·78	− 0·47	−35·86	−35·86	− 0·63
	3331	ι Leonis	....	65 37	30·8	39·9	49·2	58·1	39 7·1	9 38 49·02	− 0·39	−35·83	−35·86	− 1·77
	3459	α Leonis	....	77 23	32·0	40·4	49·1	57·4	2 6·0	10 1 48·98	− 0·44	−35·89	−35·86	− 1·96
	3995	β Leonis	....	74 42	31·5	40·0	49·0	57·5	43 6·0	10 42 46·80	− 0·43	−35·81	−35·86	− 2·25
	360	α Ursæ Minoris S. P.	....	1 25	54·5	27·0	0·5	43·0	21 19·5	13 10 4·90	− 9·83	....	−35·86	+18·51
	4532	ζ Virginis	....	89 55	11·4	19·6	28·0	36·1	28 44·5	13 28 27·92	− 0·51	−35·78	−35·86	− 2·67
	4648	η Bootis	....	70 56	36·9	45·4	54·3	3·0	49 11·7	13 48 54·26	− 0·41	−35·91	−35·86	− 2·52
	4672	τ Virginis	....	87 49	9·0	17·3	25·8	34·1	55 42·2	13 55 25·68	− 0·50	−35·83	−35·86	− 2·69
	4696	α Draconis	....	24 58	43·7	2·9	23·3	42·8	2 2·0	14 1 22·91	+ 0·03	....	−35·68	− 2·80
	4729	α Bootis	....	70 8	51·6	0·2	9·2	17·9	10 26·8	14 10 9·14	− 0·40	−35·95	−35·86	− 2·50
April 29	3946	(a) υ Leonis	....	90 6	24·2	32·4	40·9	49·0	30 57·2	11 30 40·71	− 0·49	−35·75	−35·72	− 2·31
	3995	β Leonis	....	74 42	31·4	40·0	49·0	57·3	43 5·9	11 42 48·72	− 0·42	−35·74	−35·72	− 2·35
	4145	η Virginis	....	89 56	22·0	30·3	38·9	47·0	13 55·2	12 13 38·68	− 0·19	−35·75	−35·72	− 2·47
	4532	ζ Virginis	....	89 55	11·3	19·4	28·0	36·1	28 44·3	13 28 27·82	− 0·49	−35·69	−35·72	− 2·68
	4648	η Bootis	....	70 56	36·5	45·1	54·1	2·8	49 11·4	13 48 53·98	− 0·39	−35·65	−35·72	− 2·52
	4672	τ Virginis	....	87 49	9·0	17·0	25·8	33·8	55 42·0	13 55 25·52	− 0·48	−35·69	−35·72	− 2·69
	4696	α Draconis	....	24 58	43·6	2·5	23·3	42·0	2 1·9	14 1 22·66	+ 0·03	....	−35·72	− 2·80
	4729	(b) α Bootis	....	70 8	51·4	0·0	8·9	17·7	10 26·6	14 10 8·92	− 0·39	−35·74	−35·72	− 2·50
May 1	3331	ι Leonis	....	65 37	30·5	39·5	49·0	58·0	39 7·0	9 38 48·80	− 0·36	−35·69	−35·64	− 1·72
	3459	α Leonis	....	77 23	31·8	40·1	48·9	57·1	2 5·5	10 1 48·66	− 0·41	−35·66	−35·64	− 1·82
	360	(a) α Ursæ Minoris S. P.	....	1 25	55·0	27·5	0·5	46·0	21 20·0	13 10 5·80	− 9·44	....	−35·64	+17·29
	4532	(b) ζ Virginis	....	89 55	11·2	19·4	27·9	36·1	28 44·3	13 28 27·78	− 0·47	−35·67	−35·64	− 2·66
	4648	η Bootis	....	70 56	36·3	45·0	51·0	2·9	49 11·3	13 48 53·90	− 0·38	−35·57	−35·64	− 2·53
	4672	τ Virginis	....	87 49	8·9	17·0	25·5	33·7	55 42·0	13 55 25·42	− 0·46	−35·60	−35·64	− 2·70
	4696	α Draconis	....	24 58	43·6	2·9	23·3	42·5	2 2·0	14 1 22·86	+ 0·05	....	−35·64	− 2·79
	4729	α Bootis	....	70 8	51·3	0·0	8·9	17·8	10 26·3	14 10 8·86	− 0·37	−35·69	−35·64	− 2·51
	4876	ε Bootis	....	62 22	25·0	34·3	44·2	53·4	40 2·8	14 39 43·94	− 0·34	−35·60	−35·64	− 2·51
May 4	3834	δ Leonis	....	68 45	16·1	25·0	34·1	42·9	7 51·7	11 7 33·96	− 0·33	−36·06	−36·05	− 2·05
	360	α Ursæ Minoris S. P.	....	1 25	54·0	25·5	1·5	47·5	21 20·5	13 10 5·80	− 7·67	....	−36·06	+15·94
	4532	ζ Virginis	....	89 55	11·5	19·8	28·2	36·4	28 44·6	13 28 28·10	− 0·43	−36·03	−36·06	− 2·68
	4648	η Bootis	....	70 56	36·6	45·4	54·4	3·2	49 12·0	13 48 54·32	− 0·34	−36·03	−36·06	− 2·53
	4672	τ Virginis	....	87 49	9·2	17·4	25·9	34·2	55 42·4	13 55 25·82	− 0·43	−36·02	−36·07	− 2·71
	4696	α Draconis	....	24 58	43·8	3·3	23·8	43·1	2 2·3	14 1 23·26	− 0·01	....	−36·07	− 2·76
	4729	α Bootis	....	70 8	51·6	0·4	9·3	18·1	10 26·7	14 10 9·22	− 0·34	−36·07	−36·07	− 2·52
	4808	ξ Bootis	....	59 3	20·3	30·0	39·8	49·3	26 58·9	14 26 39·66	− 0·29	−36·14	−36·08	− 2·51
	4876	ε Bootis	....	62 22	25·9	35·0	44·7	53·7	40 3·0	14 39 44·46	− 0·31	−36·14	−36·08	− 2·52
May 8	360	(c) α Ursæ Minoris S. P.	....	1 25	0·0	29·5	5·5	47·5	21 25·0	13 10 9·50	− 8·86	....	−36·67	+13·91
	4532	ζ Virginis	....	89 55	12·1	20·3	29·0	37·1	28 45·2	13 28 28·74	− 0·48	−36·63	−36·67	− 2·67
	4648	(a) η Bootis	....	70 56	37·5	46·1	55·0	3·6	49 12·4	13 48 54·92	− 0·38	−36·59	−36·67	− 2·53
	4672	τ Virginis	....	87 49	10·0	18·2	26·7	34·9	55 43·1	13 55 26·58	− 0·47	−36·74	−36·67	− 2·71

(a) Definition bad. (b) Definition very bad. Stars blurred and unsteady. (c) Foggy.

Date.	No. in British Association Catalogue.	OBJECT OBSERVED.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1866.
1865.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
May 8	4696	(a) α Draconis	....	24 58	44·7	3·8	23·8	43·4	2 2·9	14 1 23·72	+ 0·02	....	−36·67	− 2·72
	4729	α Bootis	....	70 8	52·4	1·0	9·9	18·8	10 27·4	14 10 9·90	− 0·37	−36·72	−36·67	− 2·53
	4808	ρ Bootis	....	59 3	21·0	30·4	40·3	50·0	26 59·4	14 26 40·22	− 0·32	−36·67	−36·67	− 2·51
	4876	ε Bootis	....	62 22	26·4	35·5	45·2	54·4	40 3·7	14 39 45·04	− 0·33	−36·68	−36·67	− 2·54
May 15	3995	β Leonis	....	74 42	33·0	41·4	50·2	58·8	43 7·2	11 42 50·12	− 0·47	−37·25	−37·30	− 2·09
	360	α Ursæ Minoris S. P.	....	1 25	5·0	39·0	12·8	55·5	21 30·0	13 10 16·30	−11·26	....	−37·30	+ 9·69
	4532	ζ Virginis	....	89 55	12·9	21·1	29·5	37·8	28 46·8	13 28 29·46	− 0·56	−37·28	−37·31	− 2·66
	4648	η Bootis	....	70 56	38·1	46·9	55·8	4·5	49 13·1	13 48 55·68	− 0·45	−37·29	−37·31	− 2·52
	4672	τ Virginis	....	87 49	10·6	19·0	27·3	35·5	55 43·7	13 55 27·22	− 0·55	−37·29	−37·31	− 2·72
	4696	α Draconis	....	24 58	45·0	4·4	24·8	44·0	2 3·4	14 1 24·32	+ 0·05	....	−37·32	− 2·61
	4737	....	6·0	74 8	24·3	33·0	41·9	50·4	11 59·0	14 11 41·72	− 0·46	....	−37·32	− 2·60
	4756	....	7·0	37 22	0·0	13·8	27·6	41·1	14 54·8	14 14 27·46	− 0·18	....	−37·32	− 2·48
	4797	....	7·0	53 13	0·5	10·7	21·3	31·5	23 41·9	14 23 21·18	− 0·33	....	−37·32	− 2·49
	4808	ρ Bootis	....	59 3	21·7	31·1	41·0	50·6	27 0·2	14 26 40·92	− 0·37	−37·31	−37·32	− 2·52
	4876	ε Bootis	....	62 22	27·0	36·3	46·0	55·2	40 4·5	14 39 45·80	− 0·39	−37·37	−37·33	− 2·55
	4942	....	7·0	49 50	34·0	44·8	55·9	6·4	55 17·2	14 54 55·66	− 0·30	....	−37·33	− 2·53
	4992	....	5·5	34 57	36·8	51·0	6·0	20·0	3 34·5	15 3 5·66	− 0·14	....	−37·33	− 2·59
	5143	α Coronæ Borealis	....	62 50	20·2	29·4	39·0	48·0	29 57·2	15 29 38·76	− 0·40	−37·36	−37·33	− 2·62
May 16	4532	ζ Virginis	....	89 55	13·0	21·2	29·8	37·9	28 46·8	13 28 29·58	− 0·55	−37·42	−37·41	− 2·65
	4648	η Bootis	....	70 56	38·2	47·0	56·0	4·7	49 13·2	13 48 55·82	− 0·44	−37·44	−37·41	− 2·51
	4672	τ Virginis	....	87 49	10·9	19·0	27·4	35·6	55 44·0	13 55 27·38	− 0·54	−37·47	−37·41	− 2·72
	4696	α Draconis	....	24 58	45·4	4·6	24·8	44·0	2 3·5	14 1 24·46	+ 0·07	....	−37·41	− 2·59
	4737	....	6·5	74 8	24·7	33·1	42·0	50·3	11 59·0	14 11 41·82	− 0·45	....	−37·41	− 2·60
	4797	....	6·5	53 13	0·7	10·9	21·4	31·5	23 42·0	14 23 21·30	− 0·32	....	−37·41	− 2·48
	4808	ρ Bootis	....	59 3	21·8	31·1	41·0	50·7	27 0·2	14 26 40·96	− 0·36	−37·37	−37·41	− 2·51
	4876	ε Bootis	....	62 22	27·1	36·4	46·0	55·3	40 4·5	14 39 45·86	− 0·38	−37·44	−37·41	− 2·55
	4942	....	7·0	49 50	34·0	44·9	56·0	6·8	55 17·4	14 54 55·82	− 0·29	....	−37·41	− 2·53
	4965	....	6·5	44 51	37·5	49·0	1·8	12·4	59 24·3	14 59 0·84	− 0·25	....	−37·42	− 2·54
	4992	....	6·0	34 57	36·9	51·2	6·0	20·4	3 34·8	15 3 5·86	− 0·12	....	−37·42	− 2·59
May 17	4969	ψ Bootis	....	62 32	1·5	10·9	20·4	29·5	59 39·8	14 59 20·26	− 0·41	−37·57	−37·54	− 2·53
	5034	β Libræ	....	98 54	9·0	17·2	26·0	34·4	10 42·6	15 10 25·84	− 0·61	−37·48	−37·54	− 3·06
	5143	α Coronæ Borealis	....	62 50	20·5	29·6	39·2	48·3	29 57·5	15 29 39·02	− 0·41	−37·59	−37·54	− 2·64
	5196	α Serpentis	....	83 9	1·4	9·7	18·2	26·4	38 34·8	15 38 18·10	− 0·53	−37·54	−37·54	− 2·84
May 18	3834	δ Leonis	....	68 45	17·4	26·3	35·4	44·3	7 53·1	11 7 35·30	− 0·44	−37·46	−37·53	− 1·88
	360	α Ursæ Minoris S. P.	....	1 25	7·0	41·5	14·0	58·5	21 31·0	13 10 18·40	−10·92	....	−37·53	+ 7·99
	4532	ζ Virginis	....	89 55	13·0	21·4	29·9	38·0	28 46·3	13 28 29·72	− 0·57	−37·54	−37·53	− 2·65
	4552	....	5·0	53 3	47·2	57·4	8·0	18·3	32 28·6	13 32 7·90	− 0·34	....	−37·53	− 2·34
	4575	....	6·0	66 39	45·0	54·0	3·1	12·0	38 21·0	13 38 3·02	− 0·44	....	−37·53	− 2·44
	4607	η Ursæ Majoris	....	40 2	27·4	40·2	53·5	6·2	43 19·8	13 42 53·26	− 0·22	....	−37·53	− 2·35
	4632	....	6·0	54 54	10·2	20·3	30·6	40·7	46 50·9	13 46 30·54	− 0·36	....	−37·53	− 2·39
	4648	η Bootis	....	70 56	38·4	47·1	56·0	4·8	49 13·3	13 48 55·92	− 0·46	−37·53	−37·53	− 2·51
	4696	α Draconis	....	24 58	45·1	4·8	25·0	44·4	2 3·6	14 1 24·54	+ 0·03	....	−37·53	− 2·55
	4723	....	8·0	60 17	16·0	25·4	35·0	44·4	8 54·0	14 8 34·96	− 0·39	....	−37·53	− 2·48
	4737	....	7·5	74 8	24·7	33·3	42·2	50·6	11 59·1	14 11 41·98	− 0·47	....	−37·53	− 2·60
	4756	....	7·0	37 22	0·5	14·0	28·0	41·5	14 55·8	14 14 27·80	− 0·20	....	−37·53	− 2·46
	4797	....	6·5	53 13	0·8	11·0	21·6	31·9	23 42·1	14 23 21·48	− 0·34	....	−37·53	− 2·48
	4808	ρ Bootis	....	59 3	22·0	31·4	41·3	50·9	27 0·2	14 26 41·16	− 0·38	−37·55	−37·53	− 2·51

(a) Definition bad. Stars diffused.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	interpolated.	Correction to Mean R.A. Jan. 1, 1865.
1865.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
May 18	4820	....	....	56 54	48·0	57·8	7·9	17·6	29 27·3	14 29 7·72	− 0·36	....	− 37·53	− 2·51
	4863	(a)	....	52 41	31·7	41·9	52·5	3·0	38 13·3	14 37 52·48	− 0·34	....	− 37·53	− 2·51
	4876	ι Bootis	....	62 22	27·3	36·6	46·2	55·2	40 4·8	14 39 46·02	− 0·40	− 37·57	− 37·53	− 2·56
May 19	360	α Ursæ Minoris S. P.	....	1 25	5·5	39·0	13·5	57·0	21 31·0	13 10 17·20	− 9·16	....	− 37·56	+ 7·33
	4532	ζ Virginis	....	89 55	13·0	21·3	29·8	38·0	28 46·0	13 28 29·62	− 0·52	− 37·49	− 37·56	− 2·65
	4552	....	5·0	53 3	47·1	57·4	8·0	18·3	32 28·5	13 32 7·56	− 0·33	....	− 37·57	− 2·34
	4575	....	6·0	66 39	44·9	53·9	3·0	12·0	38 21·0	13 38 2·96	− 0·41	....	− 37·57	− 2·44
	4607	η Ursæ Majoris	....	40 2	27·3	40·1	53·2	6·0	43 19·0	13 42 53·12	− 0·23	....	− 37·57	− 2·34
	4648	η Bootis	....	70 56	38·4	47·0	56·0	4·8	49 13·4	13 48 55·92	− 0·43	− 37·56	− 37·57	− 2·51
	4696	α Draconis	....	24 58	45·0	4·6	24·8	44·0	2 3·6	14 1 24·40	− 0·02	....	− 37·57	− 2·53
	4729	α Bootis	....	70 8	53·3	2·0	11·0	19·6	10 28·4	14 10 10·90	− 0·42	− 37·67	− 37·57	− 2·52
May 20	4532	ζ Virginis	....	89 55	13·1	21·4	29·8	38·0	28 46·2	13 28 29·70	− 0·53	− 37·57	− 37·55	− 2·64
	4552	....	....	53 3	47·2	57·4	8·0	18·3	32 28·5	13 32 7·88	− 0·33	....	− 37·55	− 2·33
	4575	....	....	66 39	45·0	53·8	3·0	12·0	38 21·0	13 38 2·96	− 0·42	....	− 37·55	− 2·43
	4607	η Ursæ Majoris	....	40 2	27·5	40·2	53·5	6·1	43 19·0	13 42 53·26	− 0·23	....	− 37·55	− 2·33
	4648	η Bootis	....	70 56	38·4	47·0	56·0	4·8	49 13·3	13 48 55·90	− 0·43	− 37·55	− 37·55	− 2·50
	4672	τ Virginis	....	87 49	11·0	19·0	27·4	35·7	55 44·0	13 55 27·42	− 0·52	− 37·53	− 37·55	− 2·71
	4696	α Draconis	....	24 58	45·1	4·6	24·6	44·0	2 3·5	14 1 24·36	− 0·02	....	− 37·55	− 2·51
	4723	(b)	....	60 17	16·0	25·3	35·2	44·4	8 54·0	14 8 34·98	− 0·37	....	− 37·55	− 2·47
	4756	....	....	37 22	0·5	14·0	28·0	41·5	14 55·0	14 14 27·80	− 0·20	....	− 37·55	− 2·44
	4808	ρ Bootis	....	59 3	22·0	31·4	41·2	51·0	27 0·5	14 26 41·22	− 0·37	− 37·62	− 37·55	− 2·51
	4820	....	....	56 54	48·0	57·5	7·9	17·4	29 27·1	14 29 7·58	− 0·35	....	− 37·55	− 2·50
	4863	....	....	52 41	31·8	42·0	52·5	3·0	38 13·3	14 37 52·52	− 0·33	....	− 37·55	− 2·50
	4876	ι Bootis	....	62 22	27·2	36·5	46·0	55·3	40 4·5	14 39 45·90	− 0·39	− 37·46	− 37·55	− 2·56
May 23	2485	α² Geminorum	....	57 49	18·3	28·1	38·3	48·0	26 57·8	7 26 38·10	− 0·37	− 37·91	− 37·93	− 0·87
	2555	β Geminorum	....	61 39	23·5	32·9	42·4	51·9	38 1·0	7 37 42·34	− 0·40	− 37·97	− 37·93	− 0·88
	360	α Ursæ Minoris S. P.	....	1 25	10·0	42·0	16·5	59·5	21 33·5	13 10 20·30	− 9·29	....	− 37·95	+ 4·62
	4532	ζ Virginis	....	89 55	13·4	21·6	30·0	38·2	28 46·4	13 28 29·92	− 0·55	− 37·78	− 37·95	− 2·63
	4648	(c) η Bootis	....	70 56	35·8	47·2	56·5	5·0	49 13·9	13 48 56·26	− 0·45	− 37·92	− 37·96	− 2·49
	4672	τ Virginis	....	87 49	11·3	19·5	28·0	36·1	55 44·4	13 55 27·86	− 0·53	− 37·97	− 37·96	− 2·70
	4696	α Draconis	....	24 58	45·8	5·0	25·3	44·5	2 4·0	14 1 24·92	− 0·04	....	− 37·97	− 2·44
	4723	(b)	....	60 17	16·1	25·9	35·4	45·0	8 54·4	14 8 35·56	− 0·39	....	− 37·97	− 2·46
	4820	....	....	56 54	48·3	58·1	8·0	18·0	29 27·8	14 29 8·04	− 0·37	....	− 37·97	− 2·50
	4863	....	....	52 41	32·0	42·2	53·0	3·3	38 13·5	14 37 52·80	− 0·35	....	− 37·98	− 2·49
	4876	ι Bootis	....	62 22	27·9	37·0	46·5	55·8	40 5·0	14 39 46·44	− 0·40	− 38·00	− 37·98	− 2·55
	4934	....	....	48 20	13·2	24·0	35·4	46·2	51 57·4	14 51 35·24	− 0·31	....	− 37·98	− 2·51
	4942	....	....	49 50	34·8	45·4	56·4	7·3	55 18·0	14 54 56·36	− 0·33	....	− 37·99	− 2·52
	4965	....	....	44 51	37·8	49·5	1·4	13·0	59 24·9	14 59 1·32	− 0·29	....	− 37·99	− 2·53
	4992	....	....	34 57	37·2	51·9	6·7	20·8	3 35·4	15 3 6·40	− 0·19	....	− 38·00	− 2·56
	5001	....	....	60 17	35·3	44·8	54·2	3·8	6 13·4	15 5 54·30	− 0·39	....	− 38·00	− 2·60
	5034	β Libræ	....	98 54	9·7	17·9	26·5	34·6	10 43·0	15 10 26·34	− 0·58	− 37·97	− 38·00	− 3·10
	5071	....	....	37 36	20·9	34·3	46·2	1·8	17 15·0	15 16 48·04	− 0·22	....	− 38·01	− 2·58
	5091	....	....	26 11	27·0	45·7	4·9	23·7	21 42·4	15 21 4·74	− 0·06	....	− 38·01	− 2·73
	5143	α Coronæ Borealis	....	62 50	21·0	30·0	39·5	48·9	29 58·0	15 29 39·48	− 0·41	− 38·03	− 38·02	− 2·66
	5196	α Serpentis	....	83 9	2·0	10·2	18·8	27·0	38 35·2	15 38 18·64	− 0·51	− 38·06	− 38·02	− 2·58
May 24	4532	ζ Virginis	....	89 55	13·6	21·8	30·2	38·5	28 46·5	13 28 30·12	− 0·57	− 37·96	− 38·06	− 2·62
	4648	η Bootis	....	70 56	38·9	47·7	56·5	5·2	49 13·8	13 48 56·42	− 0·47	− 38·05	− 38·06	− 2·48

(a) Very faint. (b) Fine double star. (c) Definition very bad.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1865.
1865.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
May 24	4672	τ Virginis	....	87 49	11·7	19·8	28·0	36·2	55 44·5	13 55 28·04	− 0·56	−38·12	−38·07	− 2·70
	4696	α Draconis	....	24 58	45·5	4·8	25·0	44·7	2 4·0	14 1 24·80	− 0·04	....	−38·07	− 2·42
	4738	....	....	40 39	13·9	24·5	35·7	46·5	11 57·1	14 11 35·54	− 0·27	....	−38·08	− 2·40
	4809	....	....	62 45	44·1	53·5	3·0	12·3	27 21·4	14 27 2[illegible]6	− 0·43	....	−38·08	− 2·52
	4863	....	....	52 41	32·0	42·4	53·0	3·3	38 13·8	14 37 52·90	− 0·38	....	−38·08	− 2·49
	4876	ι Bootis	....	62 22	28·0	37·1	46·5	56·0	40 5·2	14 39 46·56	− 0·43	−38·09	−38·08	− 2·55
	4934	....	....	48 20	13·1	24·0	35·5	46·4	51 57·5	14 51 35·30	− 0·33	....	−38·08	− 2·51
	5001	....	....	60 17	35·4	44·6	54·8	4·0	6 13·5	15 5 54·50	− 0·41	....	−38·09	− 2·60
	5034	β Libræ	....	98 54	9·9	18·1	26·6	35·0	10 43·3	15 10 26·58	− 0·62	−38·17	−38·09	− 3·10
May 25	360	α Ursæ Minoris S. P.	....	1 25	14·0	46·0	19·0	2·5	21 36·0	13 10 23·50	−10·63	....	−38·25	+ 3·20
	4532	ζ Virginis	....	89 55	13·9	22·0	30·5	38·7	28 46·9	13 28 30·40	− 0·60	−38·22	−38·25	− 2·62
	4729	α Bootis	....	70 8	54·0	2·6	11·7	20·4	10 29·1	14 10 11·56	− 0·49	−38·28	−38·26	− 2·50
	4876	ι Bootis	....	62 22	28·0	37·2	47·0	56·1	40 5·4	14 39 46·74	− 0·45	−38·25	−38·26	− 2·55
	5143	α Coronæ Borealis	....	62 50	21·0	30·4	40·0	49·1	29 58·3	15 29 39·76	− 0·46	−38·25	−38·27	− 2·67
	5196	α Serpentis	....	83 9	2·1	10·4	19·0	27·3	38 35·6	15 38 18·88	− 0·57	−38·23	−38·27	− 2·89
May 30	3995	β Leonis	....	74 42	35·4	44·0	53·0	1·4	43 9·9	11 42 52·71	− 0·56	−39·97	−40·04	− 1·91
	360	(a) α Ursæ Minoris S. P.	....	1 25	17·0	51·5	26·0	9·0	21 42·5	13 10 29·20	−11·01	....	−40·04	− 0·30
	4648	η Bootis	....	70 56	40·7	49·4	58·4	7·0	49 15·8	13 48 58·26	− 0·52	−39·86	−40·04	− 2·46
	4696	α Draconis	....	24 58	47·4	6·9	27·0	46·2	2 6·0	14 1 26·70	− 0·05	....	−40·05	− 2·26
	5034	β Libræ	....	98 54	12·0	20·3	28·9	37·1	10 45·3	15 10 28·72	− 0·69	−40·21	−40·08	− 3·13
	5143	α Coronæ Borealis	....	62 50	23·1	32·4	42·0	51·0	30 0·3	15 29 41·76	− 0·46	−40·22	−40·09	− 2·66
June 3	4808	ε Bootis	....	59 3	25·4	34·9	44·7	54·3	27 4·0	14 26 44·66	− 0·47	−41·02	−41·05	− 2·45
	4876	ι Bootis	....	62 22	31·0	40·1	49·6	59·0	40 8·2	14 39 49·58	− 0·50	−41·08	−41·05	− 2·51
	5034	β Libræ	....	98 54	12·9	21·0	29·6	38·0	10 46·2	15 10 29·54	− 0·70	−41·02	−41·05	− 3·13
	5143	α Coronæ Borealis	....	62 50	24·0	33·2	42·8	52·0	30 1·1	15 29 42·62	− 0·50	−41·05	−41·05	− 2·68
	5196	α Serpentis	....	83 9	5·0	13·3	22·0	30·2	38 38·4	15 38 21·78	− 0·61	−41·05	−41·05	− 2·93
June 7	5604	ζ Herculis	....	58 9	37·0	46·6	56·6	6·1	37 15·7	16 36 56·40	− 0·51	−41·25	−41·27	− 2·77
	5708	κ Ophiuchi	....	80 25	45·0	53·1	1·8	9·9	52 18·3	16 52 1·62	− 0·62	−41·27	−41·27	− 3·00
	5821	α Herculis	....	75 27	57·2	5·6	14·4	23·0	9 31·5	17 9 14·34	− 0·60	−41·20	−41·27	− 2·96
	5941	α Ophiuchi	....	77 20	8·0	16·3	26·0	33·5	29 42·0	17 29 24·96	− 0·61	−41·25	−41·27	− 3·00
	6021	μ Herculis	....	62 12	36·7	46·0	55·5	4·6	42 14·0	17 41 55·36	− 0·53	−41 38	−41·27	− 2·87
June 12	5414	δ Ophiuchi	....	93 21	45·7	53·9	2·2	10·4	8 18·6	16 8 2·16	− 0·74	−41·89	−41·90	− 3·17
	5604	ζ Herculis	....	58 9	37·6	47·2	57·3	7·0	37 16·6	16 36 57·14	− 0·56	−41·92	−41·90	− 2·79
	5708	κ Ophiuchi	....	80 25	45·5	53·8	2·4	10·9	52 19·1	16 52 2·34	− 0·67	−41·90	−41·90	− 3·04
	5821	α Herculis	....	75 27	58·1	6·4	15·2	23·5	9 32·1	17 9 15·06	− 0·65	−41·83	−41·90	− 3·00
	5941	α Ophiuchi	....	77 20	8·9	17·1	25·9	34·3	29 42·5	17 29 25·74	− 0·66	−41·92	−41·90	− 3·06
	6021	μ Herculis	....	62 12	37·4	46·5	56·1	5·3	42 14·8	17 41 56·02	− 0·58	−41·93	−41·90	− 2·93
June 22	5414	δ Ophiuchi	....	93 21	47·2	55·5	4·0	12·2	8 20·4	16 8 3·66	− 0·72	−43·59	−43·66	− 3·19
	5604	ζ Herculis	....	58 9	39·5	49·1	59·0	8·6	37 18·2	16 36 58·88	− 0·56	−43·66	−43·66	− 2·79
	5708	(b) κ Ophiuchi	....	80 25	47·4	55·9	4·3	12·5	52 21·0	16 52 4·22	− 0·66	−43·75	−43·66	− 3·08
	5821	α Herculis	....	75 27	59·9	8·2	17·0	25·4	9 34·0	17 9 16·90	− 0·64	−43·62	−43·66	− 3·06
	5941	α Ophiuchi	....	77 20	10·4	19·0	27·5	36·0	29 44·4	17 29 27·46	− 0·64	−43·59	−43·66	− 3·13
	6021	μ Herculis	....	62 12	39·0	48·3	58·0	7·1	42 16·4	17 41 57·76	− 0·58	−43·60	−43·66	− 3·00
	6281	δ Ursæ Minoris	....	3 24	6·0	25·0	48·0	6·5	21 25·0	18 16 46·10	+ 2·33	....	−43·68	−11·37
	6429	(b) β Lyræ	....	56 47	33·5	43·1	53·5	3·0	46 13·0	18 45 53·22	− 0·55	−43·82	−43·68	− 3·08

(a) Definition bad. Cloudy. (b) Very faint.

Date.	No. in British Association Catalogue.	OBJECT OBSERVED.	Magnitude observed.	North Polar Distance set to.	Wires observed.					Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock		Correction to Mean R.A. Jan. 1, 1865.
					I.	II.	III.	IV.	V.			observed.	interpolated.	
1865.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
June 23	5143	(a) α Coronæ Borealis	....	62 50	27·0	36·1	45·5	54·8	30 4·1	15 29 45·50	− 0·67	−43·94	−43·84	− 2·61
	5196	α Serpentis	....	83 9	8·0	16·2	24·9	33·1	38 41·2	15 38 24·68	− 0·79	−43·77	−43·84	− 2·93
	5414	δ Ophiuchi	....	93 21	47·5	56·0	4·2	12·5	8 20·9	16 8 4·22	− 0·83	−43·84	−43·85	− 3·19
	5821	α Herculis	....	75 27	0·1	8·5	17·3	25·9	9 34·2	17 9 17·20	− 0·73	−43·83	−43·86	− 3·06
	5941	α Ophiuchi	....	77 20	11·0	19·3	28·0	36·3	29 45·0	17 29 27·92	− 0·75	−43·94	−43·87	− 3·13
	6021	μ Herculis	....	62 12	39·4	48·6	58·2	7·5	42 17·0	17 41 58·14	− 0·66	−43·90	−43·88	− 3·00
	6281	δ Ursæ Minoris	....	3 24	5·0	24·5	47·0	5·0	21 25·0	18 16 45·30	+ 3·40	....	−43·89	−11·32
	6429	β Lyræ	....	56 47	33·8	43·6	53·7	3·4	46 13·2	18 45 53·51	− 0·63	−43·93	−43·89	− 3·09
June 30	5414	δ Ophiuchi	....	93 21	50·2	58·4	7·0	15·2	8 23·4	16 8 6·84	− 0·76	−46·54	−46·68	− 3·18
	5708	κ Ophiuchi	....	80 25	50·6	59·0	7·4	15·6	52 24·0	16 52 7·32	− 0·71	−46·79	−46·69	− 3·09
	5821	α Herculis	....	75 27	3·0	11·3	20·1	28·5	9 37·0	17 9 19·98	− 0·69	−46·63	−46·69	− 3·08
	5941	α Ophiuchi	....	77 20	13·9	22·2	31·0	39·2	29 47·5	17 29 30·76	− 0·70	−46·80	−46·70	− 3·16
July 3	5708	κ Ophiuchi	....	80 25	51·1	59·4	8·0	16·3	52 24·5	16 52 7·86	− 0·63	−47·42	−47·52	− 3·08
	5821	α Herculis	....	75 27	3·8	12·1	21·0	29·3	9 38·0	17 9 20·84	− 0·61	−47·58	−47·53	− 3·07
	5941	α Ophiuchi	....	77 20	14·5	22·9	31·4	40·0	29 48·2	17 29 31·40	− 0·63	−47·51	−47·54	− 3·16
	6281	δ Ursæ Minoris	....	3 24	11·0	29·0	52·5	10·5	21 29·5	18 16 50·60	+ 1·04	....	−47·54	−10·44
	6429	β Lyræ	....	56 47	37·4	47·1	57·1	7·0	46 16·9	18 45 57·10	− 0·57	−47·57	−47·55	− 3·19
	6528	ζ Aquilæ	....	76 19	46·8	55·1	3·9	12·3	0 20·9	19 0 3·80	− 0·62	−47·63	−47·56	− 3·27
July 8	5604	ζ Herculis	....	58 9	45·4	55·0	5·0	14·7	37 24·4	16 37 4·90	− 0·63	−49·69	−49·64	− 2·71
	5821	α Herculis	....	75 27	5·8	14·3	23·0	31·4	9 40·0	17 9 22·90	− 0·69	−49·57	−49·64	− 3·06
	5941	α Ophiuchi	....	77 20	16·8	25·0	33·8	42·0	29 50·6	17 29 33·64	− 0·70	−49·68	−49·64	− 3·16
	6021	μ Herculis	....	62 12	45·1	54·5	4·0	13·2	42 22·4	17 42 3·84	− 0·64	−49·60	−49·65	− 3·02
	6281	δ Ursæ Minoris	....	3 24	10·0	30·0	53·5	12·0	21 30·0	18 16 51·10	+ 1·75	....	−49·65	− 9·78
July 11	5604	(b) ζ Herculis	....	58 9	46·4	56·1	6·0	15·8	37 25·5	16 37 5·96	− 0·63	−50·77	−50·83	− 2·69
	5708	κ Ophiuchi	....	80 25	54·5	2·9	11·5	19·9	52 28·0	16 52 11·36	− 0·71	−50·86	−50·83	− 3·04
	5821	α Herculis	....	75 27	7·0	15·4	24·2	32·6	9 41·2	17 9 24·08	− 0·69	−50·75	−50·84	− 3·05
	5941	α Ophiuchi	....	77 20	18·0	26·2	35·0	43·3	29 52·0	17 29 34·90	− 0·70	−50·94	−50·85	− 3·16
	6021	μ Herculis	....	62 12	46·4	55·6	5·3	14·4	42 23·8	17 42 5·10	− 0·64	−50·87	−50·86	− 3·01
July 14	6528	ζ Aquilæ	....	76 19	51·3	59·9	8·4	17·0	0 25·4	19 0 8·40	− 0·72	−52·05	−51·97	− 3·35
	6595	ω Aquilæ	....	78 38	8·0	16·3	25·0	33·4	12 41·7	19 12 24·88	− 0·74	−51·99	−51·97	− 3·39
	6646	δ Aquilæ	....	87 8	21·0	29·2	37·8	46·0	19 54·2	19 19 37·64	− 0·77	−51·96	−51·97	− 3·48
	6772	γ Aquilæ	....	79 42	29·9	38·1	46·8	55·0	41 3·2	19 40 46·60	− 0·74	−51·95	−51·97	− 3·42
	6802	α Aquilæ	....	81 28	51·3	59·4	8·0	16·2	45 24·6	19 45 7·90	− 0·74	−51·95	−51·97	− 3·45
	6833	β Aquilæ	....	83 54	20·4	28·6	37·2	45·4	49 53·6	19 49 37·04	− 0·76	−51·95	−51·97	− 3·45
July 15	5604	ζ Herculis	....	58 9	48·0	57·8	7·6	17·3	37 27·0	16 37 7·54	− 0·67	−52·35	−52·30	− 2·64
	5708	κ Ophiuchi	....	80 25	56·0	4·2	13·0	21·2	52 29·4	16 52 12·76	− 0·77	−52·22	−52·30	− 3·04
	5821	α Herculis	....	75 27	8·5	17·0	25·8	34·2	9 42·9	17 9 25·68	− 0·74	−52·32	−52·31	− 3·04
	6021	μ Herculis	....	62 12	47·9	57·1	6·8	16·0	42 25·3	17 42 6·62	− 0·69	−52·36	−52·32	− 2·99
	6281	δ Ursæ Minoris	....	3 24	11·5	31·0	54·5	13·0	21 32·5	18 16 52·50	+ 1·98	....	−52·33	− 8·60
July 17	6355	α Lyræ	....	51 20	57·4	8·0	18·9	29·4	33 40·0	18 33 18·74	− 0·64	−52·86	−52·90	− 3·17
	6429	β Lyræ	....	56 47	42·9	52·6	2·7	12·5	46 22·3	18 46 2·60	− 0·67	−52·94	−52·90	− 3·22
	6528	ζ Aquilæ	....	76 19	52·3	0·8	9·4	18·0	0 26·3	19 5 9·36	− 0·75	−52·96	−52·91	− 3·37
	6595	(c) ω Aquilæ	....	78 38	9·0	17·3	26·0	34·4	12 42·7	19 12 25·88	− 0·76	−52·95	−52·91	− 3·41
	6646	δ Aquilæ	....	87 8	22·1	30·3	38·9	47·0	19 55·2	19 19 38·70	− 0·79	−52·98	−52·92	− 3·50

(a) Definition bad. Stars unsteady. (b) Definition bad. (c) Very faint.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1865.
1865.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
July 17	6772	γ Aquilæ	....	79 42	30·9	39·1	47·5	56·0	41 4·2	19 40 47·54	− 0·77	−52·84	−52·92	− 3·44
	6802	α Aquilæ	....	81 28	52·2	0·4	9·0	17·1	45 25·5	19 45 8·84	− 0·76	−52·85	−52·92	− 3·47
July 21	6528	(a) ζ Aquilæ	....	76 [illegible]	53·2	1·6	10·6	18·9	0 27·2	19 0 10·30	− 0·71	−53·93	−53·94	− 3·38
	6595	ω Aquilæ	....	78 38	10·0	18·3	27·0	35·4	12 43·8	19 12 26·90	− 0·73	−53·98	−53·94	− 3·43
	6646	δ Aquilæ	....	87 8	23·2	31·4	39·9	48·0	19 56·3	19 19 39·76	− 0·75	−54·06	−53·94	− 3·52
	6772	γ Aquilæ	....	79 42	31·9	40·0	48·8	57·0	41 5·3	19 40 48·60	− 0·72	−53·92	−53·94	− 3·47
	6802	α Aquilæ	....	81 28	53·2	1·3	10·1	18·2	45 26·5	19 45 9·86	− 0·73	−53·86	−53·94	− 3·51
	6833	β Aquilæ	....	83 54	22·4	30·6	39·2	47·2	49 55·6	19 49 39·00	− 0·74	−53·88	−53·94	− 3·50
July 23	5604	ζ Herculis	....	58 9	50·0	59·6	9·5	19·1	37 29·0	16 37 9·44	− 0·65	−54·37	−54·30	− 2·55
	5708	κ Ophiuchi	....	80 25	58·0	6·3	14·9	23·1	52 31·4	16 52 14·74	− 0·71	−54·32	−54·30	− 2·98
	5821	α Herculis	....	75 27	10·4	19·0	27·6	36·1	9 44·6	17 9 27·54	− 0·69	−54·29	−54·31	− 2·98
	5941	α Ophiuchi	....	77 20	21·3	29·4	38·2	46·8	29 55·2	17 29 38·18	− 0·70	−54·27	−54·31	− 3·11
	6021	μ Herculis	....	62 12	49·6	59·0	8·6	18·0	42 27·2	17 42 8·48	− 0·66	−54·30	−54·32	− 2·94
July 24	5941	α Ophiuchi	....	77 20	21·2	29·5	38·3	47·0	29 55·3	17 29 38·26	− 0·68	−54·38	−54·48	− 3·10
	6021	μ Herculis	....	62 12	50·0	59·2	8·9	18·0	42 27·2	17 42 8·66	− 0·65	−54·50	−54·50	− 2·93
	6281	δ Ursæ Minoris	....	3 [illegible]	13·0	32·5	56·0	14·5	21 34·0	18 16 54·00	+ 0·65	....	−54·52	− 6·68
	6429	β Lyræ	....	56 47	44·5	54·2	4·4	14·0	46 24·0	18 46 4·22	− 0·64	−54·61	−54·54	− 3·20
July 25	6528	ζ Aquilæ	....	76 19	54·0	2·3	11·1	19·5	0 28·0	19 0 10·93	− 0·70	−54·62	−54·58	− 3·38
	6772	γ Aquilæ	....	79 42	32·6	40·8	49·4	57·6	41 6·0	19 40 49·28	− 0·71	−54·59	−54·59	− 3·49
	6802	α Aquilæ	....	81 28	54·0	2·0	10·6	19·0	45 27·2	19 45 10·56	− 0·71	−54·56	−54·59	− 3·53
	6833	β Aquilæ	....	83 [illegible]	23·0	31·2	39·9	48·1	49 56·4	19 49 39·72	− 0·72	−54·60	−54·60	− 3·52
July 31	5821	(b) α Herculis	....	75 27	12·3	21·0	29·4	38·1	9 46·5	17 9 29·46	− 0·73	−56·23	−56·28	− 2·91
	6772	γ Aquilæ	....	79 42	34·4	42·7	51·1	59·4	41 7·7	19 40 51·06	− 0·74	−56·32	−56·29	− 3·51
	6802	α Aquilæ	....	81 28	55·8	3·9	12·4	20·8	45 29·0	19 45 12·38	− 0·74	−56·33	−56·29	− 3·55
	6833	β Aquilæ	....	83 54	25·0	33·1	41·5	49·6	49 58·0	19 49 41·44	− 0·75	−56·26	−56·30	− 3·55
Aug. 4	5143	α Coronæ Borealis	....	62 50	40·2	49·5	59·0	8·2	30 17·4	15 29 58·86	− 0·69	−57·72	−57·70	− 2·07
	5196	α Serpentis	....	83 9	21·4	29·7	38·2	46·4	38 54·9	15 38 38·12	− 0·73	−57·66	−57·71	− 2·54
	6528	ζ Aquilæ	....	76 19	57·0	5·4	14·2	22·6	0 31·0	19 0 14·04	− 0·72	−57·69	−57·72	− 3·35
	6646	δ Aquilæ	....	87 8	27·0	35·2	43·6	51·7	20 0·0	19 19 43·50	− 0·75	−57·78	−57·72	− 3·54
	6772	γ Aquilæ	....	79 42	35·8	44·0	52·5	0·9	41 9·2	19 40 52·48	− 0·73	−57·76	−57·72	− 3·50
	6802	α Aquilæ	....	81 28	57·1	5·2	13·9	22·1	45 30·4	19 45 13·74	− 0·73	−57·70	−57·73	− 3·55
	6833	β Aquilæ	....	83 54	26·4	34·5	43·0	51·2	49 59·4	19 49 42·90	− 0·74	−57·72	−57·73	− 3·55
Aug. 29	5604	ζ Herculis	....	58 9	54·4	4·1	14·2	23·9	37 33·4	16 37 14·00	− 0·65	−59·63	−59·53	− 1·85
	5941	α Ophiuchi	....	77 20	26·0	34·4	43·1	51·4	30 0·0	17 29 42·98	− 0·70	−59·53	−59·53	− 2·65
	6021	μ Herculis	....	62 12	54·4	3·8	13·3	22·5	42 32·0	17 42 13·20	− 0·66	−59·56	−59·53	− 2·40
	6281	δ Ursæ Minoris	....	3 24	6·5	26·0	50·0	7·5	21 26·5	18 16 47·30	+ 0·83	....	−59·53	+ 4·72
	6355	α Lyræ	....	51 20	3·3	14·1	25·0	35·5	33 45·9	18 33 24·76	− 0·62	−59·45	−59·53	− 2·62
	7368	ζ Cygni	....	60 18	56·4	5·8	15·5	25·0	8 34·3	21 8 15·10	− 0·65	−59·56	−59·53	− 3·70
	7561	ε Pegasi	....	80 43	20·5	28·8	37·4	45·6	38 54·0	21 38 37·26	− 0·71	−59·46	−59·53	− 3·75
Sept. 2	6429	β Lyræ	....	56 47	49·0	58·9	9·0	18·7	46 28·4	18 46 8·80	− 0·65	−59·67	−59·60	− 2·71
	6528	ζ Aquilæ	....	76 19	58·7	7·0	15·9	24·2	0 32·7	19 0 15·70	− 0·70	−59·65	−59·60	− 3·07
	6646	δ Aquilæ	....	87 8	28·6	36·6	45·2	53·4	20 1·5	19 19 45·06	− 0·73	−59·57	−59·60	− 3·33
	6772	γ Aquilæ	....	79 42	37·2	45·5	54·1	2·4	41 10·8	19 40 54·00	− 0·71	−59·48	−59·60	− 3·32
	6833	β Aquilæ	....	83 54	28·0	36·1	44·7	53·0	50 1·3	19 49 44·62	− 0·72	−59·61	−59·60	− 3·41

(a) An apparent inversion of the clock-rate during the time of observation, caused most probably by the swerving of the instrument on its piers. (b) Faint.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1. 1865.
1865.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Sept. 4	7368	ζ Cygni	....	60 18	56·3	5·7	15·4	24·9	8 34·4	21 8 15·34	− 0·64	−59·55	−59·50	− 3·66
	7561	ι Pegasi	....	80 43	20·6	28·8	37·3	45·6	38 54·0	21 38 37·26	− 0·70	−59·49	−59·50	− 3·73
	7688	α Aquarii	....	90 57	38·4	46·5	55·1	3·2	0 11·4	21 59 54·92	− 0·74	−59·49	−59·50	− 3·73
	7773	θ Aquarii	....	98 25	29·9	38·0	46·6	54·9	11 3·1	22 10 46·50	− 0·76	−59·48	−59·50	− 3·62
	7868	η Aquarii	....	90 47	12·7	20·8	29·1	37·4	29 45·5	22 29 29·10	− 0·74	−59·48	−59·50	− 3·61
	7908	ζ Pegasi	....	79 50	31·0	39·4	47·9	56·2	36 4·5	22 35 47·80	− 0·71	−59·51	−59·50	− 3·84
Sept. 14	7908	ζ Pegasi	....	79 50	31·6	39·9	48·5	56·9	36 5·2	22 35 48·42	− 0·69	−60·14	−60·12	− 3·85
	8034	α Pegasi	....	75 29	50·0	58·3	7·0	15·4	59 24·1	22 59 6·96	− 0·67	−60·10	−60·12	− 3·94
	8105	γ Piscium	....	87 25	58·1	6·3	14·9	23·1	11 31·3	23 11 14·74	− 0·71	−60·14	−60·12	− 3·69
	8169	κ Piscium	....	89 27	48·7	57·0	5·5	13·7	21 21·9	23 21 5·36	− 0·72	−60·10	−60·12	− 3·85
	8233	ι Piscium	....	85 4	48·5	56·7	5·3	13·5	34 21·8	23 34 5·16	− 0·71	−60·13	−60·12	− 3·91
Sept. 18	7561	ι Pegasi	....	80 43	20·8	29·0	37·6	46·1	38 51·3	21 38 37·56	− 0·68	−59·88	−59·98	− 3·66
	7627	16 Pegasi	....	64 41	41·3	50·4	59·9	9·0	48 17·9	21 47 59·70	− 0·63	−60·07	−59·98	− 3·74
	7688	α Aquarii	....	90 57	38·9	47·0	55·4	3·6	[illegible] 11·8	21 59 55·34	− 0·72	−59·97	−59·98	− 3·74
	7908	ζ Pegasi	....	79 50	31·5	39·8	48·4	56·9	36 5·1	22 35 48·34	− 0·68	−60·07	−59·97	− 3·85
	8034	α Pegasi	....	75 29	49·8	58·0	6·8	15·4	59 23·9	22 59 6·78	− 0·66	−59·93	−59·97	− 3·94
Sept. 19	7688	α Aquarii	....	90 57	38·6	46·7	55·3	3·4	[illegible] 11·6	21 59 55·12	− 0·72	−59·76	−59·85	− 3·73
	7868	η Aquarii	....	90 47	12·9	21·1	29·5	37·6	29 46·0	22 29 29·12	− 0·72	−59·82	−59·85	− 3·61
	7908	ζ Pegasi	....	79 50	31·4	39·6	48·3	56·5	36 4·9	22 35 48·14	− 0·68	−59·87	−59·85	− 3·81
	8034	α Pegasi	....	75 29	45·9	58·1	6·9	15·2	59 23·9	22 59 6·80	− 0·66	−59·95	−59·86	− 3·94
	8105	γ Piscium	....	87 25	58·0	6·0	14·5	22·8	11 31·0	23 11 14·46	− 0·70	−59·86	−59·86	− 3·90
Sept. 20	8105	(a) γ Piscium	....	87 25	58·0	6·0	14·7	23·0	11 31·0	23 11 14·54	− 0·70	−59·94	−59·93	− 3·90
	8169	κ Piscium	....	89 27	48·8	56·9	5·3	13·4	21 21·6	23 21 5·20	− 0·71	−59·93	−59·93	− 3·87
	8233	ι Piscium	....	85 4	48·3	56·6	5·0	13·2	34 21·4	23 34 4·90	− 0·70	−59·86	−59·93	− 3·93
	8331	ω Piscium	....	83 51	10·5	19·0	27·4	35·6	53 43·9	23 53 27·28	− 0·69	−59·87	−59·93	− 3·94
	4	α Andromedæ	....	61 37	11·1	20·2	30·0	39·2	2 48·6	0 2 29·82	− 0·62	−59·99	−59·93	− 4·34
	26	γ Pegasi	....	75 32	4·9	13·2	22·0	30·5	7 38·9	0 7 21·90	− 0·67	−59·97	−59·93	− 4·06
Sept. [illegible]	8034	α Pegasi	....	75 29	49·5	58·0	6·8	15·2	59 23·8	22 59 6·66	− 0·66	−59·82	−59·79	− 3·93
	8105	γ Piscium	....	87 25	57·9	6·0	14·4	22·9	11 30·9	23 11 14·42	− 0·70	−59·82	−59·79	− 3·90
	8233	ι Piscium	....	85 4	48·3	56·5	5·0	13·2	34 21·4	[illegible] 34 4·88	− 0·70	−59·83	−59·79	− 3·94
	8331	ω Piscium	....	83 51	10·4	18·9	27·2	35·4	53 43·8	[illegible] 53 27·14	− 0·69	−59·73	−59·79	− 3·94
	4	α Andromedæ	....	61 37	11·0	20·2	29·8	39·1	2 48·4	[illegible] 2 29·60	− 0·62	−59·76	−59·79	− 4·35
	26	γ Pegasi	....	75 32	4·8	13·0	21·9	30·2	7 36·7	0 7 21·72	− 0·67	−59·78	−59·79	− 4·07
Sept. 22	8233	ι Piscium	....	85 4	48·1	56·3	5·0	13·1	34 21·4	[illegible] 34 4·78	− 0·70	−59·73	−59·73	− 3·94
	8331	ω Piscium	....	83 51	10·5	18·7	27·2	35·5	[illegible] 43·7	23 53 27·12	− 0·69	−59·70	−59·72	− 3·95
	4	α Andromedæ	....	61 37	10·7	20·1	29·7	39·0	2 48·3	0 2 29·56	− 0·62	−59·72	−59·72	− 4·35
	26	γ Pegasi	....	75 32	4·6	13·0	21·9	30·2	7 38·6	0 7 21·66	− 0·67	−59·72	−59·72	− 4·07
Sept. 24	7478	β Aquarii	....	96 8	14·0	22·1	30·7	39·0	25 47·2	[illegible] 25 30·60	− 0·73	−59·28	−59·26	− 3·43
	7561	ι Pegasi	....	80 43	20·1	28·3	37·0	45·2	38 53·5	21 38 36·82	− 0·67	−59·20	−59·26	− 3·41
	7627	16 Pegasi	....	64 41	40·7	49·7	59·1	8·0	48 17·3	21 47 58·96	− [illegible]	−59·40	−59·25	− 3·68
	7688	α Aquarii	....	90 57	38·0	46·2	54·5	2·8	0 11·0	21 59 54·50	− 0·72	−59·17	−59·25	− 3·70
Sept. 25	7688	(b) α Aquarii	....	90 57	37·9	46·0	54·5	2·6	0 10·8	21 59 54·36	− 0·72	−59·04	−59·05	− 3·69
	7868	η Aquarii	....	90 47	12·0	20·2	28·8	37·0	29 45·1	22 29 28·62	− 0·72	−59·06	−59·04	− 3·77

(a) Definition very bad throughout. (b) Definition indifferent all night.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1865.
1865.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Sept. 25	7908	ζ Pegasi	....	79 50	30·5	39·0	47·4	55·6	36 4·0	22 35 47·30	− 0·68	− 59·06	− 59·04	− 3·82
	8034	α Pegasi	....	75 29	48·9	57·2	6·0	14·2	59 23·0	22 59 5·86	− 0·65	− 59·03	− 59·03	− 3·93
	8233	ι Piscium	....	85 4	47·4	55·5	4·2	12·3	34 20·5	23 34 3·98	− 0·69	− 58·94	− 59·02	− 3·94
	4	α Andromedæ	....	61 37	10·1	19·5	29·1	38·3	2 47·6	0 2 28·92	− 0·61	− 59·07	− 59·02	− 4·37
	26	γ Pegasi	....	75 32	3·9	12·4	21·0	29·7	7 38·0	0 7 21·00	− 0·66	− 59·05	− 59·02	− 4·09
Sept. 26	8233	ι Piscium	....	85 4	47·2	55·4	4·0	12·3	34 20·5	23 34 3·88	− 0·69	− 58·83	− 58·79	− 3·95
	8331	ω Piscium	....	83 51	9·7	17·9	26·3	34·4	53 42·9	23 53 26·24	− 0·69	− 58·81	− 58·79	− 3·96
	4	α Andromedæ	....	61 37	9·8	19·2	28·6	38·1	2 47·4	0 2 28·62	− 0·61	− 58·77	− 58·79	− 4·37
	26	γ Pegasi	....	75 32	3·8	12·0	20·8	29·2	7 37·7	0 7 20·70	− 0·66	− 58·74	− 58·79	− 4·10
Sept. 28	8233	ι Piscium	....	85 4	46·9	55·0	3·7	12·0	34 20·1	23 34 3·54	− 0·69	− 58·49	− 58·48	− 3·95
	8331	ω Piscium	....	83 51	9·3	17·5	26·0	34·2	53 42·4	23 53 25·88	− 0·68	− 58·45	− 58·47	− 3·97
	4	α Andromedæ	....	61 37	9·5	19·0	28·4	37·8	2 47·1	0 2 28·36	− 0·60	− 58·51	− 58·47	− 4·38
	26	γ Pegasi	....	75 32	3·4	11·7	20·5	29·0	7 37·4	0 7 20·40	− 0·65	− 58·44	− 58·46	− 4·11
Oct. 2	8233	ι Piscium	....	85 4	46·0	54·2	2·8	11·0	34 19·2	23 34 2·64	− 0·68	− 57·61	− 57·62	− 3·94
	8331	ω Piscium	....	83 51	8·5	16·4	25·1	33·2	53 41·7	23 53 24·98	− 0·68	− 57·55	− 57·61	− 3·97
	4	α Andromedæ	....	61 37	8·8	18·0	27·5	37·0	2 46·1	0 2 27·48	− 0·59	− 57·61	− 57·61	− 4·39
	26	γ Pegasi	....	75 32	2·4	11·0	19·8	28·1	7 36·6	0 7 19·58	− 0·64	− 57·63	− 57·60	− 4·11
Oct. 3	7908	ζ Pegasi	....	79 50	28·8	37·0	45·4	53·9	36 2·2	22 35 45·46	− 0·65	− 57·29	− 57·26	− 3·78
	7958	μ Pegasi	4·0	60 5	13·0	22·1	31·3	40·1	44 49·3	22 44 31·16	− 0·60	....	− 57·26	− 3·92
	7977	....	7·5	88 51	43·9	51·9	0·3	8·5	48 16·8	22 48 0·28	− 0·69	....	− 57·26	− 3·78
	7996	....	7·0	86 53	25·5	33·9	42·2	50·4	51 58·5	22 51 49·10	− 0·68	....	− 57·26	− 3·80
	8034	α Pegasi	....	75 29	47·0	55·4	4·0	12·7	59 21·1	22 59 4·01	− 0·63	− 57·26	− 57·26	− 3·90
	8065	....	7·0	88 34	14·0	22·[illegible]	30·5	38·8	3 47·0	23 3 30·46	− 0·69	....	− 57·26	− 3·82
	8083	Cassiopeæ	5·0	[illegible] 33	20·8	35·9	51·0	6·0	8 20·8	23 7 50·90	− 0·42	....	− 57·26	− 5·12
	8105	γ Piscium	....	87 25	55·2	3·3	12·0	20·1	11 28·3	23 11 11·78	− 0·68	− 57·21	− 57·26	− 3·88
	8139	....	7·0	52 8	29·8	40·1	50·9	1·2	16 11·7	23 15 50·74	− 0·54	....	− 57·26	− 4·38
	8233	ι Piscium	....	85 4	45·8	54·0	2·4	10·5	34 19·0	23 34 2·34	− 0·67	− 57·32	− 57·26	− 3·94
	8269	....	8·0	86 29	36·0	44·4	53·0	1·1	42 9·4	23 41 52·78	− 0·68	....	− 57·26	− 3·92
	4	α Andromedæ	....	61 37	8·2	17·5	27·1	36·5	2 45·9	0 2 27·04	− 0·58	− 57·20	− 57·26	− 4·39
	26	γ Pegasi	....	75 32	2·2	10·5	19·3	27·7	7 36·2	0 7 19·18	− 0·63	− 57·23	− 57·26	− 4·12
	360	α Ursæ Minoris	....	1 25	44·5	18·0	4·5	38·5	23 14·0	1 11 59·90	+ 5·20	....	− 57·26	− 89·02
	453	η Piscium	....	75 19	0·9	9·2	18·[illegible]	26·4	25 35·0	1 25 17·90	− 0·63	− 57·29	− 57·26	− 4·21
Oct. 19	8105	γ Piscium	....	87 25	53·6	1·8	10·1	18·2	11 26·5	23 11 10·04	− 0·70	− 55·55	− 55·57	− 3·79
	8233	ι Piscium	....	85 4	44·0	52·2	0·7	9·0	34 17·2	23 34 0·62	− 0·70	− 55·64	− 55·57	− 3·87
	4	α Andromedæ	....	61 37	6·5	15·9	25·6	35·0	2 44·1	0 2 25·42	− 0·58	− 55·62	− 55·57	− 4·36
	112	12 Ceti	....	94 40	52·5	0·7	9·0	17·3	24 25·8	0 24 9·06	− 0·75	− 55·47	− 55·57	− 3·90
	288	ε Piscium	....	82 48	40·1	48·3	56·9	5·0	57 13·2	0 56 56·70	− 0·68	− 55·56	− 55·57	− 4·12
	360	α Ursæ Minoris	....	1 25	39·5	17·0	1·0	36·5	23 10·0	1 11 56·80	+ 7·95	....	− 55·57	− 90·24
	453	η Piscium	....	75 19	59·3	7·6	16·5	24·9	25 33·3	1 25 16·32	− 0·64	− 55·58	− 55·57	− 4·33
Oct. 20	8105	γ Piscium	....	87 25	53·5	1·7	10·2	18·4	11 26·8	23 11 10·12	− 0·71	− 55·63	− 55·65	− 3·78
	8233	ι Piscium	....	85 4	44·0	52·2	0·6	8·9	34 17·1	23 34 0·56	− 0·70	− 55·58	− 55·65	− 3·87
	4	α Andromedæ	....	61 37	6·8	16·0	25·7	35·0	2 44·2	0 2 25·54	− 0·58	− 55·74	− 55·65	− 4·35
	26	γ Pegasi	....	75 32	0·5	9·0	17·6	26·0	7 34·8	0 7 17·58	− 0·65	− 55·63	− 55·65	− 4·10
	288	ε Piscium	....	82 48	40·2	48·3	56·9	5·0	57 13·4	0 56 56·76	− 0·69	− 55·61	− 55·65	− 4·12
	360	α Ursæ Minoris	....	1 25	39·5	14·5	1·5	37·0	23 10·0	1 11 56·50	+ 8·17	....	− 55·65	− 90·20
	453	η Piscium	....	75 19	59·3	7·7	16·5	25·0	25 33·7	1 25 16·44	− 0·65	− 55·68	− 55·65	− 4·34

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance.	Wires observed I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1865.
1865				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Oct. 21	8034	α Pegasi	......	75 29	15·1	53·6	2·5	10·9	59 19·2	22 59 2·26	− 0·64	− 55·61	− 55·64	− 3·76
	8105	γ Piscium	......	87 25	53·5	1·7	10·3	18·5	11 26·7	23 11 10·14	− 0·70	− 55·67	− 55·64	− 3·77
	8233	ι Piscium	......	85 4	44·0	52·2	0·5	9·0	34 17·2	23 34 0·64	− 0·70	− 55·67	− 55·64	− 3·88
	4	α Andromedæ	......	61 37	6·7	16·0	25·4	34·9	2 44·1	0 2 25·42	− 0·58	− 55·62	− 55·64	− 4·31
	26	γ Pegasi	......	75 32	0·5	9·0	17·6	26·0	7 34·7	0 7 17·60	− 0·65	− 55·65	− 55·64	− 4·10
Oct. 27	648	α Arietis	......	67 9	17·0	25·9	35·1	43·9	0 53·0	2 0 34·94	− 0·58	− 55·62	− 55·53	− 4·69
	704	67 Ceti	......	97 1	58·4	6·9	15·3	23·6	11 31·9	2 11 15·22	− 0·74	− 55·47	− 55·53	− 3·98
	837	γ Ceti	......	87 18	2·1	10·4	19·0	27·0	37 35·4	2 37 18·78	− 0·68	− 55·49	− 55·53	− 4·16
	949	α Ceti	......	86 25	57·3	5·5	14·0	22·3	56 30·5	2 56 13·92	− 0·68	− 55·58	− 55·53	− 4·19
	986	δ Arietis	......	70 46	38·1	46·7	55·6	4·2	5 13·0	3 4 55·52	− 0·59	− 55·48	− 55·53	− 4·61
Oct. 30	4	α Andromedæ	......	61 37	6·5	15·9	25·4	34·9	2 44·2	0 2 25·38	− 0·54	− 55·68	− 55·66	− 4·29
	26	γ Pegasi	......	75 32	0·4	8·9	17·5	26·0	7 34·6	0 7 17·48	− 0·62	− 55·61	− 55·60	− 4·05
	453	η Piscium	......	75 19	59·4	7·9	16·7	25·1	25 33·1	1 25 16·50	− 0·61	− 55·75	− 55·60	− 4·37
	577	β Arietis	......	69 49	54·3	3·0	12·1	21·0	48 29·8	1 48 12·04	− 0·59	− 55·68	− 55·66	− 4·59
	949	α Ceti	......	86 25	57·4	5·6	14·0	22·2	56 30·5	2 56 13·94	− 0·68	− 55·57	− 55·66	− 4·23
Nov. 1	577	β Arietis	......	69 49	54·0	2·8	11·9	20·5	48 29·2	1 48 11·68	− 0·58	− 55·32	− 55·22	− 4·55
	704	67 Ceti	......	97 1	58·4	6·5	15·0	23·4	11 31·6	2 11 14·92	− 0·72	− 55·16	− 55·21	− 4·00
	760	ξ² Ceti	......	82 9	42·4	50·8	59·3	7·5	22 15·9	2 21 59·18	− 0·64	− 55·19	− 55·21	− 4·32
	837	γ Ceti	......	87 18	2·0	10·2	18·7	26·9	37 35·1	2 37 18·58	− 0·67	− 55·26	− 55·21	− 4·50
Nov. 3	360	α Ursæ Minoris	......	1 25	34·0	12·0	55·5	32·0	23 10·0	1 11 52·70	+ 8·87	......	− 54·59	− 88·18
	453	η Piscium	......	75 19	58·2	6·6	15·1	24·0	25 32·4	1 25 15·32	− 0·59	− 54·59	− 54·59	− 4·37
	518	ν Piscium	......	85 10	7·1	15·4	24·0	32·1	35 40·4	1 35 23·80	− 0·65	− 54·53	− 54·59	− 4·13
	577	β Arietis	......	69 49	53·2	2·0	11·0	19·9	48 28·5	1 48 10·92	− 0·57	− 54·57	− 54·59	− 4·59
	694	......	......	26 11	50·5	9·2	28·5	47·0	10 6·0	2 9 28·24	− 0·16	......	− 54·58	− 8·05
	702	......	......	26 16	18·4	36·9	56·0	14·7	11 33·0	2 10 55·74	− 0·16	......	− 54·58	− 8·05
	764	......	......	81 1	5·9	14·2	22·6	31·0	23 39·3	2 23 22·60	− 0·64	......	− 54·58	− 4·36
	776	......	......	88 19	14·1	22·4	30·9	39·0	25 47·3	2 25 30·74	− 0·67	......	− 54·58	− 4·20
	793	......	......	83 45	23·9	32·0	40·6	48·5	29 57·0	2 29 40·16	− 0·65	......	− 54·58	− 4·30
	837	γ Ceti	......	87 18	1·1	9·7	18·0	26·1	37 34·5	2 37 17·94	− 0·67	− 54·61	− 54·58	− 4·21
	881	ε Arietis	......	75 27	45·3	53·6	2·4	11·0	45 19·4	2 45 2·31	− 0·59	......	− 54·58	− 4·56
	891	(a)	......	84 4	14·2	22·5	31·0	39·2	46 47·4	2 46 30·86	0·65	......	− 54·57	− 4·31
	920	......	......	68 54	51·4	0·0	9·0	18·0	52 26·9	2 52 9·06	− 0·57	......	− 54·57	− 4·76
	949	α Ceti	......	86 25	56·4	4·5	13·0	21·2	56 29·4	2 56 12·90	− 0·66	54·51	− 54·57	− 4·25
	986	δ Arietis	......	70 46	37·3	45·9	54·9	3·6	5 12·3	3 4 54·80	− 0·58	− 54·69	− 54·57	− 4·71
Nov. 6	648	α Arietis	......	67 9	14·7	23·6	32·8	41·6	0 50·4	2 0 32·62	− 0·52	− 53·27	− 53·24	− 4·71
	694	......	8·0	26 11	49·4	7·8	27·4	46·0	10 4·5	2 [illegible] 27·02	− 0·18	......	− 53·24	− 8·01
	702	......	7·5	26 16	16·6	35·7	54·6	13·3	11 31·8	2 10 54·40	− 0·18	......	− 53·24	− 8·09
	738	......	......	80 19	38·4	46·8	55·3	3·6	18 12·0	2 17 55·22	− 0·59	......	− 53·23	− 4·39
	760	ξ² Ceti	......	82 9	40·5	48·9	57·3	5·6	22 13·8	2 21 57·22	− 0·59	− 53·25	− 53·23	− 4·35
	764	......	7·0	81 1	4·5	12·9	21·4	29·6	23 37·9	2 23 21·26	− 0·59	......	− 53·23	− 4·35
	776	......	6·0	88 19	12·8	20·9	29·5	37·[illegible]	25 45·9	2 25 29·34	− 0·62	......	− 53·23	− 4·21
	793	......	......	83 45	22·4	30·[illegible]	39·3	47·4	29 55·9	2 29 39·12	− 0·60	......	− 53·23	− 4·32
	837	γ Ceti	......	87 18	0·0	8·1	16·6	24·9	37 33·0	2 37 16·52	− 0·62	− 53·22	− 53·23	− 4·22
	881	ε Arietis	......	75 27	43·8	52·4	1·6	9·5	45 18·0	2 45 0·94	− 0·55	......	− 53·22	− 4·56
	891	(a)	......	[illegible] 4	12·9	21·0	29·4	37·7	46 46·1	2 46 29·42	− 0·60	......	− 53·22	− 4·33
	920	......	7·0	68 54	50·0	58·7	7·8	16·5	52 25·3	2 52 7·66	− 0·53	......	− 53·22	− 4·76

(a) Double, each 10th mag.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1865.
1865.				° ′	s	s	s	s	m s	h m s	s	s	s	s
Nov. 6	949	α Ceti	....	86 25	55·0	3·2	11·6	19·9	56 28·0	2 56 11·54	– 0·61	–53·17	–53·21	– 4·29
	962	ι Persei	....	40 53	55·2	7·6	20·8	33·2	0 45·9	3 0 20·54	– 0·35	....	–53·21	– 6·38
	980	....	7·0	63 36	6·5	15·9	25·3	34·4	3 43·7	3 3 25·16	– 0·51	....	–53·21	– 5·00
	1166	η Tauri	....	66 17	8·4	17·4	26·6	35·9	40 44·6	3 40 26·58	– [illegible]·51	–53·32	–53·21	– 4·91
Nov. 9	112	12 Ceti	....	[illegible] 40	48·5	57·0	5·4	13·8	24 21·9	0 24 5·32	– 0·62	–51·96	–51·94	– 3·80
	288	ι Piscium	....	82 48	36·2	44·4	53·0	1·3	57 9·5	0 56 52·88	– 0·56	–51·89	–51·94	– 4·09
	360	α Ursæ Minoris	....	1 25	32·0	10·5	52·5	29·0	23 4·5	1 11 49·70	+ 7·54	....	–51·94	–56·48
	453	η Piscium	....	75 19	55·4	4·0	12·9	21·2	25 29·9	1 25 12·68	– 0·52	–52·02	–51·94	– 4·37
	577	β Arietis	....	69 49	50·5	59·3	8·2	17·0	48 25·9	1 [illegible] 8·18	– 0·49	–51·89	–51·93	– 4·61
	646	α Arietis	....	67 9	13·2	22·1	31·5	40·3	0 49·1	2 0 31·24	– 0·48	–51·92	–51·[illegible]	– 4·75
	691	....	7·0	26 11	48·0	6·8	25·9	44·5	10 3·1	2 9 25·66	– 0·14	....	–51·93	– 8·10
	702	....	....	26 16	15·6	34·1	53·4	12·0	11 30·3	2 10 53·08	– 0·14	....	–51·93	– 8·10
	718	....	7·0	33 21	53·8	8·8	24·[illegible]	39·1	13 54·[illegible]	2 13 23·94	– 0·25	....	–51·93	– 6·98
	738	....	8·0	80 19	37·0	45·3	54·0	2·2	18 10·6	2 17 53·82	– 0·54	....	–51·93	– 4·40
	764	....	7·5	81 1	3·0	11·3	20·0	28·3	23 36·7	2 23 19·86	– 0·55	....	–51·93	– 4·39
	776	....	6·0	88 19	11·3	19·5	28·2	36·3	25 44·5	2 25 27·96	– 0·59	....	–51·93	– 4·22
	793	....	7·0	83 45	21·2	29·4	38·0	46·1	29 54·4	2 29 37·82	– 0·57	....	–51·93	– 4·34
	881	ε Arietis	6·0	75 27	42·5	51·0	59·6	8·0	45 16·8	2 44 59·58	– 0·52	....	–51·92	– 4·58
	891	....	....	84 4	11·6	20·0	28·2	36·6	46 44·8	2 46 28·24	– 0·57	....	–51·92	– 4·35
	920	....	7·0	68 54	48·6	57·2	6·4	15·2	52 24·1	2 52 6·30	– 0·50	....	–51·92	– 4·81
	949	α Ceti	....	86 25	53·9	1·9	10·3	18·6	56 26·9	2 56 10·32	– 0·58	–51·96	–51·92	– 4·31
	962	ι Persei	4·0	40 53	54·1	6·5	19·4	32·0	0 44·6	3 0 19·32	– 0·32	....	–51·92	– 6·42
	980	....	6·0	63 36	5·4	14·5	21·0	33·1	3 42·2	3 3 23·84	– 0·47	....	–51·92	– 5·03
	1055	....	8·0	68 25	23·6	32·2	41·1	50·3	17 59·1	3 17 41·32	– 0·49	....	–51·92	– 4·86
	1087	*f* Tauri	5·0	77 31	5·3	13·8	22·5	30·8	24 39·3	3 24 22·34	– 0·53	....	–51·91	– 4·56
	1126	11 Tauri	....	65 6	22·0	31·0	40·3	49·4	[illegible] 58·4	3 33 40·22	– 0·47	....	–51·91	– 5·00
	1166	η Tauri	....	66 17	7·1	16·0	25·4	34·1	40 43·2	3 40 25·16	– 0·49	–51·88	–51·91	– 4·95
Nov. 13	760	ξ^2 Ceti	....	82 9	37·4	45·5	54·2	2·5	22 10·8	2 [illegible] 54·08	– 0·55	–50·12	–50·09	– 4·38
	837	γ Ceti	....	87 18	56·8	5·0	13·5	21·7	37 30·0	2 37 13·40	– 0·58	–50·10	–50·09	– 4·27
	949	α Ceti	....	86 25	51·9	0·1	8·5	16·8	56 25·0	2 56 8·46	– 0·58	–50·07	–50·09	– 4·34
	986	δ Arietis	....	70 46	32·8	41·3	50·2	59·0	5 7·9	3 4 50·24	– 0·50	–50·11	–50·09	– 4·81
	1166	η Tauri	....	66 17	5·3	14·1	23·5	32·7	40 41·8	3 40 23·48	– 0·49	–50·15	–50·09	– 5·00
Nov. 15	949	α Ceti	....	86 25	51·2	59·5	7·9	16·0	56 24·2	2 56 7·76	– 0·57	–49·37	–49·40	– 4·35
	986	δ Arietis	....	70 46	31·9	40·8	49·7	58·3	5 7·0	3 4 49·54	– 0·49	–49·41	–49·40	– 4·82
	1166	η Tauri	....	66 17	4·6	13·7	22·8	31·8	40 40·7	3 40 22·72	– 0·48	–49·37	–49·39	– 5·03
	1376	ε Tauri	....	71 6	21·4	30·1	39·0	47·6	21 56·4	4 21 38·90	– 0·49	–49·40	–49·39	– 4·84
	1420	α Tauri	....	73 45	47·9	56·6	5·1	13·9	29 22·5	4 29 5·26	– 0·51	–49·41	–49·38	– 4·74
Nov. 17	704	67 Ceti	....	97 1	51·9	0·2	8·7	16·8	11 25·0	2 11 8·52	– 0·62	–48·82	–48·83	– 4·05
	718	....	....	33 21	50·5	5·6	21·0	35·9	13 50·9	2 13 20·78	– 0·23	....	–48·83	– 7·00
	738	....	....	80 19	34·0	42·4	50·9	59·2	18 7·4	2 17 50·78	– 0·54	....	–48·83	– 4·42
	760	ξ^2 Ceti	....	82 9	36·1	44·4	53·0	1·2	[illegible] 9·4	2 21 52·82	– 0·55	–48·86	–48·83	– 4·39
	834	....	....	64 55	37·7	46·5	55·0	5·0	37 14·1	2 36 55·84	– [illegible]·47	....	–48·83	– 4·96
	949	α Ceti	....	86 25	50·7	59·0	7·4	15·6	56 23·9	2 56 7·32	– [illegible]·57	–48·92	–48·83	– 4·36
	986	δ Arietis	....	70 46	31·4	40·2	49·0	57·8	5 6·5	3 4 48·98*	– 0·49	–48·83	–48·83	– 4·84
	1166	η Tauri	....	66 17	4·1	13·0	22·4	31·2	40 40·3	3 40 22·20	– 0·48	–48·83	–48·83	– 5·05

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed.					Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock		Correction to Mean R.A. Jan 1. 1866.
					I.	II.	III.	IV.	V.			observed.	interpolated.	
1865.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Nov. 19	420	θ Ceti	....	98 51	52·5	0·8	9·4	17·7	18 26·0	1 18 9·28	− 0·63	− 48·28	− 48·37	− 3·87
	453	η Piscium	....	75 19	52·0	0·4	9·4	17·5	25 26·0	1 25 9·00	− 0·50	− 48·39	− 48·37	− 4·33
	516	ε Piscium	....	85 10	1·0	9·4	17·7	26·0	35 34·0	1 35 17·56	− 0·56	− 48·40	− 48·37	− 4·16
	577	β Arietis	....	69 49	47·4	55·8	4·8	13·5	48 22·3	1 48 4·70	− 0·47	− 48·41	− 48·37	− 4·60
	648	α Arietis	....	67 9	9·8	18·5	27·5	36·5	0 45·6	2 0 27·64	− 0·47	− 48·32	− 48·37	− 4·76
Nov. 23	6772	γ Aquilæ	....	79 42	24·5	32·8	41·1	49·9	40 58·1	19 40 41·32	− 0·53	− 48·08	− 48·22	− 2·02
	6802	α Aquilæ	....	81 28	45·9	54·2	2·8	11·1	45 19·4	19 45 2·68	− 0·54	− 48·28	− 48·22	− 2·10
	6833	β Aquilæ	....	83 54	15·4	23·4	32·0	40·4	49 48·4	19 49 31·60	− 0·56	− 48·22	− 48·22	− 2·14
	949	α Ceti	....	86 25	50·0	58·4	6·8	15·0	56 23·1	2 56 6·60	− 0·56	− 48·19	− 48·22	− 4·18
	986	δ Arietis	....	70 46	31·0	39·4	48·5	57·2	5 6·0	3 4 48·42	− 0·48	− 48·25	− 48·22	− 4·57
Dec. 1	6772	γ Aquilæ	....	79 42	23·3	31·5	40·2	48·5	40 57·0	19 40 40·10	− 0·52	− 47·14	− 47·15	− 1·95
	6802	α Aquilæ	....	81 28	44·8	53·0	1·5	9·8	45 18·2	19 45 1·46	− 0·53	− 47·13	− 47·15	− 2·03
	6833	β Aquilæ	....	83 54	14·0	22·2	30·8	39·1	49 47·3	19 49 30·68	− 0·55	− 47·16	− 47·15	− 2·07
	986	δ Arietis	....	70 46	29·9	38·4	47·1	56·1	5 4·9	3 4 47·34	− 0·48	− 47·14	− 47·13	− 4·90
	1087	f Tauri	5·0	77 31	0·6	9·1	18·0	26·2	24 34·5	3 24 17·68	− 0·51	....	− 47·13	− 4·73
	1101	....	7·0	58 45	48·0	57·7	7·5	17·1	28 [illegible]	3 28 7·42	− 0·41	....	− 47·13	− 5·47
	1126	....	6·0	65 6	17·4	26·4	35·7	44·7	33 53·9	3 33 35·62	− 0·45	....	− 47·13	− 5·19
	1166	(a) η Tauri	....	66 17	2·5	11·4	20·7	29·6	40 38·6	3 40 20·56	− 0·46	− 47·10	− 47·13	− 5·18
Dec. 7	949	α Ceti	....	86 25	47·9	56·0	4·5	12·8	56 21·0	2 56 4·44	− 0·55	− 46·03	− 46·04	− 4·39
	1166	(b) η Tauri	....	66 17	1·5	10·6	19·7	28·8	40 37·6	3 40 19·64	− 0·45	− 46·15	− 46·04	− 5·30
	1420	α Tauri	....	73 45	44·9	53·1	2·1	10·8	29 19·2	4 29 2·08	− 0·49	− 45·99	− 46·03	− 5·00
	1520	ι Aurigæ	....	57 2	41·9	51·7	4·8	14·5	49 24·2	4 49 4·62	− 0·39	− 46·14	− 46·03	− 5·75
	1681	β Tauri	....	61 30	18·8	28·0	37·8	47·0	18 56·3	5 18 37·58	− 0·41	− 46·04	− 46·03	− 5·52
	1730	δ Orionis	....	90 23	41·0	49·2	57·8	6·0	26 14·2	5 25 57·64	− 0·57	− 45·94	− 46·02	− 4·51
	1765	ι Orionis	....	91 17	56·4	4·5	12·9	21·1	30 29·3	5 30 12·84	− 0·58	− 45·97	− 46·02	− 4·49
Dec. 8	1420	α Tauri	....	73 45	44·3	52·9	1·5	10·2	29 18·9	4 29 1·56	− 0·48	− 45·47	− 45·39	− 5·01
	1520	ι Aurigæ	....	57 2	44·4	54·0	4·2	14·0	49 23·8	4 49 4·08	− 0·38	− 45·60	− 45·39	− 5·76
	1681	β Tauri	....	61 30	18·1	27·3	37·0	46·4	18 55·9	5 18 36·94	− 0·40	− 45·40	− 45·39	− 5·53
	1730	δ Orionis	....	90 23	40·7	48·7	57·1	5·2	26 13·5	5 25 57·04	− 0·57	− 45·33	− 45·39	− 4·52
	1765	ι Orionis	....	91 17	55·8	3·0	12·3	20·4	30 28·7	5 30 12·04	− 0·58	− 45·16	− 45·38	− 4·50
Dec. 13	1420	α Tauri	....	73 45	41·8	50·1	59·0	7·5	29 16·1	4 28 58·90	− 0·47	− 42·79	− 42·79	− 5·01
	1520	ι Aurigæ	....	57 2	41·6	51·4	1·5	11·1	49 21·0	4 49 1·32	− 0·37	− 42·81	− 42·79	− 5·90
	1626	....	8·0	49 41	42·9	53·6	4·8	15·3	10 26·2	5 10 4·56	− 0·32	....	− 42·79	− 6·25
	1656	....	....	81 42	54·0	2·4	11·0	19·2	15 27·5	5 15 10·82	− 0·52	....	− 42·78	− 4·83
	1681	β Tauri	....	61 30	15·8	24·9	34·7	43·9	18 53·2	5 18 34·50	− 0·39	− 42·91	− 42·78	− 5·53
	1730	δ Orionis	....	90 23	37·9	46·0	54·6	2·9	26 11·0	5 25 54·48	− 0·56	− 42·73	− 42·78	− 4·57
	1765	ι Orionis	....	91 17	53·4	1·2	9·8	18·0	30 26·3	5 30 9·68	− 0·57	− 42·76	− 42·77	− 4·55
	1826	....	7·0	80 31	58·9	7·0	15·8	24·0	40 32·3	5 40 15·60	− 0·51	....	− 42·77	− 4·85
	1883	α Orionis	....	82 37	23·2	31·2	40·0	48·2	48 56·4	5 48 39·80	− 0·52	− 42·68	− 42·76	− 4·73
Dec. 14	956	δ Arietis	....	70 46	25·0	33·8	42·8	51·4	5 0·1	3 4 42·62	− 0·45	− 42·45	− 42·40	− 4·93
	1055	....	7·5	68 25	13·9	23·0	32·0	40·8	17 49·7	3 17 31·88	− 0·44	....	− 42·40	− 5·05
	1087	f Tauri	5·5	77 31	56·0	4·4	13·0	21·4	24 30·0	3 24 12·96	− 0·49	....	− 42·40	− 4·74
	1101	....	....	58 45	43·4	52·9	2·9	12·5	28 22·0	3 28 2·74	− 0·38	....	− 42·40	− 5·45
	1126	11 Tauri	....	65 [illegible]	12·8	21·6	31·1	40·1	33 49·0	3 33 30·92	− 0·42	....	− 42·39	− 5·23
	1166	η Tauri	....	66 17	57·8	6·8	16·0	25·0	40 34·0	3 40 15·92	− 0·43	− 42·44	− 42·39	− 5·21

(a) Suddenly overcast. (b) Very faint.

Date.	No. in British Association Catalogue.	OBJECT OBSERVED.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1. 1865.
1865.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Dec. 14	1282	....	....	41 15	7·5	20·0	32·8	45·3	4 58·0	4 4 32·72	− 0·23	....	− 42·39	− 6·86
	1318	....	....	33 49	14·1	28·9	44·2	59·0	12 13·9	4 11 44·02	− 0·13	....	− 42·39	− 7·81
	1361	....	....	71 16	35·6	44·2	53·4	2·0	18 20·7	4 17 53·18	− 0·45	....	− 42·38	− 5·11
	1376	ι Tauri	....	71 6	14·9	23·4	32·4	41·0	21 49·5	4 21 32·24	− 0·45	− 42·49	− 42·38	− 5·13
	1420	α Tauri	....	73 45	41·3	49·9	58·5	7·1	29 15·8	4 28 58·52	− 0·47	− 42·41	− 42·38	− 5·04
	1434	....	....	77 45	7·5	16·0	24·7	33·0	31 41·4	4 31 24·52	− 0·49	....	− 42·38	− 4·91
	1463	....	....	66 37	3·9	12·9	22·0	31·0	38 39·9	4 38 21·94	− 0·43	....	− 42·38	− 5·34
	1491	....	....	81 19	46·2	54·7	3·2	11·6	44 19·9	4 44 3·12	− 0·51	....	− 42·38	− 4·81
	1501	....	....	34 [illegible]	3·1	17·8	32·9	47·2	47 1·9	4 46 32·58	− 0·13	....	− 42·38	− 7·83
	1626	....	....	49 41	42·2	53·1	4·2	15·0	10 25·7	5 10 4·04	− 0·32	....	− 42·38	− 6·30
	1656	....	....	81 42	53·8	1·9	10·4	18·8	15 27·0	5 15 10·38	− 0·52	....	− 42·38	− 4·83
	1683	....	....	55 43	21·0	31·0	41·3	51·0	19 1·1	5 18 41·08	− 0·36	....	− 42·37	− 5·90
	1730	δ Orionis	....	90 23	37·5	45·6	54·1	2·3	26 10·6	5 25 54·02	− 0·56	− 42·26	− 42·37	− 4·58
	1826	....	....	80 31	58·4	6·8	15·4	23·7	40 32·0	5 40 15·26	− 0·51	....	− 42·37	− 4·86
	1883	α Orionis	....	82 37	22·5	31·0	39·4	47·9	48 56·0	5 48 39·36	− 0·52	− 42·23	− 42·36	− 4·79
Dec. 21	1681	β Tauri	....	61 30	12·5	21·8	31·4	40·8	18 50·0	5 18 31·30	− 0·38	− 39·64	− 39·62	− 5·67
	1730	δ Orionis	....	90 23	35·0	43·2	51·5	59·6	26 8·0	5 25 51·46	− 0·55	− 39·65	− 39·62	− 4·64
	1765	ε Orionis	....	91 17	50·1	58·2	6·5	15·0	30 23·0	5 30 6·56	− 0·56	− 39·58	− 39·61	− 4·62
	1883	α Orionis	....	82 37	20·0	28·3	36·9	45·1	48 53·3	5 48 36·72	− 0·51	− 39·52	− 39·61	− 4·87
	6281	δ Ursæ Minoris S. P.	....	3 24	15·0	33·0	57·5	15·0	20 33·0	6 15 54·70	− 4·75	....	− 39·60	+ 43·14
	2163	γ Geminorum	....	73 29	22·7	31·2	40·0	48·6	30 57·2	6 30 39·94	− 0·45	− 39·63	− 39·60	− 5·12
Dec. 26	1420	α Tauri	....	73 45	36·9	45·4	54·2	2·7	29 11·2	4 28 54·08	− 0·42	− 37·98	− 37·94	− 5·08
	1434	....	....	77 45	3·3	11·6	20·3	28·6	31 37·0	4 31 20·16	− 0·45	....	− 37·94	− 4·94
	1463	....	7·0	66 37	59·4	8·3	17·4	26·2	38 35·4	4 38 17·34	− 0·39	....	− 37·93	− 5·38
	1491	....	6·0	81 19	42·0	50·2	58·8	7·0	44 15·3	4 43 58·66	− 0·47	....	− 37·93	− 4·86
	1501	....	....	34 23	58·9	13·2	28·0	42·8	46 57·2	4 46 28·02	− 0·11	....	− 37·92	− 7·88
	1520	ι Auriga	....	57 2	36·9	46·6	56·6	6·3	49 16·2	4 48 56·52	− 0·33	− 37·97	− 37·92	− 5·88
	1626	....	....	49 41	38·0	48·8	59·9	10·6	10 21·3	5 9 59·72	− 0·27	....	− 37·92	− 6·39
	1656	....	....	81 42	49·3	57·4	6·0	14·2	15 22·5	5 15 5·88	− 0·47	....	− 37·91	− 4·91
	1681	β Tauri	....	61 30	10·8	20·1	29·6	39·0	18 48·3	5 18 29·56	− 0·35	− 37·90	− 37·91	− 5·70
	1730	δ Orionis	....	90 23	33·1	41·4	49·9	58·0	26 6·2	5 25 49·72	− 0·52	− 37·91	− 37·91	− 4·67
	1765	ε Orionis	....	91 17	48·4	56·5	4·9	13·1	30 21·3	5 30 4·84	− 0·52	− 37·87	− 37·90	− 4·65
	1883	α Orionis	....	82 37	18·4	26·5	35·1	43·4	48 51·7	5 48 35·02	− 0·48	− 37·81	− 37·89	− 4·91
Dec. 29	1681	β Tauri	....	61 30	10·5	19·9	29·4	38·8	[illegible] 48·0	5 18 29·32	− 0·30	− 37·70	− 37·60	− 5·71
	1730	δ Orionis	....	90 23	32·8	41·0	49·4	57·7	26 6·0	5 25 49·38	− 0·45	− 37·63	− 37·60	− 4·68
	1765	ε Orionis	....	91 17	48·0	56·1	4·6	12·8	30 21·0	5 30 4·50	− 0·45	− 37·59	− 37·60	− 4·66
	1883	α Orionis	....	82 37	18·1	26·3	34·9	43·1	48 51·3	5 48 34·74	− 0·42	− 37·57	− 37·60	− 4·93
	6281	δ Ursæ Minoris S. P.	....	3 24	12·5	31·5	49·0	12·0	20 31·5	6 15 51·30	− 3·86	....	− 37·60	+ 43·60
	2163	γ Geminorum	....	73 29	20·6	29·1	38·0	46·5	30 55·1	6 30 37·86	− 0·37	− 37·53	− 37·60	− 5·22

ROYAL OBSERVATORY, EDINBURGH.

Individual Observations of Mean Right Ascensions of Stars observed at the Royal Observatory, Edinburgh, in the Year 1865, reduced to January 1, 1865.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
B.A.C. 4, α Andromedæ.				
			° ′	h. m. s.
Jan. 27	0·07	(1·0) (a)	61 39	0 1 24·85
Sept. 20	0·72			24·93
21	0·72			24·84
22	0·72			24·87
25	0·73			24·92
26	0·73			24·85
28	0·74			24·91
Oct. 2	0·75			24·90
3	0·75			24·81
19	0·80			24·91
20	0·80			24·96
21	0·80			24·86
30	0·83			24·89
B.A.C. 26, γ Pegasi.				
Jan. 27	0·07	(2·0)	75 34	0 6 17·22
Feb. 20	0·14			17·32
Sept. 20	0·72			17·24
21	0·72			17·19
22	0·72			17·20
25	0·73			17·23
26	0·73			17·15
28	0·74			17·18
Oct. 2	0·75			17·23
3	0·75			17·17
20	0·80			17·18
21	0·80			17·21
30	0·83			17·15
B.A.C. 112, 12 Ceti.				
Oct. 19	0·80	(6·0)	94 42	0 23 8·84
Nov. 9	0·85			8·96
B.A.C. 288, ι Piscium.				
			° ′	h. m. s.
Jan. 6	0·01	(4·0)	82 50	0 55 56·29
10	0·02			56·28
Oct. 19	0·80			56·33
20	0·80			56·30
Nov. 9	0·85			56·29
B.A.C. 420, θ Ceti.				
Jan. 10	0·02	(3·0)	98 53	1 17 16·49
Nov. 19	0·88			16·41
B.A.C. 453, η Piscium.				
Jan. 6	0·01	(4·0)	75 21	1 24 15·84
10	0·02			15·81
Feb. 20	0·14			15·82
Oct. 3	0·75			15·80
19	0·80			15·78
20	0·80			15·80
30	0·83			15·86
Nov. 3	0·84			15·77
9	0·85			15·85
19	0·88			15·80
B.A.C. 518, ν Piscium.				
Nov. 3	0·84	(5·0)	85 12	1 34 24·38
19	0·88			24·47
B.A.C. 577, β Arietis.				
Feb. 17	0·13	(3·0)	69 51	1 47 11·19
20	0·14			11·29
24	0·15			11·21
Mar. 2	0·16			11·36
Oct. 30	0·83			11·21
Nov. 1	0·83			11·30
3	0·84			11·17
9	0·85			11·15
19	0·88			11·26
B.A.C. 648, α Arietis.				
			° ′	h. m. s.
Feb. 17	0·13	(2·0)	67 10	1 59 34·14
24	0·15			34·05
Oct. 27	0·82			34·18
Nov. 6	0·85			34·12
9	0·85			34·08
19	0·88			34·04
B.A.C. 694.				
Nov. 3	0·84		26 12	2 8 25·42
6	0·85	8·0		25·51
9	0·85	7·0		25·43
B.A.C. 702.				
Nov. 3	0·84		26 17	2 9 52·92
6	0·85	7·5		52·89
9	0·85			52·91
B.A.C. 704, 67 Ceti.				
Oct. 27	0·82	(6·0)	97 3	2 10 14·97
Nov. 1	0·83			14·99
17	0·88			15·02
B.A.C. 718.				
Nov. 9	0·85	7·0	33 23	2 12 24·76
17	0·88			24·72
B.A.C. 738.				
Nov. 6	0·85		80 20	2 16 57·01
9	0·85	8·0		56·95
17	0·88			56·99

(a) Magnitudes in parenthesis are the tabular ones of the British Association Catalogue.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
B.A.C. 760, ξ² Ceti.				
Nov. 1	0·83	(4·0)	82° 9′	2h 20m 59s·01
6	0·85			59·05
13	0·87			59·06
17	0·88			59·06
B.A.C. 764.				
Nov. 3	0·84		81 2	2 22 23·02
6	0·85	7·0		23·06
9	0·85	7·5		22·99
B.A.C. 776.				
Nov. 3	0·84		86 20	2 24 31·29
6	0·85	6·0		31·28
9	0·85	6·0		31·22
B.A.C. 793.				
Nov. 3	0·84		83 46	2 28 40·93
6	0·85			40·97
9	0·85	7·0		40·98
B.A.C. 834.				
Nov. 17	0·88	(6·5)	64 56	2 36 1·58
B.A.C. 837, γ Ceti.				
Oct. 27	0·76	(3·0)	87 20	2 36 18·41
Nov. 1	0·83			18·50
3	0·84			18·48
6	0·85			18·44
13	0·87			18·46
B.A.C. 881, σ Arietis.				
Nov. 3	0·84		75 28	2 44 2·63
5	0·85			2·61
9	0·85	6·0		2·56
B.A.C. 891.				
Nov. 3	0·84	(8·0)	84 5	2 45 31·33
6	0·85			31·27
9	0·85			31·40

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
B.A.C. 920.				
Nov. 3	0·84		68° 55′	2h 51m 9s·16
6	0·85	7·0		9·13
9	0·85	7·0		9·07
B.A.C. 949, α Ceti.				
Oct. 27	0·82	(2·5)	86 26	2 55 13·52
30	0·83			13·38
Nov. 3	0·84			13·41
6	0·85			13·43
9	0·85			13·51
13	0·87			13·45
15	0·87			13·44
17	0·88			13·56
23	0·89			13·44
Dec. 7	0·93			13·46
B.A.C. 962, ι Persei.				
Nov. 6	0·85		40 54	2 59 20·60
9	0·85	4·0		20·66
B.A.C. 980.				
Nov. 6	0·85	7·0	63 37	3 2 26·44
9	0·85	6·0		26·42
B.A.C. 986, δ Arietis.				
Oct. 27	0·76	(4·0)	70 47	3 3 54·77
Nov. 3	0·84			54·91
13	0·87			54·84
15	0·87			54·83
17	0·88			54·82
23	0·89			54·85
Dec. 1	0·91			54·83
14	0·95			54·87
B.A.C. 1055.				
Nov. 9	0·85	8·0	68 26	3 16 44·05
Dec. 14	0·95	7·5		44·02
B.A.C. 1087, f Tauri.				
Nov. 9	0·85	5·0	77 32	3 23 25·34
Dec. 1	0·91	5·0		25·32
14	0·95	5·5		25·33

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
B.A.C. 1101.				
Dec. 1	0·91	7·0	58° 46′	3h 27m 14s·41
14	0·95			14·47
B.A.C. 1126, 11 Tauri.				
Nov. 9	0·85	(6·0)	65 7	3 32 42·84
Dec. 1	0·91			42·85
14	0·95			42·89
B.A.C. 1166, η Tauri				
Feb. 17	0·13	(3·0)	66 19	3 39 27·82
20	0·14			27·76
Nov. 6	0·85			27·95
9	0·85			27·81
13	0·87			27·90
15	0·87			27·82
17	0·88			27·84
Dec. 1	0·91			27·81
7	0·93			27·95
14	0·95			27·89
B.A.C. 1282.				
Dec. 14	0·95	(6·0)	41 15	4 3 43·22
B.A.C. 1318.				
Dec. 14	0·95	(6·0)	33 49	4 10 53·69
B.A.C. 1361.				
Dec. 14	0·95	(6·0)	71 16	4 17 5·24
B.A.C. 1376, ε Tauri.				
Nov. 15	0·87	(3·5)	71 7	4 20 44·18
Dec. 14	0·95			44·28
B.A.C. 1420, α Tauri.				
Nov. 15	0·87	(1·0)	73 46	4 28 10·63
Dec. 7	0·93			10·56
8	0·93			10·68
13	0·95			10·60
14	0·95			10·63
26	0·98			10·64

B.A.C. 1434.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Dec. 14	0·95	(5·0)	° ' 77 46	h. m. s. 4 30 36·74
26	0·98			36·83

B.A.C. 1463.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Dec. 14	0·95		66 37	4 37 33·79
26	0·98	7·0		33·64

B.A.C. 1491.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Dec. 14	0·95		81 20	4 43 15·42
26	0·98	6·0		15·40

B.A.C. 1501.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Dec. 14	0·95	(6·0)	34 24	4 45 42·24
26	0·98			42·11

B.A.C. 1520, ι Aurigæ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Jan. 8	0·02	(4·0)	57 3	4 46 12·43
Dec. 7	0·93			12·45
8	0·93			12·55
13	0·95			12·36
26	0·98			12·39

B.A.C. 1623, β Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Jan. 8	0·02	(1·0)	98 22	5 8 2·96

B.A.C. 1626.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Dec. 13	0·95	8·0	49 41	5 9 15·17
14	0·95			15·04
26	0·98			15·14

B.A.C. 1656.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Dec. 13	0·95	(6·0)	81 42	5 14 22·70
14	0·95			22·65
26	0·98			22·59

B.A.C. 1681, β Tauri.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Jan. 8	0·02	(2·0)	61 30	5 17 45·62
27	0·07			45·62
Dec. 7	0·93			45·62

B.A.C. 1681, β Tauri.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Dec. 8	0·93	(2·0)	° ' 61 30	h. m. s. 5 17 45·62
13	0·95			45·74
21	0·97			45·63
26	0·98			45·60
29	0·99			45·71

B.A.C. 1683.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Dec. 14	0·95	(6·0)	55 44	5 17 52·45

B.A.C. 1730, δ Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Jan. 8	0·02	(2·0)	90 24	5 25 6·64
24	0·06			6·58
27	0·07			6·62
Dec. 7	0·93			6·54
8	0·93			6·56
13	0·95			6·57
14	0·95			6·51
21	0·97			6·65
26	0·98			6·62
29	0·99			6·66

B.A.C. 1765, ε Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Jan. 6	0·01	(2·5)	91 17	5 29 21·73
8	0·02			21·76
24	0·06			21·80
27	0·07			21·77
Dec. 7	0·93			21·75
8	0·93			21·58
13	0·95			21·79
21	0·97			21·77
26	0·98			21·77
29	0·99			21·79

B.A.C. 1826.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Dec. 13	0·95	7·0	80 32	5 39 27·47
14	0·95			27·52

B.A.C. 1883, α Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Jan. 6	0·01	(1·0)	82 37	5 47 51·81
27	0·07			51·78
April 28	0·32			51·82
Dec. 13	0·95			51·74
14	0·95			51·69

B.A.C. 1883, α Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Dec. 21	0·97	(1·0)	° ' 82 37	h. m. s. 5 47 51·73
26	0·98			51·74
29	0·99			51·79

B.A.C. 1958, ν Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Jan. 10	0·02	(4·5)	75 13	5 59 51·63

B.A.C. 2163, γ Geminorum.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Jan. 10	0·02	(2·5)	73 29	6 29 54·70
16	0·04			54·62
Dec. 21	0·97			54·77
29	0·99			54·67

B.A.C. 2410, δ Geminorum.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Jan. 16	0·04	(3·0)	67 46	7 12 3·45
27	0·07			3·53
Mar. 2	0·16			3·52
7	0·18			3·48

B.A.C. 2485, α² Geminorum.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Jan. 10	0·02	(1·5)	57 49	7 25 58·98
16	0·04			59·00
27	0·07			58·98
Feb. 9	0·11			59·02
20	0·14			58·96
May 23	0·39			56·93

B.A.C. 2522, α Canis Minoris.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Jan. 16	0·04	(1·0)	84 26	7 32 13·99
Feb. 9	0·11			13·95
20	0·14			13·84

B.A.C. 2555, β Geminorum.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Jan. 10	0·02	(2·0)	61 39	7 37 3·11
16	0·04			3·10
Feb. 9	0·11			3·07
18	0·13			3·01
20	0·14			2·96
28	0·16			3·00
May 23	0·39			3·13

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
B.A.C. 2672, 6 Cancri.				
			° ′	h. m. s.
Feb. 9	0·11	(5·5)	61 50	7 55 13·34
19	0·13			13·36
28	0·15			13·36
B.A.C. 2862, η Cancri.				
Feb. 9	0·11	(6·0)	69 6	8 24 53·91
16	0·13			53·93
B.A.C. 2971, ι Hydræ.				
Feb. 18	0·13	(4·0)	83 5	8 39 37·49
28	0·16			37·51
Mar. 2	0·16			37·40
B.A.C. 3223, α Hydræ.				
Feb. 26	0·15	(2·0)	98 5	9 20 57·10
B.A.C. 3331, ε Leonis.				
Feb. 26	0·15	(3·0)	65 36	9 38 11·01
28	0·16			11·04
Mar. 2	0·16			11·09
April 26	0·31			11·02
28	0·32			11·00
May 1	0·33			11·08
B.A.C. 3415, π Leonis.				
Feb. 26	0·15	(4·5)	81 19	9 53 4·65
B.A.C. 3459, α Leonis.				
Feb. 24	0·15	(1·0)	77 22	10 1 10·76
26	0·15			10·82
28	0·16			10·78
Mar. 31	0·24			10·79
April 26	0·31			10·76
28	0·32			10·82
May 1	0·33			10·81
B.A.C. 3484.				
Feb. 24	0·15	8·0	57 56	10 6 24·85
B.A.C. 3523, γ¹ Leonis.				
			° ′	h. m. s.
Feb. 24	0·15	(2·0)	69 29	10 12 31·42
Mar. 7	0·18			31·46
8	0·18			31·51
April 4	0·25			31·56
B.A.C. 3592.				
Feb. 24	0·15	(6·0)	87 49	10 22 46·49
B.A.C. 3609, ρ Leonis.				
Feb. 24	0·15	(4·0)	80 0	10 25 42·02
April 4	0·25			42·08
B.A.C. 3708, l Leonis.				
Mar. 7	0·18	(6·0)	78 44	10 42 9·50
8	0·18			9·52
13	0·19			9·52
April 11	0·27			9·52
B.A.C. 3768, d Leonis.				
Feb. 24	0·15	6·0	85 40	10 53 35·29
B.A.C. 3780.				
Feb. 24	0·15	8·0	81 41	10 56 40·06
B.A.C. 3788, χ Leonis.				
Mar. 7	0·18	(4·5)	81 56	10 58 3·12
8	0·18			3·14
13	0·19			3·09
April 4	0·25			3·12
9	0·27			3·06
B.A.C. 3821.				
Feb. 24	0·15	7·0	20 59	11 3 31·61
B.A.C. 3834, δ Leonis.				
Feb. 20	0·14	(2·5)	68 44	11 6 55·51
24	0·15			55·46
28	0·16			55·51
Mar. 2	0·16			55·41
8	0·18			55·51
B.A.C. 3834, δ Leonis.				
			° ′	h. m. s.
Mar. 13	0·19	(2·5)	68 44	11 6 55·54
31	0·24			55·44
April 4	0·25			55·49
9	0·27			55·55
11	0·27			55·59
May 4	0·34			55·53
18	0·38			55·45
B.A.C. 3869.				
Feb. 28	0·16	7·0	71 49	11 15 25·06
Mar. 2	0·16	7·0		24·95
B.A.C. 3900, τ Leonis.				
Feb. 24	0·15	6·0	86 24	11 20 59·61
28	0·16	5·0		59·70
Mar. 2	0·16			59·67
B.A.C. 3946, υ Leonis.				
Feb. 24	0·15	(4·5)	90 5	11 30 2·23
28	0·16			2·13
Mar. 2	0·16			2·19
8	0·18			2·12
31	0·24			2·23
April 6	0·26			2·18
9	0·27			2·12
15	0·28			2·19
29	0·32			2·22
B.A.C. 3995, β Leonis.				
Feb. 20	0·14	(2·5)	74 40	11 42 10·43
24	0·15			10·25
Mar. 8	0·18			10·36
13	0·19			10·32
31	0·24			10·33
April 9	0·27			10·40
10	0·27			10·32
11	0·27			10·35
15	0·28			10·36
28	0·32			10·26
29	0·32			10·33
May 15	0·37			10·26
30	0·41			10·24

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
B.A.C. 3996.				
			° ′	h. m. s.
Mar. 2	0·16	7·0	84 3	11 42 11·94
B.A.C. 4005 (a).				
Mar. 2	0·16	7·0	76 58	11 43 59·52
B.A.C. 4052, σ Virginis.				
Feb. 28	0·16		82 38	11 53 57·25
Mar. 2	0·16	6·0		57·29
B.A.C. 4145, η Virginis.				
April 10	0·27	(3·5)	89 55	12 12 59·96
15	0·28			59·96
29	0·32			60·00
B.A.C. 4153.				
Feb. 28	0·16	6·0	62 37	12 13 32·36
B.A.C. 4199.				
Feb. 28	0·16	7·0	63 20	12 20 53·17
B.A.C. 4231.				
Feb. 28	0·16	7·0	64 48	12 26 48·61
B.A.C. 4340, δ Virginis.				
Feb. 28	0·16	3·0	85 52	12 48 48·24
B.A.C. 4364.				
Feb. 28	0·16	7·0	68 0	12 54 58·63
B.A.C. 4532, ζ Virginis.				
Feb. 26	0·15	(4·0)	89 54	13 27 49·00
April 6	0·26			48·[illegible]
11	0·27			49·04
15	0·28			48·96
26	0·31			49·00
B.A.C. 4532, ζ Virginis.				
			° ′	h. m. s.
April 28	0·32	(4·0)	89 54	13 27 48·88
29	0·32			48·93
May 1	0·33			48·99
4	0·34			48·93
8	0·35			48·92
15	0·37			48·93
16	0·37			48·97
18	0·38			48·97
19	0·38			48·89
20	0·38			48·98
23	0·39			48·79
24	0·39			48·87
25	0·39			48·93
B.A.C. 4552.				
May 18	0·38	5·0	53 1	13 31 27·69
19	0·38	5·0		27·62
20	0·38			27·67
B.A.C. 4575.				
May 18	0·38	6·0	66 37	13 37 22·61
19	0·38	6·0		22·54
20	0·38			22·56
B.A.C. 4607, η Ursæ Majoris.				
May 18	0·38	(2·5)	40 1	13 42 13·16
19	0·38			12·98
20	0·38			13·15
B.A.C. 4632.				
May 18	0·38	6·0	54 53	13 45 50·26
B.A.C. 4648, η Bootis.				
Feb. 28	0·16	(3·0)	70 55	13 48 15·50
Mar. 2	0·16			15·40
April 6	0·26			15·40
10	0·27			15·45
11	0·27			15·42
15	0·28			15·41
26	0·31			15·44
28	0·32			15·47
29	0·32			15·35
May 1	0·33			15·35
B.A.C. 4648, η Bootis.				
			° ′	h. m. s.
May 4	0·34	(3·0)	70 55	13 48 15·39
8	0·35			15·34
15	0·37			15·40
16	0·37			15·46
18	0·38			15·42
19	0·38			15·41
20	0·38			15·42
23	0·39			15·38
24	0·39			15·41
30	0·41			15·24
B.A.C. 4672, τ Virginis.				
Feb. 26	0·15	(4·5)	87 48	13 54 46·65
April 6	0·26			46·67
10	0·27			46·64
11	0·27			46·72
15	0·28			46·64
26	0·31			46·64
28	0·32			46·63
29	0·32			46·63
May 1	0·33			46·62
4	0·34			46·61
8	0·35			46·73
15	0·37			46·64
16	0·37			46·71
20	0·38			46·64
23	0·39			46·67
24	0·39			46·71
B.A.C. 4696, α Draconis.				
Feb. 28	0·16	(3·5)	24 58	14 0 44·43
Mar. 2	0·16			44·06
31	0·24			44·47
April 6	0·26			44·31
10	0·27			44·26
11	0·27			44·41
15	0·28			44·56
26	0·31			44·33
28	0·32			44·31
29	0·32			44·17
May 1	0·33			44·49
4	0·34			44·42
8	0·35			44·35
15	0·37			44·44
16	0·37			44·53

(a) Tab. place in error 2 secs. by observations in 1862 and 1866.

B.A.C. 4696, α Draconis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
			° ′	h. m. s.
May 18	0·38	(3·5)	24 58	14 0 44·49
19	0·38			44·28
20	0·38			44·28
23	0·39			44·47
24	0·39			44·27
30	0·41			44·34

B.A.C. 4723.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
May 18	0·38	8·0	60 16	14 7 54·56
20	0·38			54·59
23	0·39			54·54

B.A.C. 4729, α Bootis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
Feb. 24	0·15	(1·0)	70 7	14 9 30·41
April 6	0·26			30·33
10	0·27			30·28
11	0·27			30·25
15	0·28			30·30
26	0·31			30·32
28	0·32			30·38
29	0·32			30·31
May 1	0·33			30·34
4	0·34			30·29
8	0·35			30·33
19	0·38			30·39
25	0·39			30·31

B.A.C. 4737.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
May 15	0·37	6·0	74 7	14 11 1·34
16	0·37	6·5		1·36
18	0·38	7·5		1·38

B.A.C. 4738.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
May 24	0·39	(7·0)	40 38	14 10 54·79

B.A.C. 4756.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
May 15	0·37	7·0	37 21	14 13 47·48
18	0·38	7·0		47·61
20	0·38			47·61

B.A.C. 4797.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
			° ′	h. m. s.
May 15	0·37	7·0	53 12	14 22 41·04
16	0·37	6·5		41·09
18	0·38	6·5		41·13

B.A.C. 4808, ρ Bootis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
May 4	0·34	(4·0)	59 2	14 26 0·78
8	0·35			0·72
15	0·37			0·71
16	0·37			[illegible]·68
18	0·38			0·74
20	0·38			0·79
June 3	0·42			0·69

B.A.C. 4809.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
May 24	0·39	(6·0)	62 43	14 26 21·83

B.A.C. 4820.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
May 18	0·38	(6·0)	56 52	14 28 27·32
20	0·38			27·18
23	0·39			27·20

B.A.C. 4863.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
May 18	0·38	(6·0)	52 40	14 37 12·10
20	0·38			12·14
23	0·39			11·98
24	0·39			11·95

B.A.C. 4876, ε Bootis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
May 1	0·33	(3·0)	62 21	14 39 5·45
4	0·34			5·55
8	0·35			5·50
15	0·37			5·53
16	0·37			5·52
18	0·38			5·53
20	0·38			5·40
23	0·39			5·51
24	0·39			5·50
25	0·39			5·48
June 3	0·42			5·52

B.A.C. 4934.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
			° ′	h. m. s.
May 23	0·39	(6·5)	48 19	14 50 54·44
24	0·39			54·38

B.A.C. 4942.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
May 15	0·37	7·0	49 49	14 54 15·50
16	0·37	7·0		15·59
23	0·39			15·54

B.A.C. 4965.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
May 16	0·37	6·5	44 50	14 58 20·63
23	0·39			20·51

B.A.C. 4969, ψ Bootis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
May 17	0·37	(5·0)	62 32	14 58 39·72

B.A.C. 4992.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
May 15	0·37	5·5	34 55	15 2 25·60
16	0·37	6·0		25·73
23	0·39			25·65

B.A.C. 5001.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
May 23	0·39	(6·5)	60 15	15 5 13·31
24	0·39			13·40

B.A.C. 5034, β Libræ.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
May 17	0·37	(2·5)	98 53	15 9 44·63
23	0·39			44·66
24	0·39			44·77
30	0·41			44·82
June 3	0·42			44·66

B.A.C. 5071.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
May 23	0·39	(6·0)	37 [illegible]	15 16 7·23

B.A.C. 5091.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
May 23	0·39	(6·0)	26 10	15 20 23·94

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
B.A.C. 5143, α Coronæ Borealis.				
			° ′	h m s
May 15	0·37	(2·5)	62 50	15 28 58·41
17	0·37			58·43
23	0·39			58·39
25	0·39			58·36
30	0·41			58·51
June 3	0·42			58·39
23	0·47			58·38
Aug. 4	0·59			58·40
B.A.C. 5196, α Serpentis.				
May 17	0·37	(2·5)	83 9	15 37 37·19
23	0·39			37·23
25	0·39			37·15
June 3	0·42			37·19
23	0·47			37·12
Aug. 4	0·59			37·14
B.A.C. 5414, δ Ophiuchi.				
June 12	0·44	(3·0)	93 21	16 7 16·35
22	0·47			16·29
23	0·47			16·35
30	0·49			16·22
B.A.C. 5604, ζ Herculis.				
June 7	0·43	(3·0)	58 9	16 36 11·85
12	0·44			11·89
22	0·47			11·87
July 8	0·51			11·92
11	0·52			11·81
15	0·53			11·93
23	0·56			11·94
Aug. 29	0·66			11·97
B.A.C. 5708, κ Ophiuchi.				
June 7	0·43	(4·0)	80 25	16 51 16·73
12	0·44			16·73
22	0·47			16·82
30	0·49			16·83
July 3	0·50			16·83
11	0·52			16·76
15	0·53			16·65
23	0·56			16·75
B.A.C. 5821, α Herculis.				
June 7	0·43	(3·5)	75 27	17 8 29·51
12	0·44			29·51
22	0·47			29·54
23	0·47			29·55
30	0·49			29·52
July 3	0·50			29·63
8	0·51			29·51
11	0·52			29·49
15	0·53			29·59
23	0·56			29·56
31	0·58			29·54
B.A.C. 5941, α Ophiuchi.				
June 7	0·43	(2·0)	77 21	17 28 40·08
12	0·44			40·12
22	0·47			40·03
23	0·47			40·17
30	0·49			40·20
July 3	0·50			40·07
8	0·51			40·14
11	0·52			40·19
23	0·56			40·06
24	0·56			40·00
Aug. 29	0·66			40·10
B.A.C. 6021, μ Herculis.				
June 7	0·43	(4·0)	62 12	17 41 10·69
12	0·44			10·61
22	0·47			10·52
23	0·47			10·60
July 8	0·51			10·53
11	0·52			10·59
15	0·53			10·62
23	0·56			10·56
24	0·56			10·58
Aug. 29	0·66			10·61
B.A.C. 6355, α Lyræ.				
Jan. 24	0·06	(1·0)	51 21	18 32 22·05
July 17	0·54			22·03
Aug. 29	0·66			21·99
B.A.C. 6429, β Lyræ.				
Jan. 24	0·06	(3·0)	56 48	18 45 5·82
June 22	0·47			5·91
23	0·47			5·93
July 3	0·50			5·79
17	0·54			5·81
24	0·56			5·84
Sept. 2	0·67			5·84
B.A.C. 6528, ζ Aquilæ.				
July 3	0·50	(3·0)	76 20	18 59 12·35
14	0·53			12·36
17	0·54			12·33
21	0·55			12·27
25	0·56			12·32
Aug. 4	0·59			12·25
Sept. 2	0·67			12·33
B.A.C. 6595, ε Aquilæ.				
July 14	0·53	(5·0)	78 39	19 11 28·78
17	0·54			28·80
21	0·55			28·80
B.A.C. 6646, δ Aquilæ.				
July 14	0·53	(3·5)	87 9	19 18 41·42
17	0·54			41·49
21	0·55			41·55
Aug. 4	0·59			41·49
Sept. 2	0·67			41·40
B.A.C. 6772, γ Aquilæ.				
July 14	0·53	(3·0)	79 43	19 39 50·47
17	0·54			50·41
21	0·55			50·47
25	0·56			50·49
31	0·58			50·52
Aug. 4	0·59			50·53
Sept. 2	0·67			50·37
Nov. 23	0·89			50·55
Dec. 1	0·91			50·48

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1865.
B.A.C. 6802, α Aquilæ.				
			° ′	h. m. s.
July 14	0·53	(1·5)	81 29	19 44 11·74
17	0·54			11·69
21	0·55			11·68
25	0·56			11·73
31	0·58			11·80
Aug. 4	0·59			11·73
Nov. 23	0·89			11·82
Dec. 1	0·91			11·75
B.A.C. 6833, β Aquilæ.				
July 14	0·53	(3·5)	83 56	19 48 40·86
21	0·55			40·82
25	0·56			40·88
31	0·58			40·84
Aug. 4	0·59			40·88
Sept. 2	0·67			40·89
Nov. 23	0·89			40·88
Dec. 1	0·91			40·91
B.A.C. 7368, ζ Cygni.				
Aug. 29	0·66	(3·0)	60 20	21 7 11·52
Sept. 4	0·67			11·54
B.A.C. 7478, β Aquarii.				
Sept. 24	0·67	(3·0)	96 10	21 24 26·98
B.A.C. 7561, ι Pegasi.				
Aug. 29	0·66	(2·5)	80 44	21 37 33·27
Sept. 4	0·67			33·33
18	0·71			33·24
24	0·73			33·28
B.A.C. 7627, 16 Pegasi.				
Sept. 18	0·71	(5·5)	64 43	21 46 55·35
24	0·73			55·41
B.A.C. 7688, α Aquarii.				
Sept. 4	0·67	(3·0)	90 58	21 58 50·90
18	0·71			50·90
B.A.C. 7688, α Aquarii.				
			° ′	h. m. s.
Sept. 19	0·71	(3·0)	90 58	21 58 50·82
24	0·73			50·83
25	0·73			50·90
B.A.C. 7773, θ Aquarii.				
Sept. 4	0·67	(4·5)	98 25	22 9 42·42
B.A.C. 7868, η Aquarii.				
Sept. 4	0·67	(4·0)	90 49	22 28 25·05
19	0·71			25·04
25	0·73			25·09
B.A.C. 7908, ζ Pegasi.				
Jan. 6	0·01	(3·0)	79 52	22 34 43·85
Sept. 4	0·67			43·75
14	0·70			43·76
18	0·71			43·84
19	0·71			43·76
25	0·73			43·76
Oct. 3	0·75			43·77
B.A.C. 7958, μ Pegasi.				
Oct. 3	0·75	4·0	66 7	22 43 29·38
B.A.C. 7977.				
Oct. 3	0·75	7·5	88 52	22 46 58·55
B.A.C. 7996.				
Oct. 3	0·75	7·0	86 55	22 50 40·36
B.A.C. 8034, α Pegasi.				
Jan. 6	0·01	(2·0)	75 31	22 58 2·19
Sept. 14	0·70			2·23
B.A.C. 8034, α Pegasi.				
			° ′	h. m. s.
Sept. 18	0·71	(2·0)	75 31	22 58 2·21
19	0·71			2·34
21	0·72			2·28
25	0·73			2·25
Oct. 3	0·75			2·26
21	0·80			2·22
B.A.C. 8065.				
Oct. 3	0·75	7·0	88 35	23 2 28·69
B.A.C. 8083. (a)				
Oct. 3	0·75	5·0	33 35	23 6 48·10
B.A.C. 8105, γ Piscium.				
Sept. 14	0·70	(4·5)	87 27	23 10 10·02
19	0·71			10·00
20	0·72			10·01
21	0·72			10·03
Oct. 3	0·75			9·96
19	0·80			9·98
20	0·80			9·98
21	0·80			10·03
B.A.C. 8139.				
Oct. 3	0·75	7·0	52 9	23 14 48·56
B.A.C. 8169, κ Piscium.				
Sept. 14	0·70	(5·5)	89 29	23 20 0·67
20	0·72			0·69
B.A.C. 8233, ι Piscium.				
Sept. 14	0·70	(4·5)	85 6	23 33 0·42
20	0·72			0·34
21	0·72			0·45
22	0·72			0·41
25	0·73			0·33

(a) 8083 differs from Tab. R. A. by 2·5 sec. even after allowance for Tab. Proper Motion.

B.A.C. 8233, ι Piscium.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension. January 1, 1865.
			° ′	h m s
Sept. 26	0·73	(4·5)	85 6	23 33 0·15
28	0·74			0·42
Oct. 2	0·75			0·10
3	0·75			0·17
19	0·80			0·48
20	0·80			0·34
21	0·80			0·14

B.A.C. 8269

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension. January 1, 1865.
			° ′	h m s
Oct. 3	0·75	8·0	86 31	23 40 50·92

B.A.C. 8331, ω Piscium.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension. January 1, 1865.
Sept. 20	0·72	(4·5)	83 53	23 52 22·72
21	0·72			22·72

B.A.C. 8331, ω Piscium.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension. January 1, 18[illegible]
			° ′	h m s
Sept. 22	0·72	(4·5)	[illegible] 53	23 52 22·7[illegible]
26	0·73			22·8[illegible]
28	0·74			22·7[illegible]
Oct. 2	0·75			22·7[illegible]

EXPLANATION OF THE EDINBURGH TRANSIT OBSERVATIONS FOR 1865; AND THE METHODS OF THEIR REDUCTION.

Pages 418 to 433 contain the Transit Observations of stars for 1865, similarly with those for 1849, where the methods of reduction are more fully described; the variable data for the present year being as below.

The star observations were taken almost wholly by Mr Alexander Wallace, M.A., the First Assistant Astronomer. They were actually more numerous than here recorded, because, with a view chiefly to economy in printing, all days of observation with less than four standard stars have been struck out; also parts of a day far removed from the chief observing hours of the night; also those periods of the year when either the Instrumental corrections were uncertain, or the Clock going badly. The said observations, however, had been already computed in our MS. books, and have often served useful temporary purposes, as for approximate clock-corrections and instrumental errors.

The Micrometer observations for instrumental corrections have, on the other hand, always been taken by the Astronomer, and he has also decided on the quantities for computation to be adopted for each day of star observation.

Intervals of the Wires.

From 28 observations of α Ursæ Minoris, above and below the Pole, in the year 1865, the intervals of the wires and their Equatorial distances from their mean or middle point were found to be, the star being above the Pole.

		s.	
Wire	I.	+ 16·590	Equatorial
...	II.	+ 8·365	
...	III.	− 0·106	
...	IV.	− 8·301	
...	V.	− 16·528	

These values, immaterially different from those of 1864, have been employed in the reductions throughout the year; using for Polaris (whose Declination varied between 88° 35′ 13″ and 88° 36′ 2″) the following quantities or those adapted to a declination of 88° 35′, with the amount of alteration due to each additional second of Declination added under the term n'',—

		m.	s.	s.		s.	
Wire	I.	+ 11	11·30	+ n	×	·133	Declination 88° 35′
...	II.	+ 5	38·38	+ n	×	·067	
...	III.	− 0	4·29				
...	IV.	− 5	35·92	− n	×	·067	
...	V.	− 11	8·80	− n	×	·132	

and for δ Ursæ Minoris (whose Declination varied between 86° 36′ 3″) and 86° 36′ 43″) the following quantities, or those adapted to a declination of 86° 36′.

with the amount of alteration due to each additional second of Declination added under the term n'',—

$$\left.\begin{array}{llrrrl} & & & \text{m.} & \text{s.} & \qquad\qquad\text{s.} \\ \text{Wire} & \text{I.} & + & 4 & 39{\cdot}76 & + \; n'' \times {\cdot}023 \\ \cdots & \text{II.} & + & 2 & 21{\cdot}04 & + \; n \times {\cdot}012 \\ \cdots & \text{III.} & - & 0 & 1{\cdot}79 & \\ \cdots & \text{IV.} & - & 2 & 20{\cdot}02 & - \; n \times {\cdot}012 \\ \cdots & \text{V.} & - & 4 & 38{\cdot}70 & - \; n \times {\cdot}023 \end{array}\right\} \text{Declination } 86^\circ\ 36'$$

The correction generally for the imperfect transit of a star, whose North Polar Distance is not very small, being

$$= \frac{\text{Sum of Equatorial intervals for the Wires observed}}{\text{Number of Wires}} \times \text{cosecant of Stars N.P.D.},$$

this quantity being applied to the mean of whatever wires were observed.

With close Polar stars, the *Sine* is used in place of the *Arc.*

The signs and order of the Wires are to be changed when the star is below the Pole.

In the column entitled "Reduction to the Mean of the Wires," either the simple arithmetical mean of the Wires—if 5 were observed—is entered; or, if a less number, the reduced mean according to the method already explained and the quantities above given.

CORRECTIONS FOR INSTRUMENTAL DEVIATIONS.

These deviations are three in number, and are severally termed, Collimation error, Level error, and Azimuth error.

The Collimation error is the deviation of the line joining the optical centre of the object-glass and the Mean of the Wires, from the plane perpendicular to the axis of rotation; and is *mechanically* positive, or is positive as a correction for all objects at all altitudes both above and below the horizon, when the object-glass deviates to the east of the said plane:—$0^s{\cdot}012$, the diurnal aberration, is included, for practical convenience, in the sum representing the collimation.

The Level error is the angle of inclination of the axis of rotation to the horizon, measured in a vertical plane; and is *mechanically* positive, as a correction, for all objects above the horizon, negative for those below, when the Western end is higher than the other.

The Azimuthal error is the angle of deviation of the axis of rotation (presumed approximately horizontal) from the East and West line, measured in a horizontal plane; and is *mechanically* positive as a correction for all objects South of the Zenith, or Nadir, and negative for those North of the same, when the Western end of said axis deviates towards the South.

COLLIMATION AND LEVEL ERRORS.

These are determined, as explained in former years, by special observations made from time to time with the collimating eye-piece, and by measuring micrometrically the distance between the Middle wire and its reflected image in reversed positions of the transit-instrument's axis.

For dates between the epochs of observation, the errors have been assumed to vary as the time, except where the readings of the earth-thermometers, as noticed in the Introduction, have indicated a modification thereof to be probably desirable.

AZIMUTHAL ERROR.

Of the three usual methods for determining the azimuthal position of a transit-instrument; viz. by a Polar star combined with an Equatorial star, by two successive transits of a Polar star above and below the Pole, or by three consecutive transits of a Polar star, the first plan has alone been adopted; for although the two latter have the advantage of being independent of the Right Ascension assumed for the stars, yet they can only be employed with safety when the stability of the instrument can be depended on through the twelve or twenty-four hours during which the observations extend.

Now grave doubts had long existed on this head; and, as set forth both in the Introduction to this volume and the Report to the Board of Visitors for 1870, towards the end of the volume, see pp. R 50 to R 57, they have since been proved to be only too well founded. The following therefore is the formula which has always been adopted, enabling, for each transit of a Polar star observed, a comparatively instantaneous determination of the Azimuthal error then to be made:—

$$\text{Azimuthal error} = \frac{\text{R.A. 1st} \ast - \text{R.A. 2d} \ast - (\text{obs. tr. 1st} \ast - \text{obs. tr. 2d} \ast) - \text{clock's loss in the interval}}{\left(\frac{\sin \text{Z.D. South}}{\sin \text{N.P.D.}}\ \text{1st} \ast\right) - \left(\frac{\sin \text{Z.D. South}}{\sin \text{N.P.D.}}\ \text{2d} \ast\right)}$$

In the course of the year 40 combinations of either α, or δ, Ursæ Minoris and a Clock star were obtained, from which the Azimuth error at these epochs was computed, and for dates between them the error was made to vary nearly as the time, modified in some cases by the temperature and the annual curve shown in Plate III.

TABLE I.

ADOPTED INSTRUMENTAL CORRECTIONS, EXPRESSED IN SECONDS OF TIME FOR CONVENIENCE OF APPLICATION TO TIME OBSERVATIONS.

Date.	Collimation.	Level.	Azimuth.
1865.	s.	s.	s.
Jan. 2	−0·07	+0·10	−0·05
4	−0·07	+0·10	−0·07
6	−0·07	+0·10	−0·10
8	−0·07	+0·11	−0·08
10	−0·07	+0·11	−0·07
16	−0·07	+0·11	−0·03
22	−0·07	+0·11	0·00
24	−0·07	+0·11	+0·02
27	−0·07	+0·11	+0·05
Feb. 5	−0·07	+0·10	+0·05
8	−0·07	+0·10	+0·06
9	−0·07	+0·10	+0·07
15	−0·07	+0·10	+0·08
17	−0·07	+0·10	+0·03
18	−0·07	+0·10	+0·04
20	−0·07	+0·10	+0·05
24	−0·07	+0·09	−0·02
26	−0·07	+0·08	−0·10
28	−0·07	+0·08	−0·19
Mar. 2	−0·07	+0·07	−0·21
4	−0·07	+0·07	−0·22
6	−0·07	+0·06	−0·24
7	−0·07	+0·06	−0·25
8	−0·07	+0·06	−0·27
9	−0·07	+0·06	−0·29
13	−0·07	+0·05	−0·30
21	−0·07	+0·03	−0·32
23	−0·07	+0·02	−0·34
26	−0·07	+0·02	−0·33
29	−0·07	+0·01	−0·32
31	−0·07	+0·01	−0·31
April 1	−0·07	+0·01	−0·34
4	−0·07	0·00	−0·40
6	−0·07	0·00	−0·45
9	−0·07	0·00	−0·44
10	−0·07	0·00	−0·44
11	−0·07	0·00	−0·43
15	−0·07	0·00	−0·58
26	−0·07	0·00	−0·44
28	−0·07	0·00	−0·53
29	−0·07	0·00	−0·51
May 1	−0·07	+0·01	−0·50

Date.	Collimation.	Level.	Azimuth.
1865.	s.	s.	s.
May 3	−0·07	0·00	−0·48
4	−0·07	0·00	−0·44
8	−0·07	0·00	−0·49
15	−0·07	0·00	−0·59
16	−0·07	+0·01	−0·59
17	−0·07	−0·01	−0·59
18	−0·07	−0·01	−0·59
19	−0·07	−0·02	−0·53
20	−0·07	−0·02	−0·54
23	−0·07	−0·03	−0·55
24	−0·07	−0·04	−0·58
25	−0·07	−0·04	−0·62
28	−0·07	−0·05	−0·64
30	−0·07	−0·05	−0·65
31	−0·07	−0·06	−0·65
June 3	−0·07	−0·07	−0·65
7	−0·07	−0·10	−0·66
8	−0·07	−0·11	−0·66
10	−0·07	−0·12	−0·67
11	−0·07	−0·12	−0·68
12	−0·07	−0·13	−0·70
22	−0·07	−0·15	−0·66
23	−0·07	−0·16	−0·80
25	−0·07	−0·16	−0·75
30	−0·07	−0·18	−0·70
July 2	−0·08	−0·18	−0·64
3	−0·08	−0·18	−0·58
8	−0·08	−0·19	−0·68
11	−0·08	−0·19	−0·68
14	−0·08	−0·21	−0·70
15	−0·08	−0·21	−0·74
17	−0·08	−0·22	−0·72
19	−0·08	−0·23	−0·70
20	−0·08	−0·23	−0·68
21	−0·08	−0·23	−0·66
23	−0·08	−0·23	−0·64
24	−0·08	−0·23	−0·62
25	−0·08	−0·23	−0·64
29	−0·08	−0·24	−0·66
31	−0·08	−0·24	−0·66
Aug. 4	−0·08	−0·24	−0·65
6	−0·08	−0·24	−0·65
8	−0·08	−0·24	−0·65

Date.	Collimation.	Level.	Azimuth.
1865.	s.	s.	s.
Aug. 11	−0·08	−0·25	−0·64
14	−0·08	−0·25	−0·64
18	−0·08	−0·25	−0·64
23	−0·08	−0·24	−0·64
25	−0·08	−0·24	−0·64
29	−0·08	−0·23	−0·64
Sept. 2	−0·08	−0·23	−0·64
4	−0·08	−0·22	−0·64
6	−0·08	−0·22	−0·64
8	−0·08	−0·21	−0·64
12	−0·08	−0·21	−0·64
14	−0·08	−0·20	−0·64
15	−0·08	−0·20	−0·64
16	−0·08	−0·20	−0·64
18	−0·08	−0·19	−0·64
19	−0·08	−0·19	−0·64
20	−0·08	−0·19	−0·64
21	−0·08	−0·19	−0·64
22	−0·08	−0·19	−0·64
24	−0·08	−0·18	−0·64
25	−0·08	−0·18	−0·64
26	−0·08	−0·18	−0·64
28	−0·08	−0·17	−0·64
Oct. 2	−0·08	−0·17	−0·63
3	−0·08	−0·16	−0·63
19	−0·08	−0·12	−0·69
20	−0·08	−0·12	−0·70
21	−0·08	−0·12	−0·69
23	−0·08	−0·11	−0·69
25	−0·08	−0·11	−0·69
27	−0·08	−0·10	−0·68
30	−0·08	−0·09	−0·68
Nov. 1	−0·08	−0·09	−0·67
3	−0·08	−0·08	−0·67
5	−0·08	−0·08	−0·64
6	−0·08	−0·06	−0·61
9	−0·08	−0·07	−0·58
10	−0·08	−0·06	−0·58
12	−0·08	−0·06	−0·58
13	−0·08	−0·05	−0·58
15	−0·08	−0·05	−0·58
17	−0·08	−0·05	−0·59
19	−0·08	−0·04	−0·58

Date.	Collimation.	Level.	Azimuth.	Date.	Collimation.	Level.	Azimuth.	Date.	Collimation.	Level.	Azimuth.
1865.	s.	s.	s.	1865.	s.	s.	s.	1865.	s.	s.	s.
Nov. 23	-0·08	-0·03	-0·58	Dec. 7	-0·08	-0·02	-0·58	Dec. 15	-0·08	0·00	-0·58
24	-0·08	-0·03	-0·58	8	-0·08	-0·01	-0·58	21	-0·08	+0·01	-0·58
26	-0·08	-0·03	-0·58	9	-0·08	-0·01	-0·58	26	-0·08	+0·02	-0·54
				12	-0·08	-0·01	-0·58	29	-0·08	+0·03	-0·47
Dec. 1	-0·08	-0·03	-0·58	13	-0·08	0·00	-0·58	31	-0·08	-0·03	-0·49
2	-0·08	-0·03	-0·58	14	-0·08	0·00	-0·58				

The correction to the star observations of times of Transit, for each of the above three instrumental deviations successively, is,

$$\text{Collimation correction} \times \frac{1}{\text{sin Star's North Polar Distance}},$$

the sign being positive for a star above the Pole, and negative when it crosses the Meridian below the Pole.

$$\text{Level correction} \times \frac{\text{cos Star's Zenith Distance South}}{\text{sin Star's North Polar Distance}},$$

the sign being positive for a star above the Pole, and negative when it crosses the Meridian below the Pole. And

$$\text{Azimuthal correction} \times \frac{\text{sin Star's Zenith Distance South}}{\text{sin Star's North Polar Distance}},$$

the sign being positive for a star above the Pole *and* to the South of the Zenith, also for a star below the Pole and North of the Zenith; but negative when above the Pole and to the North of the Zenith.

Correction of the Clock.

For computing the errors of the Clock and the Azimuthal errors of the Transit Instrument, the following Table of the Mean Right Ascensions of the principal stars for January 1, 1865, has been employed, and was kindly communicated at the time by G. B. Airy, Esq., Astronomer Royal, as being the same employed by him for reducing the Greenwich Observations of 1865.

TABLE I.

MEAN RIGHT ASCENSIONS ADOPTED OF STANDARD STARS.

Star's Name.	Assumed Mean Right Ascension, January 1, 1865.	Correction to Nautical Almanac.
	h. m. s.	s.
α Andromedæ	0 1 24·87	+0·06
γ Pegasi	0 6 17·20	+0·06
ι Ceti	0 12 32·68	········
12 Ceti	0 23 8·94	−0·03
ι Andromedæ	0 31 25·65	········
β Ceti	0 36 48·66	+0·07
μ Andromedæ	0 49 16·12	········
ε Piscium	0 55 56·34	−0·02
β Andromedæ	1 2 10·88	········
Polaris	1 9 38·33	+0·22
θ Ceti	1 17 16·51	+0·02
η Piscium	1 24 15·77	+0·06
ν Piscium	1 34 24·44	+0·01
β Arietis	1 47 11·19	+0·01
α Arietis	1 59 34·10	+0·01
67 Ceti	2 10 15·03	+0·04
ξ² Ceti	2 20 59·03	0·00
δ Ceti	2 32 33·92	········
γ Ceti	2 36 18·45	+0·04
σ Arietis	2 44 2·56	········
α Ceti	2 55 13·47	+0·07
δ Arietis	3 3 54·82	+0·01
τ' Arietis	3 13 26·23	········
ο Tauri	3 17 33·09	········
f Tauri	3 23 25·41	········
ε Eridani	3 26 34·28	········
11 Tauri	3 32 42·80	········
δ Eridani	3 36 46·94	········
η Tauri	3 39 27·84	+0·06
γ' Eridani	3 51 43·87	+0·05
ω' Tauri	4 1 18·30	········
ε' Eridani	4 5 16·57	−0·02
γ Tauri	4 12 6·83	········
ι Tauri	4 20 44·17	+0·01
Aldebaran	4 28 10·60	−0·01
μ Eridani	4 38 45·26	········
ι Aurigæ	4 48 12·34	0·00
ε Leporis	4 59 44·78	+0·05
Rigel	5 8 3·03	+0·02
β Tauri	5 17 45·61	+0·06
δ Orionis	5 25 6·62	−0·04
α Leporis	5 26 46·59	−0·04
ε Orionis	5 29 21·80	−0·01
α Columbæ	5 34 45·60	−0·14
κ Orionis	5 41 21·22	········
α Orionis	5 47 51·82	+0·02
1 Geminorum	5 55 54·89	········
ν Orionis	5 59 51·84	−0·02
η Geminorum	6 6 43·75	········
μ Geminorum	6 14 47·59	+0·01
β Canis Majoris	6 16 45·38	········
ν Geminorum	6 ········	········
γ Geminorum	6 29 54·74	−0·03
Cephei 51	6 36 11·88	+2·62
Sirius	6 39 ···	0·00
θ Canis Majoris	6 47 55·07	········
ε Canis Majoris	6 53 19·24	0·00
γ Canis Majoris	6 57 39·06	−0·02
51 Geminorum	7 5 37·04	········
δ Geminorum	7 12 3·52	0·00
β Canis Minoris	7 19 49·70	········
Castor	7 25 58·95	+0·01
Procyon	7 32 14·06	+0·09
Pollux	7 37 3·09	+0·03
ξ Navis	7 43 37·00	········
6 Cancri	7 55 13·34	−0·08
15 Argûs	8 1 47·71	0·00
β Cancri	8 9 11·55	········
d² Cancri	8 15 37·84	········
η Cancri	8 24 53·88	+0·03
γ Cancri	8 35 28·17	········
ε Hydræ	8 39 37·49	−0·02
α Cancri	8 51 6·06	········
κ Cancri	9 0 25·97	········
83 Cancri	9 11 26·56	+0·10
α Hydræ	9 20 57·18	+0·03
ξ Leonis	9 24 39·94	········
ο Leonis	9 33 56·58	········
ε Leonis	9 38 11·03	+0·05
μ Leonis	9 45 4·84	········
π Leonis	9 53 4·64	+0·01
Regulus	10 1 10·79	+0·03
γ¹ Leonis	10 12 31·54	0·00
μ Hydræ	10 ········	········
ρ Leonis	10 25 42·06	0·00
34 Sextantis	10 35 39·13	········
l Leonis	10 42 9·53	+0·03
d Leonis	10 53 35·25	········
χ Leonis	10 58 3·10	−0·01
δ Leonis	11 6 55·62	+0·02
δ Crateris	11 12 35·58	+0·05
τ Leonis	11 20 59·63	········
υ Leonis	11 30 2·19	−0·02
β Leonis	11 42 10·31	+0·05
π Virginis	11 53 57·28	········
ε Corvi	12 3 11·16	+0·04

Digitized by

Star's Name.	Assumed Mean Right Ascension, January 1, 1865.	Correction to Nautical Almanac.	Star's Name.	Assumed Mean Right Ascension, January 1, 1865.	Correction to Nautical Almanac.
	h. m. s.	s.		h. m. s.	s.
η Virginis	12 12 59·97	+0·05	α Lyræ	18 32 22·07	+0·07
δ Corvi	12 22 53·02	....	2 Aquilæ	18	....
β Corvi	12 27 17·99	+0·14	β Lyræ	18 45 5·77	+0·12
35 Virginis	12 40 58·98	....	ι Aquilæ	18 53 29·70	....
δ Virginis	12 48 48·27	....	ζ Aquilæ	18 59 12·28	+0·13
ε Virginis	12 55 27·38	....	ψ Sagittarii	19 7 15·60	....
θ Virginis	13 2 57·72	+0·03	ω Aquilæ	19 11 28·76	+0·04
Spica	13 18 5·02	+0·03	δ Aquilæ	19 18 41·43	+0·03
ζ Virginis	13 27 48·96	−0·01	α Vulpeculæ	19 23 5·30	....
m Virginis	13 34 31·72	....	μ Aquilæ	19 27 29·65	....
τ Bootis	13 40 50·82	....	h² Sagittarii	19 28 29·30	+0·11
η Bootis	13 48 15·42	+0·04	γ Aquilæ	19 39 50·49	+0·09
τ Virginis	13 54 46·66	+0·05	α Aquilæ	19 44 11·76	+0·05
κ Virginis	14 5 41·87	....	β Aquilæ	19 48 40·88	+0·06
Arcturus	14 9 30·29	+0·06	c Sagittarii	19 54 21·14	....
f Bootis	14 20 10·64	....	λ Ursæ Minoris	19 59 9·61	−0·28
ρ Bootis	14 26 0·72	+0·01	θ Aquilæ	20 4 20·27	....
ε Bootis	14 39 5·49	+0·08	α² Capricorni	20 10 33·70	+0·07
α² Libræ	14 43 24·85	+0·04	β Capricorni	20 13 25·40	....
ξ² Libræ	14 49 26·78	....	ρ Capricorni	20 21 9·40	+0·15
ψ Bootis	14 58 39·70	−0·03	ε Delphini	20 26 45·75	....
β Libræ	15 9 44·70	+0·03	α Delphini	20 33 22·07	....
ι¹ Libræ	15 15 30·21	....	ε Aquarii	20 40 21·90	....
ζ Libræ	15 20 38·84	....	32 Vulpeculæ	20 48 48·43	+0·05
α Coronæ	15 28 58·38	+0·08	θ Capricorni	20 58 21·25	....
α Serpentis	15 37 37·19	+0·08	ζ Cygni	21 7 11·49	+0·08
ε Serpentis	15 44 5·29	....	α Equulei	21 9 4·43	....
γ Serpentis	15 50 13·15	....	ι Capricorni	21 14 43·53	....
β¹ Scorpii	15 57 35·46	+0·04	β Aquarii	21 24 26·96	+0·03
δ Ophiuchi	16 7 16·36	+0·05	ξ Aquarii	21 30 33·75	....
γ Herculis	16 15 57·97	....	ε Pegasi	21 37 33·34	+0·03
Antares	16 21 8·03	+0·03	δ Capricorni	21 39 35·12	....
λ Ophiuchi	16 24 6·39	....	16 Pegasi	21 46 55·25	+0·02
ζ Ophiuchi	16 29 43·63	....	α Aquarii	21 58 50·91	+0·05
ζ Herculis	16 36 11·87	+0·02	ι Pegasi	22 0 43·65	....
κ Ophiuchi	16 51 16·73	−0·04	θ Aquarii	22 9 42·45	0·00
ε Herculis	16 55 7·56	....	γ Aquarii	22 14 40·95	....
η Ophiuchi	17 2 38·25	....	π Aquarii	22 23 30·00	....
π Herculis	17 8 29·58	+0·10	η Aquarii	22 28 25·07	+0·02
θ Ophiuchi	17 13 43·24	+0·06	ζ Pegasi	22 34 43·74	+0·08
ν Ophiuchi	17 19 49·02	....	μ Pegasi	22 43 29·38	....
α Ophiuchi	17 28 40·11	+0·06	λ Aquarii	22 45 34·13	....
β Ophiuchi	17 36 48·22	....	Fomalhaut	22 50 11·03	+0·03
μ Herculis	17 41 10·58	+0·07	α Pegasi	22 58 2·25	+0·03
89 Herculis	17 49 58·48	....	γ Piscium	23 10 10·00	+0·01
72 Ophiuchi	18 0 56·96	....	κ Piscium	23 20 0·69	−0·02
μ Sagittarii	18 5 41·36	+0·06	ι Piscium	23 33 0·41	−0·03
η Serpentis	18 14 19·17	....	δ Sculptoris	23 41 53·30	−0·05
δ Ursæ Minoris	18 15 53·47	−0·13	ω Piscium	23 52 22·78	−0·03
λ Sagittarii	18 19 38·35	....	2 Ceti	23 56 49·27	....

The Mean Right Ascensions are converted into Apparent for any day of observation, by the application of the reductions of mean to apparent places taken from the Nautical Almanac. The Correction of the Clock is determined from the observed transits of the stars in the foregoing Table (excepting the

close Polar stars), the corrections of the instrument being previously applied, compared with the Apparent Right Ascensions computed.

The Corrections of the Clock thus determined are contained in the column entitled "Correction of Clock observed."

The sign + prefixed to the Correction of the Clock denotes that the clock is slow; the sign − that it is fast.

On account partly of the variability at times of the Clock-rate, and still more frequently of swerving in the azimuthal position of the Transit Instrument as produced by changes of temperature acting on its supporting stone piers during the observations, the "Adopted Clock Corrections" have been generally obtained by graphical projection, and the stars of each night have been used much more by themselves than with reference to those of preceding and following nights.

At the same time, to afford a tabular view, in the usual manner, of the march of the Clock, its daily errors at 0^h Sidereal Time, as given more or less approximately by the curves, are contained in the following Table.

TABLE III.

CORRECTION FOR TRANSIT CLOCK AT 0^h SIDEREAL TIME.

Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.
1865.	s.	1865.	s.	1865.	s.	1865.	s.	1866.	s.
Jan. 6	−34·65	April 4	−37·83	May 25	−38·37	Aug. 4	−57·77	Oct. 27	−55·53
8	−34·55	5	−37·80	30	−40·14	29	−59·54	30	−55·66
10	−34·81	9	−37·93						
16	−36·60	10	−37·90	June 3	−41·05	Sept. 2	−59·59	Nov. 1	−55·24
24	−37·72	11	−37·80	7	−41·30	4	−59·52	3	−54·60
27	−38·14	15	−37·68	12	−41·92	14	−60·13	6	−53·27
		26	−36·02	22	−43·73	18	−59·95	9	−51·95
Feb. 9	−40·63	28	−35·84	23	−43·94	19	−59·87	13	−50·14
17	−40·14	29	−35·70	30	−46·77	20	−59·93	15	−49·46
18	−40·60					21	−59·79	17	−48·87
20	−41·08	May 1	−35·66	July 3	−47·61	22	−59·72	19	−48·39
24	−40·81	4	−36·12	8	−49·72	24	−59·23	23	−48·22
26	−40·23	8	−36·69	11	−51·00	25	−59·02		
28	−40·19	15	37·35	14	−52·07	26	−58·79	Dec. 1	−47·14
		16	−37·47	15	−52·45	28	−58·47	7	−46·07
		17	−37·58	17	−53·01			8	−45·44
Mar. 2	−40·30	18	−37·52	21	−53·98	Oct. 2	−57·61	13	−42·83
7	−40·20	19	−37·57	23	−54·39	3	−57·26	14	−42·45
8	−40·04	20	−37·59	24	−54·56	19	−55·57	21	−39·68
13	−39·45	23	−38·03	25	−54·65	20	−55·65	26	−38·02
31	−38·12	24	−38·14	31	−56·34	21	−55·64	29	−37·65

ROYAL OBSERVATORY, EDINBURGH.

OBSERVATIONS

MADE WITH

THE MURAL CIRCLE,

AND

CALCULATION

OF

APPARENT NORTH POLAR DISTANCES.

1865.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1865.
1865.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Jan. 6	......	Nadir ‖|	......	5 12 0	254 0	1 25.0	34.1	0.500	29.60	38.8	37.5	....	......	......	....	.....
	......	Nadir |‖	......	....	254 0	1 36.8	46.1	0.500	......	......	......	....	......	......	....	.....
	1883	....	2.0	5 48 28	122 35	0 10.0	12.5	0.682	29.80	......	37.0	7, N.W.	......	6	+48 33 42.5	− 9.2
Jan. 10	......	Nadir ‖|	......	5 0 0	254 0	1 22.8	32.6	0.500	29.15	42.5	40.0	....	......	......	....	.....
	......	Nadir |‖	......	....	254 0	1 35.6	45.4	0.500	......	......	......	....	......	......	....	.....
	1683	....	......	5 18 27	95 40	2 27.9	30.4	0.500	29.15	......	40.0	10, S.W.	1	6	+21 40 55.5	− 3.4
	1730	δ Orionis	......	5 25 43	130 20	1 46.7	50.7	0.562	29.15	......	40.0	....	......	7	+56 20 16.8	−10.1
	1826	....	......	5 40 4	120 25	4 52.6	55.8	0.500	29.15	......	39.6	....	......	6	+46 28 21.5	− 8.9
	1883	α Orionis	......	5 48 28	122 35	0 9.0	10.4	0.807	29.15	......	39.5	....	......	6	+48 33 44.5	− 9.5
	1930	....	......	5 55 41	112 15	3 34.9	36.7	0.432	29.15	......	39.5	....	......	5	+38 17 1.1	− 8.4
	2022	....	......	6 10 16	119 55	3 45.0	47.3	0.650	29.15	......	39.3	....	......	7	+45 57 17.3	−10.0
	2101	....	......	6 22 48	107 20	0 33.7	35.1	0.570	29.15	......	39.1	....	......	6	+33 19 2.8	− 9.2
	2184	....	......	6 34 10	113 25	2 6.0	8.0	0.533	29.15	......	39.0	....	......	7	+39 25 34.9	−10.2
	2238	....	......	6 44 24	106 10	2 58.2	59.8	0.630	29.15	......	39.0	....	......	7	+32 11 29.5	−10.2
	2292	....	......	6 54 7	119 5	4 25.8	27.6	0.600	29.15	......	39.0	....	......	6	+45 7 54.0	−11.3
	2334	....	......	7 2 15	79 55	3 33.3	35.2	0.608	29.15	......	39.0	....	......	6	+ 5 57 3.0	− 9.7
	2379	....	......	7 8 52	80 15	1 56.5	58.3	0.500	29.15	......	39.0	....	......	7	+ 6 15 22.9	−10.1
	2522	α Canis Minoris	......	7 32 50	124 20	3 45.3	49.1	0.817	29.15	......	39.0	....	......	7	+50 22 22.7	−12.1
	......	Nadir ‖|	......	7 39 0	254 0	1 24.8	33.9	0.500	29.15	39.5	39.0	....	......	......	....	.....
	......	Nadir |‖	......	....	254 0	1 37.1	44.0	0.500	......	......	......					
Jan. 16	......	Nadir ‖|	......	6 0 0	254 0	1 24.6	34.8	0.500	28.77	39.0	36.0	....	......	......	....	.....
	......	Nadir |‖	......	....	254 0	1 36.8	46.4	0.500	......	......	......	....	......	......	....	.....
	2101	....	......	....	107 20	0 36.1	37.7	0.500	28.77	......	35.0	....	......	5	+33 19 3.1	− 9.2
	2238	....	......	....	106 10	3 2.8	3.7	0.500	28.77	......	35.0	....	......	6	+32 11 29.8	−10.1
	2292	....	......	6 54 8	119 5	4 27.8	28.4	0.500	28.77	......	35.0	....	......	6	+45 7 55.1	−11.4
	2363	....	......	7 6 50	105 0	2 13.0	13.0	0.500	28.77	......	34.8	....	......	7	+31 0 39.4	−11.1
	2410	δ Geminorum	......	7 12 42	107 40	4 43.3	44.2	0.740	28.77	......	34.8	....	......	6	+33 43 17.5	−11.6
	2463	....	7.0	7 20 54	102 5	4 11.8	12.4	0.551	28.77	......	34.3	....	......	7	+28 7 40.1	−11.7
	2488	....	......	7 27 21	83 25	5 29.8	30.0	0.619	28.77	......	34.2	....	......	8	+ 9 28 59.1	−10.9
	......	Nadir ‖|	......	8 0 0	254 0	1 25.1	35.0	0.500	28.77	34.8	34.1	....	......	......	....	.....
	......	Nadir |‖	......	....	254 0	1 36.6	46.1	0.500	......	......	......	....	......	......	....	.....
Jan. 19	......	Nadir ‖|	......	5 56 0	254 0	1 25.3	33.7	0.500	29.35	38.0	33.3	....	......	......	....	.....
	......	Nadir |‖	......	....	254 0	1 37.9	47.1	0.500	......	......	......	....	......	......	....	.....
	2379	(a)	......	7 8 56	80 15	1 51.0	52.4	0.564	29.35	......	33.0	....	......	5	+ 6 15 18.3	− 9.9
Jan. 20	......	Nadir ‖|	......	5 54 0	254 0	1 25.8	34.2	0.500	29.30	37.0	32.0	....	......	......	....	.....
	......	Nadir |‖	......	....	254 0	1 36.0	44.6	0.500	......	......	......	....	......	......	....	.....
	2184	....	7.0	6 34 15	113 25	1 58.7	59.2	0.760	29.30	......	32.0	....	......	6	+39 25 32.9	−10.6
	2238	....	......	6 44 28	106 10	3 1.3	1.1	0.500	29.30	......	32.0	....	......	7	+32 11 27.7	−10.1
	2488	....	6.0	7 27 23	83 25	5 30.0	30.0	0.566	29.30	......	32.0	....	......	6	+ 9 28 57.6	−10.3
	2522	α Canis Minoris	1.0	....	124 20	3 51.3	53.3	0.500	29.30	......	32.0	....	......	7	+50 22 18.7	−12.4
	2586	....	......	7 42 15	101 25	1 34.1	34.3	0.602	29.30	......	31.7	....	......	7	+27 25 2.9	−12.5
	......	Nadir ‖|	......	7 50 0	254 0	1 26.5	33.9	0.500	29.30	33.3	31.5	....	......	......	....	.....
	......	Nadir |‖	......	....	254 0	1 37.4	45.2	0.500	......	......	......	....	......	......	....	.....
Feb. 6	......	Nadir ‖|	......	9 14 0	254 0	1 25.9	35.2	0.500	29.60	40.0	38.9	....	......	......	....	.....
	......	(b) Nadir |‖	......	....	254 0	1 47.7	43.9	0.500	......	......	......	....	......	......	....	.....

(a) Bad definition. (b) Sky getting overcast.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour) and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1. 1865.
1865.				h. m. s.	° ′	r. ″	″	revols.	inches.	°	°				° ′ ″	″
Feb. 8	......	Nadir ‖ |	......	7 25 0	254 0	1 26·4	34·1	0·500	29·97	37·4	31·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 36·3	44·8	0·500	......	......	......	......	......	......	......	......
	2586	......	7·0	7 42 16	101 25	1 31·6	31·0	0·642	29·97	......	34·0	0	0	5	+27 25 2·6	−11·6
	2683	......	......	7 57 39	110 45	0 9·4	10·0	0·500	29·97	......	34·0	......	......	6	+36 43 37·3	−13·7
	2737	......	......	8 4 6	114 55	1 46·6	47·2	0·400	29·97	......	34·0	......	......	7	+40 55 12·2	−14·4
	......	Nadir ‖ |	......	9 0 0	254 0	1 25·8	33·6	0·500	29·97	36·0	33·6	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 36·8	35·1	0·500	......	......	......	......	......	......	......	......
Feb. 9	......	Nadir ‖ |	......	7 10 0	254 0	1 21·9	30·1	0·500	30·27	31·9	32·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 36·0	44·2	0·500	......	......	......	......	......	......	......	......
	2463	......	7·0	7 21 0	102 5	4 10·0	9·2	0·500	30·27	......	32·0	0	......	5	+28 7 37·7	−10·6
	2522	α Canis Minoris	......	7 32 56	124 20	3 43·0	46·0	0·800	30·27	......	32·0	......	......	......	+50 22 20·8	−15·1
	2683	......	......	7 57 39	110 40	5 0·0	1·0	0·821	30·27	......	31·8	......	......	7	+36 43 38·0	−13·7
	2748	......	......	8 5 31	115 30	4 2·9	3·8	0·380	30·27	......	31·4	......	......	6	+41 32 28·5	−14·6
	......	Nadir ‖ |	......	9 3 0	254 0	1 20·7	29·6	0·500	30·27	31·3	31·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 37·1	43·9	0·500	......	......	......	......	......	......	......	......
Feb. 15	......	Nadir ‖ |	......	7 11 0	254 0	1 26·0	33·8	0·500	29·27	33·1	30·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 39·6	47·0	0·500	......	......	......	......	......	......	......	......
	2737	......	......	8 4 6	114 55	1 46·7	47·4	0·500	29·27	......	30·0	......	......	6	+40 55 12·9	−14·5
	......	Nadir ‖ |	......	10 0 0	254 0	1 26·1	34·1	0·500	29·27	30·0	30·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 39·8	47·1	0·500	......	......	......	......	......	......	......	......
Feb. 20	......	Nadir ‖ |	......	7 48 0	254 0	1 24·8	33·1	0·500	30·05	33·1	31·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 37·6	45·1	0·500	......	......	......	......	......	......	......	......
	2737	......	......	8 4 5	114 55	1 51·0	50·4	0·243	30·05	......	31·0	5, S.W.	5	7	+40 55 10·1	−14·5
	2971	ι Hydræ	......	8 40 21	123 0	3 20·9	22·0	0·450	30·05	......	31·0	......	......	6	+49 1 46·3	−16·6
	3242	θ Ursæ Majoris	......	9 24 32	77 40	1 39·6	40·0	0·500	30·05	......	31·0	......	......	6	+ 3 40 4·7	−12·2
	3331	ι Leonis	......	9 38 54	105 30	4 56·6	56·4	0·500	30·05	......	31·0	......	......	7	+31 33 22·7	−15·9
	......	Nadir ‖ |	......	10 41 0	254 0	1 26·4	34·1	0·500	30·03	31·0	31·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 38·1	45·0	0·500	......	......	......	......	......	......	......	......
Feb. 24	......	Nadir ‖ |	......	7 16 0	254 0	1 24·2	32·1	0·500	29·45	40·0	39·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 37·6	45·3	0·500	......	......	......	......	......	......	......	......
	2683	......	......	7 57 39	110 40	4 56·0	56·4	0·938	29·46	......	39·5	8, S.W.	0	7	+36 43 35·8	−13·4
	2867	......	......	8 26 1	119 25	1 58·9	60·9	0·374	29·46	......	40·0	......	......	6	+45 25 23·3	−15·9
	2971	ι Hydræ	......	8 40 20	123 0	3 17·6	19·4	0·676	29·46	......	40·0	......	......	7	+49 1 50·4	−16·7
	3053	......	......	8 51 8	120 0	3 51·5	53·9	0·500	29·46	......	40·1	......	......	7	+46 2 19·8	−16·5
	3242	θ Ursæ Majoris	......	9 24 31	77 40	1 36·3	38·7	0·634	29·46	......	40·1	......	......	8	+ 3 40 6·5	−11·4
	3375	......	......	9 46 16	91 20	1 38·2	38·9	0·529	29·46	......	40·0	......	......	8	+20 20 14·0	−14·6
	3418	......	......	9 54 34	120 20	2 16·0	17·9	0·500	29·46	......	40·0	......	......	6	+46 20 43·9	−17·1
	3529	......	......	10 14 10	122 50	1 33·0	34·0	0·558	29·46	......	40·0	......	......	7	+48 50 1·7	−17·2
	3592	......	......	10 23 23	127 45	1 46·0	47·0	0·500	29·46	......	39·0	......	......	7	+53 45 13·0	−17·1
	3662	......	......	10 35 16	118 30	1 31·0	33·1	0·760	29·46	......	38·3	......	......	6	+44 30 6·0	−17·0
	3726	......	......	10 45 59	128 10	3 24·9	25·1	0·500	29·46	......	37·4	......	......	8	+54 11 51·8	−16·8
	......	Nadir ‖ |	......	10 51 0	254 0	1 24·4	33·2	0·500	29·46	37·5	37·4	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 37·8	44·8	0·500	......	......	......	......	......	......	......	......
Feb. 28	......	Nadir ‖ |	......	8 15 0	254 0	1 22·9	32·1	0·500	28·92	41·2	41·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 35·8	44·0	0·500	......	......	......	......	......	......	......	......
	2971	ι Hydræ	......	8 40 18	123 0	3 30·8	34·1	0·100	28·97	......	38·0	4, W.	0	7	+49 1 45·8	−16·5

Date.	Star or other Object Observed. No. in British Ass. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.
1865.				h. m. s.	° ′	′ ″	″	revols.	inches	°	°				° ′ ″
Feb. 28	3083	……………………	……	8 56 19	78 35	2 27·4	28·0	0·500	28·98	……	37·9	…………	……	6	+ 4 35 53·8
	3133	……………………	……	9 5 52	125 30	2 53·7	55·4	0·500	28·97	……	37·8	…………	……	7	+51 31 21·9
	3242	θ Ursæ Majoris……	……	9 24 32	77 40	1 40·8	42·4	0·350	28·97	……	37·8	…………	……	6	+ 3 40 3·3
	3331	ι Leonis…………	……	9 38 52	105 30	4 52·2	52·4	0·736	28·97	……	37·8	…………	……	7	+31 33 26·6
	3380	……………………	……	9 47 21	123 20	2 34·0	34·4	0·500	28·97	……	37·6	…………	……	8	+49 21 1·5
	3529	……………………	……	10 14 9	122 50	1 34·3	35·9	0·603	28·97	……	37·6	…………	……	6	+48 50 3·1
	3592	……………………	……	10 23 29	127 45	1 47·1	49·1	0·500	28·97	……	37·5	…………	……	7	+53 45 15·1
	3662	……………………	……	10 35 15	118 30	1 39·7	40·5	0·443	28·97	……	36·7	…………	……	6	+44 30 5·9
	3726	……………………	……	10 46 0	128 10	3 25·1	27·2	0·500	28·97	……	36·6	…………	……	7	+54 11 53·5
	3780	……………………	……	10 57 22	121 35	4 31·4	36·8	0·574	28·97	……	36·4	…………	……	8	+47 38 5·2
	……	Nadir ‖│…………	……	11 6 0	254 0	1 23·4	32·7	0·500	28·97	36·6	36·4	…………	……	……	…………
	……	Nadir │‖…………	……	………	254 0	1 36·0	44·2	0·500	……	……	……	…………	……	……	…………
Mar. 2	……	Nadir ‖│…………	……	9 16 0	254 0	1 26·4	35·7	0·500	29·70	40·6	40·0	…………	……	……	…………
	……	Nadir │‖…………	……	………	254 0	1 36·3	45·4	0·500	……	……	……	…………	……	……	…………
	3529	……………………	……	10 14 9	122 50	1 33·9	36·0	0·500	29·70	……	34·8	5, N.W.	2	7	+48 50 1·1
	3662	……………………	……	10 35 14	118 30	1 36·4	37·1	0·500	29·70	……	34·8	…………	……	6	+44 30 3·1
	3726	……………………	……	10 45 58	128 10	3 19·7	21·4	0·604	29·70	……	34·8	…………	……	7	+54 11 49·7
	……	Nadir ‖│…………	……	11 50 0	254 0	2 26·0	36·0	0·500	29·70	35·4	34·1	…………	……	……	…………
	……	Nadir │‖…………	……	………	254 0	2 35·9	46·1	0·500	……	……	……	…………	……	……	…………
Mar. 6	……	Nadir ‖│…………	……	8 12 0	254 0	2 23·0	32·7	0·500	29·16	39·5	36·8	…………	……	……	…………
	……	Nadir │‖…………	……	………	254 0	2 36·9	45·6	0·500	……	……	……	…………	……	……	…………
	2867	……………………	……	8 26 0	119 25	1 55·9	57·8	0·508	29·16	……	36·7	4, W.	0	7	+45 25 23·9
	3053	……………………	……	8 51 7	120 0	3 47·8	49·8	0·677	29·16	……	36·6	…………	……	6	+46 2 20·8
	3083	……………………	……	8 56 29	78 35	2 21·8	25·2	0·617	29·16	……	36·6	…………	……	6	+ 4 35 53·9
	3133	……………………	……	9 5 51	125 30	2 53·7	56·2	0·500	29·16	……	36·3	…………	……	7	+51 31 21·6
	3834	δ Leonis…………	……	11 7 38	108 40	2 45·0	44·6	0·580	29·16	……	36·2	…………	……	8	+34 41 14·1
	……	Nadir ‖│…………	……	11 21 0	254 0	1 24·4	32·8	0·500	29·16	36·2	36·0	…………	……	……	…………
	……	Nadir │‖…………	……	………	254 0	1 36·1	44·9	0·500	……	……	……	…………	……	……	…………
Mar. 8	……	Nadir ‖│…………	……	9 4 0	254 0	1 24·0	32·6	0·500	29·68	38·1	33·7	…………	……	……	…………
	……	(a) Nadir │‖…………	……	………	254 0	1 35·1	43·7	0·500	……	……	……	…………	……	……	…………
	3529	……………………	……	10 14 11	122 50	1 33·6	37·4	0·500	29·68	……	33·5	…………	……	6	+48 50 2·3
	3726	……………………	……	10 46 0	128 10	3 20·0	22·4	0·500	29·68	……	33·0	…………	……	7	+54 11 48·1
	3834	δ Leonis…………	……	11 7 37	108 40	2 43·0	44·0	0·600	29·68	……	33·0	…………	……	6	+34 41 13·6
	……	Nadir ‖│…………	……	11 28 0	254 0	1 24·5	33·0	0·500	29·68	37·0	33·0	…………	……	……	…………
	……	Nadir │‖…………	……	………	254 0	1 34·8	44·0	0·500	……	……	……	…………	……	……	…………
Mar. 9	……	Nadir ‖│…………	……	9 17 0	254 0	1 25·8	35·0	0·500	29·69	38·0	35·0	…………	……	……	…………
	……	Nadir │‖…………	……	………	254 0	1 37·0	45·1	0·500	……	……	……	…………	……	……	…………
	3331	(a) ι Leonis…………	……	9 38 53	105 30	4 49·7	51·3	0·711	29·69	……	34·9	2, N.	0	7	+31 33 23·2
	……	Nadir ‖│…………	……	11 2 0	254 0	1 26·3	35·7	0·500	29·69	37·5	35·7	…………	……	……	…………
	……	Nadir │‖…………	……	………	254 0	1 36·7	44·8	0·500	……	……	……	…………	……	……	…………
Mar. 15	……	Nadir ‖│…………	……	10 47 0	254 0	1 25·9	34·3	0·500	29·71	38·9	37·0	…………	……	……	…………
	……	Nadir │‖…………	……	………	254 0	1 37·4	46·4	0·500	……	……	……	…………	……	……	…………
Mar. 21	……	Nadir ‖│…………	……	9 25 0	254 0	1 23·0	32·4	0·500	29·82	36·6	33·4	…………	……	……	…………
	……	Nadir │‖…………	……	………	254 0	1 37·3	45·2	0·500	……	……	……	…………	……	……	…………
	3331	ι Leonis…………	3·0	9 38 51	105 30	4 42·8	43·9	0·922	29·82	……	33·3	1, N.	0	6	+31 33 22·4

(a) Cloudy.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1865.
				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
1865. Mar. 21	3380	......	6·0	9 47 18	123 20	2 25·8	27·8	0·609	29·82	......	33·3	......	......	7	+ 49 20 56·6	− 17·6
	3418	......	8·0	9 54 31	120 20	2 9·4	11·7	0·653	29·82	......	33·2	......	......	6	+ 46 20 41·8	− 17·0
	3780	......	......	10 57 21	121 35	4 31·8	35·[illegible]	0·500	29·82	......	32·2	......	......	7	+ 47 38 0·5	− 17·0
	3869	......	6·0	11 16 5	111 45	2 44·6	46·6	0·500	29·82	......	32·2	......	......	6	+ 37 46 12·7	− 15·8
	3996	......	......	11 42 52	124 [illegible]	1 40·6	44·0	0·464	29·82	......	32·1	......	......	6	+ 50 0 7·9	− 16·5
	4231	......	......	12 27 29	104 45	1 56·7	57·6	0·500	29·82	......	31·0	......	......	8	+ 30 45 24·0	− 15·3
	......	Nadir ‖	......	13 3 0	254 0	1 24·1	33·0	0·500	29·82	35·[illegible]	31·0	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 36·8	44·9	0·500	......	......	......	......	......	......	......	......
Mar. 23	......	Nadir ‖	......	10 28 0	254 0	1 25·7	34·4	0·500	29·65	38·0	34·8	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 37·0	44·2	0·500	......	......	......	......	......	......	......	......
	3662	......	......	10 35 13	118 30	1 30·6	32·4	0·711	29·65	......	34·8	0	0	7	+ 44 30 4·2	− 16·7
	3726	......	......	10 45 58	128 10	3 25·7	28·9	0·500	29·65	......	34·8	......	......	7	+ 54 11 54·1	− 18·0
	3780	......	......	10 57 20	121 35	4 34·8	37·2	0·435	29·65	......	34·8	......	......	5	+ 47 38 1·3	− 17·0
	3834	δ Leonis	......	11 7 36	108 40	2 39·8	41·0	0·740	29·65	......	34·7	......	......	6	+ 34 41 14·1	− 15·2
	3869	......	......	11 15 5	111 45	2 46·0	47·8	0·500	29·65	......	34·6	......	......	7	+ 37 48 14·0	− 15·6
	4153	......	......	12 14 12	102 35	1 10·4	11·9	0·660	29·65	......	33·1	......	......	8	+ 28 34 42·2	− 14·9
	......	Nadir ‖	......	......	254 0	1 26·0	34·7	0·500	29·65	37·0	33·1	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 36·6	44·1	0·500	......	......	......	......	......	......	......	......
Mar. 29	......	Nadir ‖	......	11 4 0	254 0	1 22·2	30·4	0·500	29·84	40·3	41·0	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 35·1	43·9	0·500	......	......	......	......	......	......	......	......
	3996	......	......	11 42 52	124 0	1 39·2	42·0	0·600	29·84	......	41·0	0	0	6	+ 50 0 11·1	− 16·6
	4153	......	......	12 14 13	102 35	1 14·5	15·6	0·500	29·84	......	41·0	......	......	7	+ 28 34 42·7	− 14·0
	4231	......	......	12 27 28	104 45	1 52·6	54·4	0·588	29·84	......	41·0	......	......	7	+ 30 45 23·8	− 14·2
	4364	......	......	12 55 39	107 55	3 38·3	40·9	0·500	29·84	......	39·4	......	......	8	+ 33 57 7·9	− 14·3
	4421	β Comæ	......	13 6 14	101 20	4 48·8	50·0	0·564	29·84	......	39·2	......	......	8	+ 27 23 19·3	− 14·0
	4457	......	......	13 13 32	94 5	3 29·8	31·0	0·500	29·84	......	39·0	......	......	7	+ 20 6 58·1	− 13·7
	4526	......	......	13 27 5	104 50	5 38·6	39·4	0·500	29·84	......	38·8	......	......	7	+ 30 54 7·4	− 13·9
	4606	......	......	13 42 54	97 50	4 11·7	13·7	0·531	29·84	......	38·5	......	......	6	+ 23 52 41·5	− 13·8
	4652	......	......	13 50 51	97 15	2 3·9	4·8	0·750	29·84	......	38·7	......	......	7	+ 23 15 38·8	− 13·8
	4696	α Draconis	3·0	14 1 23	64 55	3 0·5	1·4	0·500	29·85	......	38·7	......	......	7	− 9 3 [illegible]	− 12·7
	......	Nadir ‖	......	14 7 0	254 0	1 23·1	30·7	0·500	29·85	40·8	38·7	......	......	......	......	......
	......	Nadir ‖	......	......	254 [illegible]	1 34·7	44·1	0·500	......	......	......	......	......	......	......	......
Mar. 31	......	Nadir ‖	......	11 45 0	254 0	1 25·4	33·0	0·500	29·65	45·8	45·8	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 37·5	45·3	0·500	......	......	......	......	......	......	......	......
	4421	β Comæ	......	13 6 14	101 20	4 49·7	51·8	0·542	29·64	......	45·0	8, S.W.	3	6	+ 27 23 18·5	− 13·6
	4457	......	......	13 13 31	94 5	3 30·6	31·9	0·500	29·64	......	45·0	......	......	7	+ 20 6 57·3	− 13·3
	4552	......	......	13 32 7	92 55	4 50·6	53·7	0·500	29·64	......	45·0	......	......	8	+ 18 58 18·4	− 13·3
	4696	α Draconis	3·0	14 1 21	64 55	3 1·7	3·9	0·449	29·64	......	44·8	......	......	7	− 9 3 34·4	− 12·1
	......	Nadir ‖	......	14 10 0	254 0	1 26·1	42·9	0·500	29·64	45·4	44·8	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 37·0	45·1	0·500	......	......	......	......	......	......	......	......
April 4	......	Nadir ‖	......	11 0 0	254 0	1 24·6	33·0	0·500	29·58	47·0	48·0	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 35·8	44·0	0·500	......	......	......	......	......	......	......	......
	4421	β Comæ	......	13 6 13	101 20	4 45·0	48·2	0·659	29·60	......	47·0	30, S.W.	0	6	+ 27 23 18·3	− 12·6
	4457	......	......	13 13 31	94 5	3 27·0	29·3	0·608	29·60	......	47·0	......	......	7	+ 20 6 58·1	− 12·1
	4526	......	6·0	13 27 3	104 50	5 34·6	37·4	0·610	29·60	......	47·0	......	......	8	+ 30 54 6·6	− 12·7
	4652	......	7·0	13 50 50	97 15	2 6·0	9·0	0·660	29·60	......	47·0	......	......	7	+ 23 15 38·6	− 12·3
	4696	α Draconis	......	14 1 21	64 55	2 52·6	56·8	0·657	29·60	......	46·8	......	......	8	− 9 3 35·9	− 10·4

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Co... N. P. ... Jan. 18...
1865.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	
April 6	......	Nadir ‖ |	......	14 10 0	254 0	1 25·2	33·6	0·500	29·60	46·9	46·4	....	......	......	....	..
	......	Nadir | ‖	......	....	254 0	1 35·7	43·9	0·500	......	......	......	....	......	......	....	..
April 10	......	Nadir ‖ |	......	12 16 0	254 0	1 24·4	34·0	0·500	29·99	48·8	44·0	....	......	......	....	
	......	Nadir | ‖	......	....	254 0	1 35·6	46·0	0·500	......	......	......	....	......	......	....	
	4205	....	......	12 22 33	102 55	5 7·7	10·2	0·500	29·99	......	44·0	4, W.	0	6	+28 58 36·2	-1
	4364	....	......	12 55 37	107 55	3 34·8	38·4	0·612	29·99	......	44·0	....	......	7	+33 57 6·9	-1
	4421	β Comæ............	......	13 6 14	101 20	4 43·4	46·1	0·650	29·99	......	43·8	....	......	8	+27 23 15·9	-1
	4468	....	......	13 15 21	115 5	1 44·0	46·2	0·560	29·99	......	43·8	....	......	7	+41 5 13·9	-1
	4606	....	......	13 42 54	97 50	4 5·6	10·4	0·666	29·99	......	43·7	....	......	6	+23 52 39·4	-1
	4696	α Draconis.........	......	14 1 22	64 55	2 57·6	61·2	0·500	29·99	......	43·7	....	......	7	− 9 3 35·6	-
	......	Nadir ‖ |	......	14 7 0	254 0	1 24·2	33·8	0·500	29·99	45·8	43·7	....	......	......	....	
	......	Nadir | ‖	......	....	254 0	1 36·0	45·8	0·500	......	......	......	....	......	......	....	
April 11	......	Nadir ‖ |	......	12 42 0	254 0	1 23·8	33·4	0·500	29·88	49·2	48·0	....	......	......	....	
	......	Nadir | ‖	......	....	254 0	1 36·4	45·9	0·500	......	......	......	....	......	......	....	
	4457	(a)	......	13 13 31	94 5	3 24·4	27·0	0·591	29·88	......	47·7	1, S.W.	0	7	+20 6 54·9	-1
	4513	....	7·0	13 25 8	105 0	2 26·9	29·4	0·500	29·88	......	47·7	....	......	6	+31 0 55·2	-1
	4575	....	......	13 38 1	106 35	0 29·8	33·1	0·606	29·88	......	47·7	....	......	6	+32 34 1·1	-1
	4696	....	......	14 1 22	64 55	2 55·1	58·4	0·500	29·88	......	47·7	....	......	7	− 9 3 38·3	-
April 26	......	Nadir ‖ |	......	11 23 0	254 0	1 21·3	30·7	0·500	29·85	53·0	51·0	....	......	......	....	..
	......	Nadir | ‖	......	....	254 0	1 32·6	41·4	0·500	......	......	......	....	......	......	....	
	4153	....	......	12 14 10	102 35	1 15·2	17·2	0·235	29·85	......	50·9	6, W.	4	7	+28 34 38·2	-
	4231	....	......	12 27 26	104 45	1 49·1	50·9	0·500	29·85	......	50·9	....	......	8	+30 45 19·5	-
	4364	....	......	12 55 35	107 55	3 33·7	35·9	0·558	29·85	......	50·8	....	......	7	+33 57 6·3	-1
	4421	β Comæ............	......	13 6 12	101 20	4 12·4	45·2	0·496	29·85	......	50·8	....	......	8	+27 23 13·4	-
	4503	....	......	13 23 2	125 20	3 38·1	41·1	0·495	29·85	......	48·0	....	......	6	+51 22 9·1	-1
	4652	....	6·0	13 50 48	97 15	2 5·2	7·9	0·500	29·85	......	48·0	....	......	8	+23 15 33·7	-
	4678	....	......	13 57 12	97 35	4 51·7	55·2	0·500	29·85	......	47·9	....	......	7	+23 38 23·0	-
	......	Nadir ‖ |	......	14 9 0	254 0	1 22·0	30·4	0·500	29·85	......	47·8	....	......	......	....	
	......	Nadir | ‖	......	....	254 0	1 32·3	41·7	0·500	......	......	......	....	......	......	....	
April 28	......	Nadir ‖ |	......	12 20 0	254 0	1 22·7	31·7	0·500	29·97	49·2	41·0	....	......	......	....	..
	......	Nadir | ‖	......	....	254 0	1 36·0	45·1	0·500	......	......	......	....	......	......	....	
	4421	β Comæ............	......	13 6 11	101 20	4 39·0	41·9	0·636	29·97	......	40·0	1, N.E.	0	7	+27 23 12·3	-
	4468	....	......	13 15 21	115 5	1 40·8	43·8	0·524	29·97	......	40·0	....	......	8	+41 5 11·2	-1
	4550	....	......	13 32 1	76 35	1 15·0	18·8	0·500	29·97	......	40·0	....	......	6	+ 2 34 43·2	-
	4575	....	......	13 38 0	106 30	5 28·7	31·1	0·500	29·97	......	40·0	....	......	7	+32 33 58·3	-
	4678	....	......	13 57 9	97 35	4 43·0	47·1	0·710	29·97	......	40·0	....	......	6	+23 38 18·8	-
	4696	α Draconis.........	......	14 1 26	64 55	2 51·3	54·3	0·500	29·97	......	40·0	....	......	6	− 9 3 41·4	-
	......	Nadir ‖ |	......	14 6 0	254 0	1 23·0	32·2	0·500	29·97	44·1	40·0	....	......	......	....	..
	......	Nadir | ‖	......	....	254 0	1 35·8	44·8	0·500	......	......	......	....	......	......	....	..
May 1	......	Nadir ‖ |	......	13 30 0	254 0	1 23·1	32·7	0·500	29·45	49·0	49·0	....	......	......	....	
	......	Nadir | ‖	......	....	254 0	1 35·2	45·4	0·500	......	......	......	....	......	......	....	
	4610	....	......	13 43 10	98 5	1 48·0	50·8	0·743	29·45	......	49·0	10, S.W.	2	6	+24 5 23·3	-
	4652	....	......	13 50 49	97 15	1 51·3	55·1	0·915	29·45	......	49·0	....	......	7	+23 15 31·9	-
	4696	α Draconis.........	5·0	14 1 20	64 55	2 49·8	53·0	0·500	29·45	......	48·8	....	......	7	− 9 3 43·1	-
	4729	α Bootis............	......	14 10 7	110 5	0 12·2	14·2	0·500	29·45	......	48·8	....	......	8	+36 3 40·7	-1
	4876	ε Bootis............	......	14 39 42	102 15	4 43·7	46·8	0·500	29·45	......	48·7	....	......	7	+28 18 13·1	-

(a) Good definition.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South	Cor. to Mean N. Polar Dist., Jan. 1, 1865.
1865.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
May 1	......	Nadir ‖	......	14 43 0	254 0	1 22·7	32·4	0·500	29·45	48·8	48·6	....	......	......	....	......
	......	Nadir ‖	......	....	254 0	1 35·8	45·7	0·500	......	......	......	....	......	......	....	......
May 8	......	Nadir ‖	......	13 8 0	254 0	1 21·9	32·8	0·500	29·72	51·0	47·0	....	......	......	....	......
	......	Nadir ‖	......	....	254 0	1 34·0	44·4	0·500	......	......	......	....	......	......	....	......
	4552	....	......	13 32 6	92 55	4 38·7	44·0	0·500	29·72	......	47·0	0	6	6	+ 18 58 9·1	− 4·8
	4575	....	......	13 38 1	106 35	0 26·2	30·0	0·559	29·72	......	47·0	....	......	7	+ 32 33 57·5	− 7·2
	4627	....	......	13 45 54	94 30	1 58·9	61·8	0·724	29·71	......	46·9	....	......	8	+ 20 30 33·9	− 5·0
	4678	....	......	13 57 12	97 35	4 48·9	53·2	0·500	29·71	......	46·9	....	......	7	+ 23 38 18·9	− 5·4
	4696	(a) α Draconis	......	....	64 55	2 50·7	54·0	0·500	29·71	......	46·9	....	......	5	− 9 3 41·8	− 0·5
	4729	α Bootis	......	14 10 16	110 0	5 2·5	6·3	0·500	29·71	......	46·9	....	......	6	+ 36 3 32·9	− 7·7
	4797	....	......	14 23 19	93 5	5 27·4	31·8	0·650	29·71	......	46·9	....	......	7	+ 19 9 1·4	− 4·6
	4820	....	......	14 29 5	96 50	0 53·2	56·8	0·520	29·71	......	46·9	....	......	8	+ 22 49 23·9	− 5·0
	4863	....	......	14 37 50	92 35	3 35·4	39·2	0·683	29·71	......	47·0	....	......	7	+ 18 37 9·9	− 4·5
	......	Nadir ‖	......	14 41 0	254 0	1 22·4	33·6	0·500	29·71	50·6	47·0	....	......	......	....	......
	......	Nadir ‖	......	....	254 0	1 35·4	45·8	0·500	......	......	......	....	......	......	....	......
May 15	......	Nadir ‖	......	12 45 0	254 0	1 22·9	33·4	0·500	29·18	48·0	44·1	....	......	......	....	......
	......	Nadir ‖	......	....	254 0	1 34·7	45·3	0·500	......	......	......	....	......	......	....	......
	4364	....	......	12 55 38	107 55	3 35·0	37·3	0·399	29·18	......	44·0	5, W.	0	6	+ 33 57 1·6	− 7·3
	4421	β Comae	......	13 6 13	101 20	4 36·1	36·7	0·761	29·18	......	44·0	....	......	7	+ 27 23 12·6	− 5·4
	4457	....	......	13 13 29	94 5	3 21·7	23·9	0·443	29·18	......	44·0	....	......	6	+ 20 6 48·7	− 3·6
	4503	....	......	13 23 3	125 20	3 36·3	40·5	0·500	29·18	......	43·3	....	......	8	+ 51 22 6·3	− 10·5
	4552	....	......	13 32 5	92 55	4 38·6	43·1	0·589	29·18	......	43·0	....	......	7	+ 18 58 11·0	− 3·2
	4621	....	......	13 44 18	110 35	5 8·7	11·3	0·698	29·18	......	42·6	....	......	6	+ 36 38 41·0	− 6·7
	4652	....	......	13 50 51	97 15	1 59·8	63·3	0·500	29·18	......	42·4	....	......	6	+ 23 15 29·0	− 3·9
	4696	α Draconis	......	14 1 21	64 55	2 45·1	47·3	0·613	29·18	......	42·3	....	......	7	− 9 3 45·0	+ 1·5
	4729	α Bootis	......	14 10 7	110 0	5 0·7	3·1	0·812	29·18	......	42·1	....	......	8	+ 36 3 39·0	− 6·6
	4797	....	......	14 23 19	93 10	0 31·2	34·8	0·510	29·18	......	42·0	....	......	6	+ 19 9 0·3	− 2·9
	4820	....	......	14 29 5	96 50	0 51·4	54·4	0·624	29·18	......	41·8	....	......	9	+ 22 49 23·5	− 3·4
	4863	....	......	14 37 50	92 35	3 38·7	41·0	0·500	29·18	......	41·8	....	......	8	+ 18 37 7·3	− 2·7
	4934	....	......	14 51 33	88 15	2 46·8	51·0	0·593	29·18	......	41·7	....	......	7	+ 14 16 18·4	− 2·1
	4965	....	......	14 58 58	84 45	3 21·8	25·5	0·500	29·18	......	41·7	....	......	7	+ 10 46 50·7	− 1·7
	5000	....	......	15 5 50	96 20	3 0·6	4·9	0·619	29·18	......	41·6	....	......	6	+ 22 21 33·6	− 2·9
	5071	....	......	15 16 46	77 30	2 7·0	11·2	0·500	29·18	......	41·0	....	......	7	+ 3 30 35·6	− 1·1
	......	Nadir ‖	......	15 23 0	254 0	1 23·2	33·6	0·500	29·18	42·4	41·0	....	......	......	....	......
	......	Nadir ‖	......	....	254 0	1 35·1	44·9	0·500	......	......	......	....	......	......	....	......
May 17	......	Nadir ‖	......	13 11 0	254 0	1 23·3	33·3	0·500	29·42	49·4	50·0	....	......	......	....	......
	......	Nadir ‖	......	....	254 0	1 33·7	43·5	0·500	......	......	......	....	......	......	....	......
	4575	....	6·0	13 38 2	106 35	0 26·5	29·9	0·551	29·42	......	49·9	4, S.W.	1	7	+ 32 33 57·3	− 5·6
	4756	....	6·0	14 14 25	77 15	4 25·8	30·6	0·592	29·42	......	50·0	....	......	6	+ 3 17 57·4	+ 0·1
	4809	....	......	14 27 2	102 40	1 53·8	56·9	0·500	29·42	......	50·0	....	......	6	+ 28 40 23·1	− 3·8
	4992	....	......	15 3 4	74 50	4 7·8	11·4	0·794	29·42	......	49·9	....	......	8	+ 0 52 44·3	− 0·0
	5071	....	......	15 16 45	77 30	2 6·4	11·2	0·500	29·42	......	49·9	....	......	7	+ 3 30 35·3	− 0·4
	......	Nadir ‖	......	15 24 0	254 0	1 23·7	33·9	0·500	29·42	49·6	49·8	....	......	......	....	......
	......	Nadir ‖	......	....	254 0	1 32·9	44·0	0·500	......	......	......	....	......	......	....	......
May 19	......	Nadir ‖	......	13 47 0	254 0	1 22·1	32·7	0·500	29·90	56·0	55·0	....	......	......	....	......
	......	Nadir ‖	......	....	254 0	1 36·7	46·1	0·500	......	......	......	....	......	......	....	......
	4696	α Draconis	......	14 1 22	64 55	2 41·7	45·9	0·664	29·90	......	54·9	8, S.W.	4	7	− 9 3 46·5	+ 2·6

(a) Rather late.

Date.	Star or other Object Observed: No. in British Asso. Catalogue.	Star or other Object Observed: Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South	Cor. to Mean N. Polar Dist., Jan. 1, 1865.
1865.				h. m. s.	° '	' "	"	revols.	inches.	°	°				° ' "	"
May 19	4729	α Bootis		14 10 10	110 5	0 2.1	6.1	0.520	29.90		54.9			8	+36 3 31.6	− 5.9
		Nadir		14 21 0	254 0	1 22.7	33.0	0.500	29.90	55.2	54.8					
		Nadir			254 0	1 35.9	47.0	0.500								
May [illegible]		Nadir		13 24 0	254 0	1 22.4	32.8	0.500	29.80	60.5	57.8					
		Nadir			254 0	1 34.2	45.0	0.500								
	4575			13 38 1	106 35	0 19.9	24.7	0.700	29.80		56.4	2, N.E.	0	7	+32 33 55.7	− 4.6
	4627			13 45 45	94 30	1 59.3	64.5	0.609	29.80		56.3			6	+20 30 32.3	− 1.7
	4652			13 50 49	97 15	1 52.7	58.9	0.783	29.80		56.2			7	+23 15 31.3	− 2.2
	4696	α Draconis		14 1 21	64 55	2 36.8	41.8	0.733	29.80		55.3			8	− 9 3 48.3	+ 3.7
	4729	α Bootis		14 10 10	110 0	5 1.8	7.6	0.658	29.80		55.0			7	+36 3 37.8	− 5.3
	4797			14 23 19	93 10	0 25.6	32.1	0.572	29.80		54.4			8	+19 8 58.0	− 1.4
	4863			14 37 49	92 35	3 31.8	37.0	0.677	29.80		54.1			6	+18 37 7.0	− 0.7
	4934			14 51 32	88 15	2 38.8	44.8	0.703	29.80		54.0			7	+14 16 14.6	− [illegible]
	4965			14 58 59	84 45	3 13.3	19.0	0.634	29.80		54.0			8	+10 46 47.1	+ 0.5
	5071			15 16 45	77 30	2 0.4	6.9	0.600	29.80		54.0			7	+ 3 30 33.0	+ 1.4
		Nadir		15 41 0	254 0	1 21.0	32.0	0.500	29.80	57.4	54.0					
		Nadir			254 0	1 33.7	45.3	0.500								
May 24		Nadir		13 28 0	254 0	1 21.6	34.9	0.500	29.80	59.2	53.1					
		Nadir			254 0	1 33.7	47.3	0.500								
	4575			13 38 0	106 35	0 23.6	26.0	0.594	29.80		53.0	2, N.E.	0	6	+32 33 54.6	− 4.4
	4621			13 44 19	110 35	5 10.0	12.4	0.588	29.80		53.0			7	+36 38 41.6	− 5.2
	4652			13 50 50	97 15	1 56.7	60.4	0.583	29.80		53.0			7	+23 15 27.8	− 2.4
	4696	α Draconis		14 1 21	64 55	2 40.1	42.9	0.640	29.80		52.9			8	− 9 3 49.4	+ 4.0
	4723			14 8 33	110 10	4 8.3	12.9	0.677	29.80		52.8			6	+26 12 42.9	− 3.3
	4797			14 23 19	93 10	0 25.8	30.6	0.500	29.80		52.8			7	+19 8 54.7	− 4.7
	4863			14 37 51	92 35	3 34.1	38.6	0.574	29.80		52.0			8	+18 37 5.4	− 4.5
	4934			14 51 33	88 15	2 38.9	44.6	0.718	29.80		52.0			6	+14 16 14.3	+ 4.3
	4965			14 59 0	84 45	3 12.7	17.9	0.692	29.80		52.0			8	+10 46 47.1	+ 4.6
	5000			15 5 50	96 20	2 58.4	65.0	0.500	29.80		52.0			9	+22 21 26.5	− 0.7
		Nadir		15 30 0	254 0	1 22.1	35.3	0.500	29.80	57.0	52.0					
		Nadir			254 0	1 34.0	47.1	0.500								
May 25		Nadir		13 31 0	254 0	1 21.0	35.0	0.500	29.82	60.0	58.1					
		Nadir			254 0	1 31.8	45.4	0.500								
	4627			13 45 46	94 30	1 56.0	57.7	0.753	29.82		58.0	2, W.	1	6	+20 30 31.4	− 1.3
	4876	ι Bootis		14 39 46	102 15	4 42.7	46.9	0.500	29.82		58.0			7	+28 18 13.2	− 1.3
	5091				66 5	4 34.2	38.4	0.500	29.82		57.3			7	− 7 51 57.4	+ 3.1
		Nadir		15 40 0	254 0	1 20.9	34.8	0.500	29.82		57.2					
		Nadir			254 0	1 32.2	46.0	0.500								
May 31		Nadir		14 35 0	254 0	1 22.5	34.2	0.500	29.75	54.0	47.7					
		Nadir			254 0	1 36.4	47.0	0.500								
	4965			14 59 2	84 45	3 13.7	17.9	0.587	29.75		47.0				+10 46 44.2	+ 2.7
		Nadir		15 11 0	254 0	1 23.0	34.6	0.500	29.75	49.3	47.1					
		Nadir			254 0	1 35.8	47.3	0.500								
June 7		Nadir		14 36 0	254 0	1 23.1	31.9	0.500	30.17	62.0	62.0					
		Nadir			254 0	1 35.7	44.3	0.500								
	4942			14 54 58	89 45	2 33.3	38.7	0.636	30.17		62.0	2	0	6	+15 46 7.1	+ 3.6

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1865.
1865.				h. m. s.	° '	' "	"	revols.	inches.	°	°				° ' "	"
June 7	4992	......	......	15 3 6	74 50	4 4·8	11·0	0·643	30·17	......	62·0	......	......	7	+ 0 52 38·4	+ 6·0
	5071	......	......	......	77 30	1 59·7	65·9	0·500	30·17	......	62·0	......	......	5	+ 3 30 29·3	+ 5·6
	5284	γ Serpentis	......	15 50 56	113 50	1 49·4	54·2	0·500	30·17	......	62·0	......	......	7	+39 50 20·0	+ 1·3
	5415	......	......	16 7 5	71 40	1 25·0	27·6	0·500	30·17	......	61·9	......	......	5	− 2 20 7·8	+ 6·1
	5452	......	......	16 14 55	108 30	0 29·8	33·6	0·600	30·17	......	61·0	......	......	9	+34 29 2·3	+ 2·8
	5647	......	......	16 44 4	116 25	3 1·9	6·3	0·473	30·17	......	60·6	......	......	6	+42 26 31·7	+ 3·2
	5716	......	......	16 53 15	114 15	3 32·5	37·9	0·529	30·17	......	60·4	......	......	8	+40 17 4·5	+ 3·7
	5787	......	......	17 4 2	119 40	4 47·2	52·2	0·500	30·17	......	60·1	......	......	8	+45 43 18·1	+ 3·9
	5863	ω Herculis	......	17 16 18	97 15	4 53·1	57·9	0·373	30·17	......	60·0	......	......	7	+23 18 20·0	+ 4·6
	5917	......	......	17 24 37	69 45	4 6·1	11·7	0·620	30·17	......	60·0	......	......	9	− 4 12 21·5	+ 5·0
	......	Nadir	......	17 51 0	254 0	1 22·4	34·0	0·500	30·17	60·0	60·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 33·4	44·8	0·500	......	......	......	......	......	......	......	......
June 12	......	Nadir	......	15 3 0	254 0	1 22·4	33·0	0·500	30·18	57·8	52·6	......	......	......	......	......
	......	Nadir	......	......	254 0	1 33·6	44·4	0·500	......	......	......	......	......	......	......	......
	5284	γ Serpentis	......	15 50 57	113 50	1 49·6	52·8	0·500	30·18	......	52·4	4, W.	0	7	+39 50 19·8	+ 2·2
	5415	......	......	16 7 7	71 40	1 24·0	26·8	0·573	30·18	......	52·2	......	......	6	− 2 20 6·3	+ 7·6
	5493	......	6·0	16 21 47	127 15	3 10·7	17·1	0·500	30·17	......	52·0	......	......	7	+53 16 42·2	+ 1·9
	5615	......	......	16 38 58	93 10	2 34·1	38·7	0·548	30·17	......	52·0	......	......	6	+19 11 5·5	+ 5·8
	5787	......	......	17 4 1	119 40	4 46·4	50·0	0·500	30·17	......	52·0	......	......	8	+45 43 17·0	+ 4·8
	5863	ω Herculis	......	......	97 15	4 47·7	51·9	0·500	30·17	......	52·0	......	......	5	+23 18 18·2	+ 6·0
	6035	......	......	17 44 30	120 0	4 14·6	20·0	0·393	30·17	......	52·8	......	......	7	+46 2 43·1	+ 6·5
	......	Nadir	......	18 1 0	254 0	1 23·1	34·1	0·500	30·17	52·0	52·5	......	......	......	......	......
	......	Nadir	......	......	254 0	1 32·9	43·7	0·500	......	......	......	......	......	......	......	......
June 13	......	Nadir	......	15 44 0	254 0	1 21·7	31·1	0·500	30·20	60·0	53·5	......	......	......	......	......
	......	Nadir	......	......	254 0	1 34·4	44·2	0·500	......	......	......	......	......	......	......	......
	5415	......	......	16 7 6	71 40	1 26·0	29·2	0·500	30·20	......	53·3	0	0	6	− 2 20 6·1	+ 7·9
	5452	......	......	16 14 56	108 30	0 31·0	36·8	0·500	30·20	......	53·3	......	......	7	+34 29 2·1	+ 4·0
	5597	......	......	16 36 7	104 50	0 52·5	56·4	0·700	30·20	......	53·2	......	......	6	+30 49 28·2	+ 5·1
	5686	......	......	16 47 58	114 15	4 56·9	63·0	0·570	30·20	......	53·1	......	......	5	+40 18 30·8	+ 4·7
	5726	......	......	16 54 38	123 10	0 18·8	24·8	0·604	30·20	......	53·0	......	......	7	+49 8 52·7	+ 4·3
	5777	......	......	17 2 35	94 25	3 6·9	11·0	0·560	30·20	......	53·0	......	......	6	+20 26 38·7	+ 6·3
	5863	ω Herculis	......	17 16 19	97 15	4 44·4	50·0	0·600	30·20	......	53·0	......	......	6	+23 18 18·4	+ 6·3
	6035	......	......	17 44 29	120 0	4 11·7	19·1	0·500	30·20	......	52·9	......	......	7	+46 2 44·1	+ 6·7
	......	Nadir	......	18 7 0	254 0	1 22·9	35·2	0·500	30·20	54·7	52·9	......	......	......	......	......
	......	Nadir	......	......	254 0	1 33·3	44·1	0·500	......	......	......	......	......	......	......	......
June 22	......	Nadir	......	17 22 0	254 0	1 21·3	32·6	0·500	29·95	64·0	64·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 34·6	45·4	0·500	......	......	......	......	......	......	......	......
	6123	70 Ophiuchi	......	17 59 23	127 25	5 22·0	28·4	0·584	29·95	......	64·0	4, W.	4	6	+53 28 56·0	+ 9·0
	6213	......	4·0	18 13 23	122 45	0 11·7	17·4	0·500	29·95	......	64·0	......	......	5	+48 43 42·4	+ 9·6
	6302	χ Draconis	......	18 24 11	57 15	3 40·0	44·1	0·586	29·95	......	64·0	......	......	7	− 16 42 49·9	+ 8·6
	......	Nadir	......	18 42 0	254 0	1 22·0	33·0	0·500	29·95	64·0	64·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 34·4	45·1	0·500	......	......	......	......	......	......	......	......
June 23	......	Nadir	......	16 13 0	254 0	1 21·4	32·2	0·500	29·84	61·1	52·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 34·8	45·8	0·500	......	......	......	......	......	......	......	......
	5597	......	......	16 36 10	104 50	0 54·6	56·3	0·520	29·84	......	51·9	5, W.	0	7	−30 49 23·8	+ 7·4
	6245	......	......	18 17 37	112 10	2 42·9	46·1	0·680	29·84	......	51·5	......	......	7	+38 11 17·9	+ 9·8

Date.	Star or other Object Observed: No. in British Asso. Catalogue.	Star or other Object Observed: Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. (Max. = 10.)	Est. Value of Obs. (Max. = 10.)	Apparent Zenith Distance South.	Cor. to Mean N. Pol. Dist. Jan. 1, 1865.
				h m s	° '	' "	"	revols.	inches.	°	°				° ' "	"
1865. June 23	......	Nadir	......	18 32 0	254 0	1 21·7	31·9	0·500	29·84	......	50·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 35·3	46·0	0·500	......	......	......	......	......	......	......	......
Sept. 22	......	Nadir	......	21 7 0	254 0	1 50·1	62·3	0·500	30·23	58·1	56·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 60·4	72·8	0·500	......	......	......	......	......	......	......	......
	7561	ι Pegasi	......	21 38 36	120 40	2 24·8	30·4	0·540	30·23	......	56·0	7, S.W.	0	7	+46 40 27·6	+26·5
	7644	......	......	21 51 22	58 5	3 0·0	3·9	0·502	30·23	......	56·0	......	......	6	−15 [illegible] 1·7	+31·4
	7688	α Aquarii	......	21 59 54	130 55	0 53·0	60·6	0·500	30·23	......	56·0	......	......	7	+56 53 55·1	+26·3
	7908	ζ Pegasi	......	22 35 47	119 50	0 14·4	19·9	0·500	30·23	......	56·0	......	......	8	+45 48 15·7	+28·8
	8024	......	......	22 56 51	73 35	1 6·9	11·4	0·500	30·23	......	55·8	......	......	8	− 0 25 53·9	+27·7
	8139	......	......	23 15 51	92 5	2 58·7	63·6	0·577	30·21	......	55·5	......	......	6	+18 6 1·5	+27·1
	8204	......	7·0	23 27 50	58 40	3 51·9	55·5	0·617	30·21	......	55·3	......	......	7	−15 [illegible] 6·5	+23·1
	8247	......	......	23 36 45	112 0	3 2·5	6·1	0·503	30·21	......	55·2	......	......	7	+38 1 3·6	+25·1
	8298	......	7·0	23 46 33	53 5	3 19·9	23·0	0·600	30·21	......	55·1	......	......	8	−20 53 39·6	+20·5
	8338	......	7·0	23 51 55	68 30	3 34·8	38·0	0·563	30·20	......	55·0	......	......	9	− 5 26 24·9	+21·5
	18	......	6·5	0 4 34	71 0	3 46·8	49·0	0·539	30·20	......	55·0	......	......	6	− 2 58 13·9	+21·3
	......	Nadir	......	0 10 0	254 0	1 53·6	66·2	0·500	30·20	53·7	55·0	......	......	......	......	—
	......	Nadir	......	......	254 0	1 63·4	75·2	0·500	......	......	......	......	......	......	......	—
Sept. 25	......	Nadir	......	21 50 0	254 0	1 50·0	63·0	0·500	30·15	59·0	56·0	......	......	......	......	—
	......	Nadir	......	......	254 0	1 61·0	71·6	0·500	......	......	......	......	......	......	......	—
	7908	ζ Pegasi	3·5	22 35 46	119 50	0 16·9	23·0	0·463	30·15	......	56·0	......	......	8	+45 48 18·3	+29·1
	8024	......	......	22 56 49	73 35	1 8·6	13·2	0·420	30·15	......	56·0	......	......	7	− 0 25 53·5	+28·6
	8135	......	......	23 15 24	86 35	1 0·0	3·8	0·500	30·15	......	55·8	......	......	6	+12 34 0·5	+27·8
	8269	......	8·0	23 41 57	126 30	1 56·4	62·0	0·500	30·15	......	55·7	......	......	7	+52 29 59·7	+26·2
	18	......	......	0 4 31	71 0	3 45·7	49·7	0·600	30·15	......	55·7	......	......	5	− 2 58 11·5	+22·1
	48	......	7·0	0 10 50	116 45	2 54·0	59·8	0·950	30·15	......	55·6	......	......	6	+42 46 9·5	+25·0
Sept. 26	......	Nadir	......	21 37 0	254 0	1 49·7	63·7	0·500	29·95	59·0	56·0	......	......	......	......	—
	......	Nadir	......	......	254 0	1 60·8	71·8	0·500	......	......	......	......	......	......	......	—
	8315	......	7·0	23 49 44	122 25	4 36·0	41·9	0·500	29·95	......	55·9	......	......	8	+48 27 39·4	+26·1
	18	......	......	0 4 30	71 0	3 43·8	47·8	0·581	29·95	......	55·9	......	......	7	− 2 58 13·7	+23·5
	......	Nadir	......	0 23 2	254 0	1 50·1	64·0	0·500	29·95	58·6	55·7	......	......	......	......	—
	......	Nadir	......	......	254 0	1 60·2	72·0	0·500	......	......	......	......	......	......	......	—
Oct. 3	......	Nadir	......	22 13 0	254 0	1 53·6	63·2	0·500	30·05	57·4	54·8	......	......	......	......	—
	......	Nadir	......	......	254 0	1 62·7	75·1	0·500	......	......	......	......	......	......	......	—
	7908	ζ Pegasi	......	22 35 44	119 50	0 13·2	19·0	0·638	30·05	......	54·7	1, S.E.	0	7	+45 48 17·5	+29·0
	7996	......	6·0	22 51 41	126 50	2 22·1	26·7	0·500	30·05	......	54·7	......	......	7	+52 50 22·7	+27·7
	8034	α Pegasi	......	22 59 3	115 25	4 16·8	21·1	0·500	30·05	......	54·1	......	......	8	+41 27 18·4	+25·9
	8083	......	......	23 7 47	73 30	3 32·9	37·1	0·350	30·05	......	53·7	......	......	7	− 0 28 32·4	+30·1
	8135	......	......	23 16 22	86 35	0 56·3	60·3	0·553	30·05	......	53·5	......	......	6	+12 33 57·4	+22·8
	8204	......	......	23 27 45	58 40	3 49·5	52·4	0·556	30·05	......	53·4	......	......	6	−15 18 11·2	+27·3
	8252	......	......	23 37 32	77 30	4 37·2	41·4	0·550	30·05	......	53·9	4, S. E.	0	8	+ 3 32 38·5	+27·4
	8316	......	......	23 49 44	122 25	4 32·9	38·3	0·500	30·05	......	53·9	......	......	8	+48 27 34·7	+26·3
	8354	......	......	23 58 59	72 10	2 9·4	13·4	0·561	30·05	......	53·9	......	......	6	− 1 49 50·4	+24·4
	26	γ Pegasi	......	0 7 18	115 30	2 4·6	9·0	0·610	30·05	......	53·9	......	......	9	+41 30 8·4	+23·1
	57	......	......	0 11 52	129 0	1 19·7	24·4	0·500	30·05	......	53·9	......	......	10	+54 59 19·9	+23·2
	83	......	......	0 18 50	77 40	1 0·0	5·0	0·864	30·05	......	53·9	......	......	9	+ 3 39 1·0	+23·7
	120	......	......	0 25 17	97 5	3 25·1	29·7	0·500	30·05	......	53·9	......	......	8	+23 6 25·5	+24·4
	177	......	......	0 35 14	121 20	0 53·0	58·4	0·500	30·05	......	53·9	......	......	6	+47 18 53·5	+24·3

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1865.
1865.				h. m. s.	° ′	r. ″	″	revs.	inches.	°	°				° ′ ″	″
Oct. 3	229	......	6·0	0 43 31	66 25	3 30·6	24·2	0·500	30·05	......	54·0	......	......	7	− 7 33 36·0	+ 19·8
	263	......	......	0 51 0	103 40	2 21·8	25·8	0·500	30·05	......	54·0	......	......	6	+ 29 40 22·2	+ 22·5
	299	......	6·0	0 58 6	101 0	2 12·7	17·3	0·612	30·05	......	54·0	......	......	7	+ 27 0 16·2	+ 21·7
	357	......	......	1 6 25	98 35	2 4·1	10·1	0·500	30·05	......	54·0	......	......	6	+ 24 35 5·2	+ 20·7
	......	Nadir	......	1 11 0	254 0	1 50·0	63·0	0·500	30·05	55·2	54·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 63·1	75·3	0·500	......	......	......	......	......	......	......	......
Oct. 27	......	Nadir	......	23 11 0	254 0	1 55·0	66·0	0·500	29·01	44·0	40·0	7, N.	6	......	......	......
	......	Nadir	......	......	254 0	1 63·0	75·2	0·500	......	......	......	......	......	......	......	......
	8372	......	6·5	0 0 3	72 15	2 55·7	58·0	0·512	29·07	......	40·0	......	......	6	− 1 44 6·7	+ 32·0
	48	(a)	7·0	0 10 41	116 45	2 51·9	55·2	0·861	29·02	......	38·0	......	......	7	+ 42 46 1·9	+ 27·1
	83	......	......	......	77 40	0 51·3	57·3	0·500	29·02	......	38·0	......	......	5	+ 3 38 51·9	+ 30·1
	120	......	6·0	0 25 16	97 5	3 23·0	26·5	0·500	29·03	......	37·9	......	......	7	+ 23 6 22·6	+ 28·5
	177	......	......	0 35 13	121 20	0 56·4	59·9	0·335	29·93	......	37·9	......	......	8	+ 47 18 51·2	+ 25·0
	218	η Cassiopeæ	......	0 41 57	72 50	3 7·7	11·1	0·358	29·04	......	37·5	......	......	9	− 1 8 58·2	+ 27·7
	259	......	......	0 50 16	92 10	2 41·8	45·2	0·457	29·05	......	37·3	......	......	8	+ 18 10 39·7	+ 26·5
	290	......	7·0	0 57 20	76 30	0 7·6	9·4	0·480	29·05	......	37·2	......	......	7	+ 2 28 3·7	+ 26·0
	357	(b)	9·0	1 6 24	98 35	2 1·0	4·2	0·500	29·05	......	37·1	......	......	6	+ 24 35 0·1	+ 24·6
	455	......	......	1 25 46	113 40	2 46·4	48·9	0·465	29·06	......	36·5	......	......	6	+ 39 40 45·0	+ 22·1
	538	......	......	1 40 15	113 10	4 6·0	8·7	0·500	29·06	......	36·0	......	......	7	+ 39 12 6·1	+ 20·8
	645	......	6·0	2 0 3	104 45	2 23·4	25·9	0·500	29·08	......	36·0	......	......	5	+ 30 45 25·0	+ 19·0
	718	......	7·0	2 13 25	73 20	1 53·9	55·9	0·500	29·08	......	35·9	......	......	7	− 0 40 9·1	+ 15·7
	764	......	......	2 23 22	121 0	0 23·0	27·3	0·500	29·08	......	35·9	......	......	7	+ 46 58 22·5	+ 16·8
	793	......	......	......	123 40	3 30·4	33·2	0·500	29·10	......	35·9	......	......	8	+ 49 41 29·8	+ 16·3
	834	......	......	2 37 0	101 50	4 51·4	53·3	0·500	29·10	......	35·9	......	......	7	+ 30 52 51·1	+ 14·9
	......	Nadir	......	2 46 0	254 0	1 53·5	62·9	0·500	29·10	41·0	35·9	......	......	......	......	......
	......	Nadir	......	......	254 0	1 63·8	73·2	0·500	......	......	......	......	......	......	......	......
Nov. 1	......	Nadir	......	1 0 0	254 0	1 53·4	63·2	0·500	29·67	45·4	43·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·7	75·2	0·500	......	......	......	......	......	......	......	......
	588	......	......	1 50 45	66 0	1 30·1	31·3	0·500	29·65	......	41·1	0	3	6	− 8 0 31·0	+ 19·9
	694	......	......	2 8 27	66 10	1 26·9	29·1	0·500	29·65	......	40·7	......	......	5	− 7 50 36·7	+ 17·2
	764	......	7·0	2 23 28	121 0	0 22·8	27·2	0·500	29·65	......	40·6	......	......	6	+ 46 58 22·3	+ 16·8
	793	......	......	2 30 0	123 40	3 20·7	32·1	0·500	29·65	......	40·4	......	......	7	+ 49 41 29·0	+ 16·1
	......	Nadir	......	2 41 0	254 0	1 52·9	62·7	0·500	29·65	44·7	40·3	......	......	......	......	......
	......	Nadir	......	......	254 0	1 65·0	76·0	0·500	......	......	......	......	......	......	......	......
Nov. 3	......	Nadir	......	1 4 0	254 0	1 51·9	61·9	0·500	29·82	44·4	41·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·3	74·9	0·500	......	......	......	......	......	......	......	......
	455	......	......	1 25 46	113 40	2 47·4	48·8	0·500	29·82	......	40·9	3, W.	0	6	+ 39 40 46·2	+ 22·4
	538	......	......	1 40 14	113 10	4 5·8	7·0	0·567	29·82	......	40·9	......	......	5	+ 39 12 6·6	+ 21·2
	588	......	......	1 50 44	66 0	1 29·1	30·8	0·500	29·82	......	40·9	......	......	7	− 8 0 31·6	+ 20·5
	694	......	......	2 9 27	66 10	1 25·0	25·0	0·593	29·82	......	40·9	......	......	7	− 7 50 37·1	+ 17·8
	776	......	......	2 25 30	128 15	2 45·0	46·0	0·550	29·82	......	40·9	......	......	8	+ 51 15 44·1	+ 16·3
	834	......	......	2 37 1	104 50	4 54·6	56·1	0·360	29·82	......	40·8	......	......	8	+ 30 52 49·2	+ 15·5
	891	......	......	2 46 29	124 0	2 50·2	53·2	0·545	29·82	......	40·9	......	......	6	+ 50 0 55·5	+ 11·6
	962	ι Persei	......	3 0 20	80 50	3 24·3	26·7	0·567	29·82	......	40·9	......	......	7	+ 6 51 21·1	+ 11·2
	......	Nadir	......	3 21 0	254 0	1 53·7	63·7	0·500	29·82	42·2	40·9	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·3	74·3	0·500	......	......	......	......	......	......	......	......

(a) Stars well defined. (b) Larger observed.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist. Jan. 1, 1865.
1865				h m s	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Nov. 6	......	Nadir	......	0 51 0	254 0	1 52·0	61·4	0·500	30·08	41·5	36·8	......	......	......	......	......
	......	Nadir	......	......	254 0	1 65·7	76·1	0·500	......	......	......	......	......	......	......	......
	335	......	......	1 3 42	66 30	0 8·0	9·3	0·450	30·08	......	36·8	......	......	7	− 7 31 57·8	+27·7
	455	......	8·0	1 25 44	113 40	2 44·9	45·3	0·510	30·06	......	36·8	3, W.	0	7	+39 40 43·4	+22·5
	514	......	......	1 35 0	100 35	1 44·7	46·1	0·500	30·06	......	36·8	......	......	8	+26 34 42·6	+22·6
	538	......	......	1 40 11	113 10	4 4·8	6·4	0·570	30·06	......	36·8	......	......	8	+39 12 5·7	+21·3
	588	......	......	1 50 43	66 0	1 29·8	31·0	0·500	30·06	......	37·0	......	......	7	− 8 0 34·3	+21·4
	645	......	6·0	1 60 2	104 45	2 24·9	24·5	0·500	30·06	......	37·0	......	......	9	+30 45 22·3	+19·9
	691	......	......	2 9 25	66 10	1 24·8	25·8	0·564	30·06	......	37·0	......	......	7	− 7 50 37·6	+16·7
	728	......	......	2 16 57	119 40	4 55·0	56·4	0·500	30·06	......	37·0	......	......	6	+45 42 53·5	+17·4
	764	......	......	2 23 21	121 0	0 21·0	27·0	0·500	30·06	......	37·0	......	......	8	+46 58 22·8	+16·7
	793	......	......	2 29 38	123 40	3 29·1	31·1	0·509	30·05	......	37·9	......	......	6	+49 41 28·0	+16·0
	834	......	......	2 36 59	104 50	4 49·0	49·6	0·500	30·05	......	38·0	......	......	9	+30 52 47·4	+15·7
	891	......	......	2 46 28	124 0	2 48·4	51·4	0·580	30·05	......	38·1	......	......	7	+50 0 49·6	+14·4
	920	......	......	2 52 7	108 50	3 58·7	58·7	0·500	30·05	......	38·2	......	......	6	+34 51 56·5	+14·0
	962	ι Persei	......	2 60 19	80 50	3 25·6	25·4	0·500	30·05	......	38·2	......	......	9	+ 6 51 22·1	+11·8
	1055	......	......	3 17 41	108 20	4 58·1	58·0	0·520	30·05	......	38·2	......	......	9	+34 22 57·2	+11·0
	......	Nadir	......	3 26 0	254 0	1 54·4	64·4	0·500	30·05	38·7	38·2	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·7	75·3	0·500	......	......	......	......	......	......	......	......
Nov. 9	......	Nadir	......	1 21 0	254 0	1 53·9	63·0	0·500	29·91	42·5	40·5	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·6	74·2	0·500	......	......	......	......	......	......	......	......
	547	......	......	1 41 50	82 45	0 26·3	26·3	0·694	29·91	......	40·5	......	......	6	+ 8 43 27·9	+23·4
	588	......	......	1 50 40	66 0	1 23·8	24·6	0·697	29·91	......	40·5	......	......	7	− 8 0 35·0	+22·2
	645	......	......	1 59 59	104 45	2 22·1	21·9	0·603	29·91	......	39·4	......	......	8	+30 45 22·5	+20·1
	691	......	......	2 9 25	66 10	1 20·6	21·0	0·713	29·91	......	39·1	......	......	9	− 7 50 38·1	+19·5
	728	......	8·0	2 16 56	119 40	4 55·4	56·4	0·518	29·91	......	39·0	......	......	8	+45 42 54·5	+17·4
	764	......	......	2 23 19	121 0	0 22·1	23·9	0·609	29·91	......	39·0	......	......	8	+46 58 23·3	+16·6
	793	......	......	2 29 37	123 40	3 31·1	32·3	0·540	29·91	......	39·0	......	......	6	+49 41 30·4	+15·9
	834	......	......	2 36 58	104 50	4 50·7	50·3	0·500	29·91	......	39·0	......	......	7	+30 52 48·6	+15·9
	891	......	......	2 46 27	124 0	2 48·7	50·5	0·555	29·91	......	39·0	......	......	7	+50 0 48·6	+14·3
	920	......	......	2 52 6	108 50	3 56·8	56·9	0·548	29·91	......	39·0	......	......	8	+34 51 56·2	+14·1
	962	ι Persei	......	3 0 17	80 50	3 21·8	22·3	0·663	29·91	......	39·0	......	......	7	+ 6 51 23·1	+12·4
	1055	......	......	3 17 39	108 20	4 57·9	58·3	0·584	29·91	......	39·0	......	......	8	+34 22 58·6	+11·1
	1101	......	......	3 28 11	98 45	0 12·4	13·4	0·530	29·91	......	39·0	......	......	6	+24 43 10·6	+ 9·4
	......	Nadir	......	3 42 0	254 0	1 53·5	62·9	0·500	29·91	39·2	39·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 65·9	75·5	0·500	......	......	......	......	......	......	......	......
Nov. 13	......	Nadir	......	1 23 0	254 0	1 52·1	60·8	0·500	30·00	42·0	32·1	......	......	......	......	......
	......	Nadir	......	......	254 0	1 65·0	73·4	0·500	......	......	......	......	......	......	......	......
	514	......	......	1 34 57	100 35	1 44·7	45·9	0·500	30·00	......	38·7	0	2	7	+26 34 42·8	+23·5
	891	(a)	......	2 46 26	124 0	2 51·0	53·8	0·500	30·00	......	38·6	......	......	3	50 0 50·2	+14·1
	949	α Ceti	......	......	126 20	4 28·2	30·2	0·500	30·00	......	38·6	......	......	5	+52 22 27·3	+13·9
	980	......	......	3 3 21	103 35	1 0·4	0·8	0·524	30·00	......	38·5	......	......	6	+29 33 58·9	+13·0
	1055	......	......	3 17 39	108 25	0 4·2	6·8	0·500	30·00	......	38·0	......	......	5	+34 23 3·1	+11·3
	1101	......	......	3 28 9	98 45	0 10·7	13·0	0·538	30·00	......	37·8	......	......	5	+24 43 10·0	+ 9·8
	......	Nadir	......	3 44 0	254 0	1 53·4	63·0	0·500	30·00	39·4	37·7	......	......	......	......	......
	......	Nadir	......	......	254 0	1 66·0	74·9	0·500	......	......	......	......	......	......	......	......
Nov. 15	......	Nadir	......	1 49 0	254 0	1 53·4	61·4	0·500	29·98	43·3	42·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 63·9	75·5	0·500	......	......	......	......	......	......	......	......

(a) Bad definition.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds.	Est. Value of Obs.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1865.
				h. m. s.	° '	' "	"	revols.	inches.	°	°		Max. = 10.	Max. = 10.	° ' "	"
1865. Nov. 15	694	......	7·5	2 9 21	66 10	1 21·8	23·7	0·590	29·98	......	42·0	......	......	7	+ 7 50 39·2	+21·2
	728	......	......	2 16 53	119 40	4 54·4	55·8	0·538	29·98	......	42·0	......	......	8	+45 42 54·5	+17·3
	793	......	......	2 29 35	123 40	3 29·8	31·2	0·674	29·98	......	41·5	......	......	7	+49 41 33·2	+15·6
	920	......	......	2 52 3	108 50	3 54·9	55·4	0·630	29·98	......	41·4	......	......	6	+34 51 57·2	+14·4
	962	ι Persei	......	3 0 16	80 50	3 23·7	24·5	0·598	29·98	......	41·3	......	......	7	+ 6 51 23·7	+13·7
	......	Nadir ‖ |	......	3 51 0	254 0	1 55·0	63·8	0·500	29·98	43·0	41·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 64·9	74·7	0·500	......	......	......	......	......	......	......	......
Nov. 17	......	Nadir ‖ |	......	1 43 0	254 0	1 52·3	61·0	0·500	29·55	47·0	45·1	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 65·0	73·8	0·500	......	......	......	......	......	......	......	......
	645	......	6·5	1 59 58	101 45	2 26·2	26·4	0·500	29·55	......	44·8	8, W.	0	7	+30 45 24·7	+20·7
	793	......	......	2 29 35	123 40	3 30·3	31·2	0·710	29·55	......	44·4	......	......	6	+49 41 35·0	+15·5
	834	......	......	2 36 55	104 50	4 50·1	49·9	0·500	29·55	......	44·3	......	......	7	+30 52 48·9	+16·5
	......	Nadir ‖ |	......	3 3 0	254 0	1 52·4	60·9	0·500	29·55	45·5	44·2	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 64·8	74·0	0·500	......	......	......	......	......	......	......	......
Nov. 22	......	Nadir ‖ |	......	2 20 0	254 0	1 51·9	61·8	0·500	28·43	47·0	47·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 63·9	72·8	0·500	......	......	......	......	......	......	......	......
Nov. 23	......	Nadir ‖ |	......	2 41 0	254 0	1 52·9	63·3	0·500	29·00	47·3	45·6	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 63·0	73·0	0·500	......	......	......	......	......	......	......	......
	962	ι Persei	......	3 0 14	80 50	3 18·7	19·9	0·690	29·00	......	45·5	......	......	6	+ 6 51 22·5	+17·2
Nov. 27	......	Nadir ‖ |	......	11 20 0	254 0	1 49·0	58·9	0·500	29·25	41·0	38·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 62·8	74·0	0·500	......	......	......	......	......	......	......	......
Dec. 1	......	Nadir ‖ |	......	2 56 0	254 0	1 55·8	64·8	0·500	29·71	42·3	38·8	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 64·4	74·2	0·500	......	......	......	......	......	......	......	......
	1101	......	......	3 28 6	98 45	0 11·4	13·8	0·498	29·71	......	38·8	......	......	7	+24 43 9·6	+11·3
Dec. 8	......	Nadir ‖ |	......	2 13 0	254 0	1 52·4	61·0	0·500	30·10	48·0	48·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 63·7	73·9	0·500	......	......	......	......	......	......	......	......
	793	......	......	2 29 30	123 40	3 31·9	34·7	0·580	30·10	......	48·0	3, W.	0	7	+49 41 34·[illegible]	+14·2
	834	......	......	2 36 52	104 50	4 49·8	50·6	0·444	30·10	......	48·0	......	......	7	+30 52 47·7	+17·4
	920	......	......	2 51 59	108 50	3 57·9	58·8	0·500	30·10	......	48·2	......	......	6	+34 51 57·6	+14·9
	1282	(a)	......	......	81 10	4 34·0	37·5	0·500	30·10	......	48·8	......	......	5	+ 7 12 33·7	+ 7·8
	1434	(b)	......	4 31 26	117 40	4 12·7	16·2	0·500	30·10	......	49·0	......	......	6	+43 42 13·5	+ 1·9
	1491	......	......	4 44 5	121 15	3 23·0	26·4	0·500	30·10	......	49·0	......	......	7	+47 16 23·6	+ 0·3
	1730	δ Orionis	......	5 25 55	130 20	2 3·8	8·1	0·500	30·10	......	49·0	......	......	7	+56 20 4·4	− 4·2
	......	Nadir ‖ |	......	5 30 0	254 0	1 50·8	62·4	0·500	30·10	48·8	48·9	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 62·8	72·1	0·500	......	......	......	......	......	......	......	......
Dec. 13	......	Nadir ‖ |	......	2 49 0	254 0	1 51·0	62·7	0·500	30·15	44·2	41·2	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 62·4	71·9	0·500	......	......	......	......	......	......	......	......
	980	......	......	3 3 13	103 35	0 56·0	56·8	0·518	30·15	......	41·4	6, W.	0	6	+29 33 55·6	+14·3
	1055	......	......	3 17 32	108 25	0 0·0	1·8	0·500	30·15	......	41·6	......	......	7	+34 22 59·7	+12·0
	1101	......	......	3 28 2	98 45	0 12·7	15·0	0·500	30·15	......	41·6	......	......	8	+24 43 12·2	+12·2
	1282	......	......	......	81 10	4 33·3	37·9	0·500	30·15	......	41·6	......	......	6	+ 7 12 33·7	+ 8·7
	1434	......	......	4 31 23	117 40	4 12·4	15·2	0·500	30·15	......	41·8	......	......	7	+43 42 13·1	+ 1·7
	1459	......	......	4 37 53	74 35	2 53·7	56·5	0·590	30·15	......	41·6	......	......	8	+ 0 35 55·1	+ 3·4
	1491	......	......	4 44 2	121 15	3 23·2	25·8	0·557	30·14	......	41·7	......	......	7	+47 16 25·1	− 0·1

(a) Cloudy. (b) Wind increasing.

Date.	Star or other Object Observed. No. in British Assoc. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist. Jan. 1, 1865.
1865.				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
Dec. 13	1626	......	......	5 10 4	89 40	0 11·8	15·0	0·580	30·14	......	41·5	......	......	8	+ 14 38 13·6	− 2·3
	1656	......	......	5 15 9	121 40	0 50·7	53·1	0·588	30·14	......	41·5	......	......	8	+ 47 38 53·0	− 3·4
	1826	......	......	5 40 15	120 30	0 17·4	21·1	0·523	30·14	......	41·8	......	......	8	+ 46 28 19·6	− 6·4
	1883	α Orionis	1·0	5 48 30	122 35	0 39·7	42·0	0·595	30·14	......	41·9	......	......	9	+ 48 33 42·2	− 7·1
	1930	......	8·5	5 55 53	112 15	4 3·4	5·6	0·390	30·14	......	41·9	......	......	5	+ 38 17 0·6	− 6·4
	......	Nadir ‖|	......	6 1 0	254 0	1 53·0	62·2	0·500	30·14	42·1	42·[illegible]	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 64·8	74·2	0·500	......	......	......	......	......	......	......	......
Dec. 14	......	Nadir ‖|	......	2 56 0	254 0	1 51·0	60·8	0·500	30·27	44·1	41·1	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 63·5	73·9	0·500	......	......	......	......	......	......	......	......
	1055	......	......	3 17 31	108 20	4 57·2	58·8	0·497	30·27	......	41·2	7, W.	0	8	+ 31 22 57·4	+ 12·0
	1101	......	......	3 28 0	98 45	0 9·7	11·3	0·517	30·27	......	41·2	......	......	7	+ 24 43 9·5	+ 12·3
	1166	η Tauri	......	3 40 15	106 15	2 28·8	29·4	0·611	30·27	......	41·0	......	......	9	+ 32 15 31·3	+ 9·1
	1282	......	......	4 4 31	81 10	4 30·1	31·8	0·587	30·27	......	41·0	......	......	7	+ 7 12 31·6	+ 8·4
	1318	......	......	4 11 43	73 45	3 34·0	37·1	0·650	30·27	......	41·0	......	......	6	− 0 13 22·8	+ 8·1
	1434	......	......	4 31 24	117 40	4 9·6	13·4	0·500	30·27	......	40·0	......	......	7	+ 43 42 10·9	+ 1·6
	1463	......	......	4 38 20	106 35	1 7·4	9·8	0·563	30·30	......	39·6	......	......	6	+ 32 34 9·4	+ 1·7
	1501	......	......	4 46 31	74 20	3 8·0	11·0	0·700	30·30	......	39·5	......	......	7	+ 0 21 12·5	+ 2·2
	1626	......	......	5 10 3	89 40	0 8·0	10·2	0·650	30·32	......	39·0	......	......	8	+ 15 38 11·3	− 2·2
	1683	......	......	5 18 40	95 40	2 54·2	56·3	0·500	30·32	......	38·8	......	......	6	+ 21 40 53·9	− [illegible]
	1730	δ Orionis	......	5 26 52	130 20	2 4·4	7·6	0·500	30·32	......	38·6	......	......	10	+ 56 20 4·7	− 5·3
	1772	......	......	5 31 31	100 50	0 53·7	55·0	0·640	30·32	......	38·6	......	......	8	+ 26 48 56·9	− 5·5
	1826	......	......	5 40 14	120 30	0 17·1	20·4	0·500	30·32	......	38·6	......	......	9	+ 46 28 17·6	− 6·5
	1883	α Orionis	......	5 48 38	122 35	0 33·4	36·4	0·690	30·32	......	38·6	......	......	10	+ 48 33 39·0	− 7·4
	......	Nadir ‖|	......	5 52 0	254 0	1 53·7	61·7	0·500	30·32	42·0	38·4	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 64·0	72·8	0·500	......	......	......	......	......	......	......	......
Dec. 21	......	Nadir ‖|	......	3 52 0	254 0	1 55·0	64·8	0·500	29·72	50·0	50·5	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 61·0	71·6	0·500	......	......	......	......	......	......	......	......
	1282	......	......	4 4 29	81 10	4 30·2	31·6	0·500	29·72	......	50·4	15, S.W.	0	4	+ 7 12 29·3	+ 9·9
	1318	......	......	4 11 39	73 45	3 36·7	37·7	0·503	29·72	......	50·4	......	......	6	− 0 13 25·0	+ 9·5
	1361	......	......	4 17 49	111 10	4 51·8	52·8	0·500	29·72	......	50·3	......	......	6	+ 37 12 52·1	+ 3·5
	1434	......	......	4 31 21	117 40	4 12·7	15·0	0·500	29·72	......	50·0	......	......	6	+ 43 42 13·4	+ 1·2
	1463	(a)	......	4 38 18	106 35	1 8·8	9·7	0·500	29·72	......	50·0	......	......	3	+ 32 34 8·5	+ 1·5
	1626	......	......	5 10 0	89 40	0 12·2	16·4	0·500	29·72	......	50·0	......	......	4	+ 15 38 12·6	− 1·4
	1683	......	......	5 18 37	95 40	2 54·6	57·8	0·500	29·72	......	49·0	......	......	7	+ 21 40 55·1	− 3·1
	1730	δ Orionis	......	5 25 50	130 20	2 7·4	11·0	0·560	29·72	......	49·0	......	......	7	+ 56 20 9·9	− 6·8
	1826	......	......	5 40 11	120 30	0 20·0	23·4	0·550	29·72	......	48·9	......	......	6	+ 46 28 22·1	− 7·3
	1883	α Orionis	......	5 48 36	122 35	0 41·0	43·8	0·576	29·72	......	48·8	......	......	8	+ 48 33 43·5	− 8·1
	1930	......	......	5 55 49	112 15	4 4·1	7·7	0·343	29·72	......	48·8	......	......	4	+ 38 17 1·3	− 8·7
	2046	......	......	6 15 47	73 35	3 28·1	31·3	0·539	29·72	......	48·8	......	......	5	− 0 23 31·4	− 11·5
	......	Nadir ‖|	......	6 30 0	254 0	1 50·9	62·3	0·500	29·72	48·7	48·7	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 60·1	71·4	0·500	......	......	......	......	......	......	......	......
Dec. 22	......	Nadir ‖|	......	4 33 0	254 0	1 52·7	62·3	0·500	29·88	49·0	48·0	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 62·8	73·2	0·500	......	......	......	......	......	......	......	......
Dec. 26	......	Nadir ‖|	......	4 22 0	254 0	1 52·9	61·8	0·500	29·85	46·1	41·5	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 62·2	73·0	0·500	......	......	......	......	......	......	......	......
	1434	......	......	4 31 20	117 40	4 12·1	14·0	0·500	29·85	......	41·5	7, W.	0	6	+ 43 42 12·5	+ 1·4
	1463	......	......	4 38 16	106 35	1 9·3	10·3	0·500	29·85	......	41·3	......	......	7	+ 32 34 9·0	+ 1·6

(a) Hardly visible.

Day.	Star or other Object Observed. No. in British Assoc. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	In-door Ther. Fahr.	External Ther. Fahr.	Wind. Velocity in miles per hour, and Direction.	Clouds. Max.	Est. Value of Obs. 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1865.
1865.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Dec. 26	1491	....	5·0	....	121 15	3 23·7	28·7	0·500	29·85	......	41·2	....	......	5	+ 17 16 25·5	− 1·1
	1656	....	......	5 15 5	121 40	0 52·5	55·5	0·500	29·85	......	41·8	....	......	7	+ 47 38 52·9	− 4·7
	1730	δ Orionis..............	......	....	130 20	2 9·0	12·3	0·500	29·85	......	41·9	....	......	6	+ 56 20 9·5	− 6·8
	1826	....	......	5 40 10	120 30	0 20·0	23·8	0·500	29·85	......	41·9	....	......	7	+ 46 28 20·9	− 7·5
	......	Nadir	......	5 57 0	254 0	1 53·1	62·0	0·500	29·85	42·7	41·9	....	......	......	....	......
	......	Nadir	......	....	254 ·0	1 61·9	74·5	0·500	......	......	......	....	......	......	....	......
Dec. 27	......	Nadir	......	4 25 0	254 0	1 53·1	62·3	0·500	29·65	45·0	......	....	......	......	....	......
	......	Nadir	......	....	254 0	1 62·7	73·6	0·500	......	......	......	....	......	......	....	......
	1491	....	......	4 43 58	121 15	3 21·3	25·0	0·630	29·65	......	42·2	8, S.W.	1	6	+ 47 16 26·0	− 1·2
	1626	....	......	5 9 57	89 40	0 7·1	10·5	0·663	29·65	......	42·1	....	......	5	+ 15 38 11·4	− 0·7
	1683	....	......	5 18 35	95 40	2 52·9	56·3	0·510	29·65	......	42·0	....	......	7	+ 21 40 54·4	− 2·6
	......	Nadir	......	5 31 0	254 0	1 54·0	61·4	0·500	29·65	43·8	42·0	....	......	......	....	......
	......	Nadir	......	....	254 0	1 63·0	72·2	0·500	......	......	......	....	......	......	....	......

ROYAL OBSERVATORY, EDINBURGH.

Individual Observations of Mean North Polar Distances of Stars observed at the Royal Observatory, Edinburgh, in the Year 1865, reduced to January 1, 1865.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1865.
B.A.C. 18.				
			h. m.	° ′ ″
Sept. 22	0·72	6·5	0 3	31 4 41·2
25	0·73			44·4
26	0·73			42·6
B.A.C. 26, γ Pegasi.				
Oct. 3	0·75	(2·0) (a)	0 6	75 34 2·3
B.A.C. 48.				
Sept. 25	0·73	7·0	0 10	76 49 64·9
Oct. 27	0·82	7·0		59·2
B.A.C. 57.				
Oct. 3	0·75	(6·5)	0 11	89 3 44·4
B.A.C. 83.				
Oct. 3	0·75	(6·0)	0 18	37 42 5·2
27	0·82			2·5
B.A.C. 120.				
Oct. 3	0·75	(6·0)	0 24	57 9 51·7
27	0·82			52·6
B.A.C. 177.				
Oct. 3	0·75	(7·0)	0 34	81 22 57·6
27	0·82			55·6
B.A.C. 218, η Cassiopeæ.				
Oct. 27	0·82	(4·0)	0 41	32 54 5·1
B.A.C. 259.				
			h. m.	° ′ ″
Oct. 27	0·82	(4·0)	0 49	52 14 2·0
B.A.C. 263.				
Oct. 3	0·75	(6·0)	0 50	68 43 54·5
B.A.C. 290.				
Oct. 27	0·82	(7·0)	0 56	36 31 9·0
B.A.C. 299.				
Oct. 3	0·75	(6·0)	0 57	61 3 44·2
B.A.C. 335.				
Nov. 6	0·85	(6·5)	1 2	26 30 58·8
B.A.C. 357.				
Oct. 3	0·75	(9·0)	1 5	58 38 29·2
27	0·82			28·0
B.A.C. 455.				
Oct. 27	0·82	(8·0)	1 24	73 44 32·1
Nov. 3	0·84			34·4
6	0·85			32·5
B.A.C. 514.				
Nov. 6	0·85	(6·5)	1 34	60 38 12·2
13	0·87			13·0
B.A.C. 538.				
			h. m.	° ′ ″
Oct. 27	0·82	(6·5)	1 39	73 15 51·1
Nov. 3	0·84			52·7
6	0·85			52·7
B.A.C. 547.				
Nov. 9	0·85	(6·0)	1 41	42 46 37·3
B.A.C. 588.				
Nov. 1	0·83	(6·5)	1 49	26 2 14·4
3	0·84			14·4
6	0·85			15·5
9	0·85			15·6
B.A.C. 645.				
Oct. 27	0·82	6·0	1 59	64 48 55·4
Nov. 6	0·85	6·0		54·7
9	0·85			57·4
17	0·88			56·7
B.A.C. 694.				
Nov. 1	0·83	(7·5)	2 8	96 12 9·3
3	0·84			9·4
6	0·85			9·6
9	0·85			10·8
15	0·87			10·4
B.A.C. 718.				
Oct. 27	0·82	(7·0)	2 12	33 22 43·7
B.A.C. 728.				
Nov. 6	0·85	(6·5)	2 15	79 46 49·4
9	0·85			49·6
15	0·87			49·3

(a) Magnitudes in parenthesis are the tabular ones of the British Association Catalogue.

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1865.
B.A.C. 764.				
Oct. 27	0·82	(7·0)	h m 2 22	° ′ ″ 81 2 18·3
Nov. 1	0·83			18·7
6	0·85			20·5
9	0·85			20·3
B.A.C. 776.				
Nov. 3	0·84	(6·0)	2 24	88 19 59·4
B.A.C. 793.				
Oct. 27	0·82	(6·5)	2 29	83 45 31·4
Nov. 1	0·83			31·1
6	0·85			31·2
9	0·85			33·1
15	0·87			35·4
17	0·88			35·7
Dec. 8	0·93			34·3
B.A.C. 834.				
Oct. 27	0·82	(6·5)	2 36	64 56 17·7
Nov. 3	0·84			16·9
6	0·85			15·7
9	0·85			16·9
17	0·88			16·9
Dec. 8	0·93			17·0
B.A.C. 891.				
Nov. 3	0·84	(8·0)	2 45	84 4 52·3
6	0·85			52·0
9	0·85			50·5
13	0·87			52·1
B.A.C. 920.				
Nov. 6	0·85	(7·0)	2 51	68 55 29·3
9	0·85			28·5
15	0·87			29·7
Dec. 8	0·93			30·2
B.A.C. 949, α Ceti.				
Nov. 13	0·87	(2·5)	2 55	86 26 34·3
B.A.C. 962, ι Persei.				
Nov. 3	0·84	(4·0)	h m 2 59	° ′ ″ 40 54 19·2
6	0·85			17·9
9	0·85			19·4
15	0·87			21·3
23	0·89			23·3
B.A.C. 980.				
Nov. 13	0·87	(6·5)	3 2	63 37 22·6
Dec. 13	0·95			20·5
B.A.C. 1055.				
Nov. 6	0·85	(7·5)	3 16	68 26 25·9
9	0·85			27·1
13	0·87			32·1
Dec. 13	0·95			29·3
14	0·95			27·2
B.A.C. 1101.				
Nov. 9	0·85	(6·5)	3 27	58 46 24·2
13	0·87			24·1
Dec. 1	0·91			24·9
13	0·95			28·6
14	0·95			26·1
B.A.C. 1166, η Tauri.				
Dec. 14	0·95	(3·0)	3 39	66 18 55·2
B.A.C. 1252.				
Dec. 8	0·93	(6·0)	4 4	41 15 25·7
13	0·95			26·7
14	0·95			24·8
21	0·97			23·3
B.A.C. 1318.				
Dec. 14	0·95	(6·0)	4 10	33 49 21·9
21	0·97			21·1
B.A.C. 1361.				
Dec. 21	0·97	(6·0)	4 17	71 16 16·5
B.A.C. 1434.				
Dec. 8	0·93	(5·0)	h m 4 30	° ′ ″ 77 45 48·2
13	0·95			48·5
14	0·95			46·6
21	0·97			46·5
26	0·98			46·7
B.A.C. 1459.				
Dec. 13	0·95	(6·5)	4 37	34 38 35·9
B.A.C. 1463.				
Dec. 14	0·95	(7·5)	4 37	66 37 26·3
21	0·97			24·0
26	0·98			25·3
B.A.C. 1491.				
Dec. 8	0·93	(5·0)	4 43	81 20 4·1
13	0·95			6·2
26	0·98			5·1
27	0·99			4·9
B.A.C. 1501.				
Dec. 14	0·95	(6·0)	4 46	34 23 51·9
B.A.C. 1626.				
Dec. 13	0·95	(7·5)	5 9	49 41 4·8
14	0·95			2·8
21	0·97			4·2
27	0·99			3·9
B.A.C. 1656.				
Dec. 13	0·95	(6·0)	5 14	81 42 31·5
26	0·98			29·6
B.A.C. 1683.				
Jan. 10	0·02	(6·0)	5 18	55 43 51·7
Dec. 14	0·95			51·1
21	0·97			51·6
27	0·99			51·9

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1865.
B.A.C. 1730, δ Orionis.				
Jan. 10	0·02	(2·0)	h. m. 5 25	° ′ ″ 90 24 10·1
Dec. 8	0·93			4·8
14	0·95			6·7
21	0·97			7·3
26	0·98			7·8
B.A.C. 1772.				
Dec. 14	0·95	(6·0)	5 30	60 51 58·7
B.A.C. 1826.				
Jan. 10	0·02	(6·0)	5 39	80 31 50·2
Dec. 13	0·95			51·6
14	0·95			51·3
21	0·97			52·6
26	0·98			52·2
B.A.C. 1883, α Orionis.				
Jan. 6	0·01	2·0	5 48	82 37 17·4
10	0·02			17·3
Dec. 13	0·95			19·1
14	0·95			16·6
21	0·97			17·7
B.A.C. 1930.				
Jan. 10	0·02	(6·5)	5 55	72 20 15·2
Dec. 13	0·95			16·2
21	0·97			15·1
B.A.C. 2022.				
Jan. 10	0·02	(6·0)	6 9	80 0 43·9
B.A.C. 2046.				
Dec. 21	0·97	(7·0)	6 15	33 38 53·3
B.A.C. 2101.				
Jan. 10	0·02	(7·5)	6 22	67 22 8·5
16	0·04			8·6
B.A.C. 2184.				
Jan. 10	0·02		h. m. 6 33	° ′ ″ 73 28 49·1
20	0·05	7·0		47·6
B.A.C. 2238.				
Jan. 10	0·02	(6·0)	6 43	66 14 32·6
16	0·04			32·8
20	0·05			31·6
B.A.C. 2292.				
Jan. 10	0·02	(6·0)	6 53	79 11 17·7
16	0·04			18·0
B.A.C. 2334.				
Jan. 10	0·02	(6·0)	7 1	39 59 36·1
B.A.C. 2363.				
Jan. 16	0·04	(7·5)	7 6	65 3 39·8
B.A.C. 2379.				
Jan. 10	0·02	(5·0)	7 8	40 17 55·7
19	0·05			52·8
B.A.C. 2410, δ Geminorum.				
Jan. 16	0·04	(3·0)	7 12	67 46 21·2
B.A.C. 2463.				
Jan. 16	0·04	7·0	7 20	62 10 36·1
Feb. 9	0·11	7·0		36·5
B.A.C. 2488.				
Jan. 16	0·04		7 26	43 31 34·7
20	0·05	6·0		34·0
B.A.C. 2522, α Canis Minoris.				
Jan. 10	0·02	(1·0)	h. m. 7 32	° ′ ″ 84 25 57·0
20	0·05			53·3
Feb. 9	0·11			56·1
B.A.C. 2586.				
Jan. 20	0·05		7 41	61 27 57·9
Feb. 8	0·10	7·0		59·0
B.A.C. 2683.				
Feb. 8	0·10	(6·0)	7 57	70 46 45·1
9	0·11			46·7
24	0·15			42·8
B.A.C. 2737.				
Feb. 8	0·10	(7·0)	8 3	74 58 26·8
15	0·12			26·6
20	0·14			25·0
B.A.C. 2748.				
Feb. 9	0·11	7·0	8 5	75 35 44·6
B.A.C. 2867.				
Feb. 24	0·15	(6·5)	8 25	79 28 43·4
Mar. 6	0·18			43·7
B.A.C. 2971, ε Hydræ.				
Feb. 20	0·14	(4·0)	8 40	83 5 16·3
24	0·15			17·7
28	0·16			15·2
B.A.C. 3053.				
Feb. 24	0·15	(6·0)	8 50	80 5 40·6
Mar. 6	0·18			41·3
B.A.C. 3083.				
Feb. 28	0·16	(6·5)	8 56	38 38 26·3
Mar. 6	0·18			27·6

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension (h m)	Mean North Polar Distance, January 1, 1865 (° ′ ″)
B.A.C. 3133.				
Feb. 28	0·16	(6·0)	9 5	65 34 53·7
Mar. 6	0·18			54·1
B.A.C. 3242, θ Ursæ Majoris.				
Feb. 20	0·14	(3·0)	9 23	37 42 33·2
24	0·15			35·6
28	0·16			33·3
B.A.C. 3331, ε Leonis.				
Feb. 20	0·14	(3·0)	9 38	65 36 20·9
28	0·16			23·5
Mar. 9	0·18			22·0
21	0·22			22·4
B.A.C. 3375.				
Feb. 24	0·15	(6·5)	9 45	54 22 57·9
B.A.C. 3380.				
Feb. 28	0·16	(6·0)	9 46	83 24 28·1
Mar. 21	0·22			25·6
B.A.C. 3418.				
Feb. 24	0·15	(8·0)	9 54	80 24 4·8
Mar. 21	0·22			4·4
B.A.C. 3529.				
Feb. 24	0·15	(6·0)	10 13	82 53 28·0
28	0·16			30·6
Mar. 2	0·16			28·3
8	0·18			29·8
B.A.C. 3592.				
Feb. 24	0·15	(6·0)	10 23	87 48 52·4
28	0·16			53·1
B.A.C. 3662.				
Feb. 24	0·15	(7·5)	10 34	78 33 23·4
28	0·16			22·4
Mar. 2	0·16			21·3
23	0·22			22·7
B.A.C. 3726.				
Feb. 24	0·15	(6·0)	10 45	88 15 33·1
28	0·16			33·3
Mar. 2	0·16			31·7
8	0·18			30·0
23	0·22			35·2
B.A.C. 3780.				
Feb. 28	0·16	(7·5)	10 57	81 41 28·4
Mar. 21	0·22			26·1
23	0·22			26·2
B.A.C. 3834, δ Leonis.				
Mar. 6	0·18	(2·5)	11 7	68 44 14·6
8	0·18			15·2
23	0·22			16·8
B.A.C. 3869.				
Mar. 21	0·22	6·0	11 15	71 49 20·3
23	0·22			21·2
B.A.C. 3996.				
Mar. 21	0·22	(6·0)	11 42	84 3 39·8
29	0·24			41·6
B.A.C. 4153.				
Mar. 23	0·22	(6·0)	12 13	62 37 36·6
29	0·24			37·7
April 26	0·31			36·9
B.A.C. 4205.				
April 10	0·27	(6·0)	12 22	63 1 33·5
B.A.C. 4231.				
Mar. 21	0·22	(7·0)	12 27	64 48 21·3
29	0·24			21·5
April 26	0·31			20·8
B.A.C. 4364.				
Mar. 29	0·24	(6·0)	12 55	68 0 10·3
April 10	0·27			10·8
26	0·31			11·9
May 15	0·37			9·7
B.A.C. 4421, β Comæ.				
Mar. 29	0·24	(4·5)	13 5	61 26 12·8
31	0·24			11·8
April 6	0·26			12·5
10	0·27			11·4
26	0·31			11·2
28	0·32			11·3
May 15	0·37			13·7
B.A.C. 4457.				
Mar. 29	0·24	(6·5)	13 13	54 9 42·9
31	0·24			42·1
April 6	0·26			44·0
11	0·27			42·1
May 15	0·37			42·9
B.A.C. 4468.				
April 10	0·27	(6·0)	13 14	75 8 29·2
28	0·32			29·1
B.A.C. 4503.				
April 26	0·31	(7·0)	13 22	85 25 46·6
May 15	0·37			44·4
B.A.C. 4513.				
April 11	0·27	(6·0)	13 24	65 3 55·2
B.A.C. 4526.				
Mar. 29	0·24	(6·5)	13 26	64 57 5·8
April 6	0·26			5·3
B.A.C. 4550.				
April 28	0·32	(7·5)	13 31	36 37 18·1

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1865.
B.A.C. 4552.				
Mar. 31	0·24	(5·0)	h. m. 13 31	° ′ ″ 53 1 1·9
May 8	0·35			1·1
15	0·37			4·4
B.A.C. 4575.				
April 11	0·27	(6·0)	13 37	66 37 3·2
28	0·32			4·1
May 8	0·35			4·2
17	0·37			5·0
[illegible]	0·39			4·4
24	0·39			3·8
B.A.C. 4606.				
Mar. 29	0·24	(7·0)	13 42	57 55 30·7
April 10	0·27			30·7
B.A.C. 4610.				
May 1	0·33	(6·0)	13 42	58 8 18·6
B.A.C. 4621.				
May 15	0·37	(6·0)	13 43	70 41 56·9
24	0·39			56·0
B.A.C. 4627.				
May 8	0·35	(7·0)	13 45	54 33 27·4
23	0·39			28·8
25	0·39			28·2
B.A.C. 4652.				
Mar. 29	0·24	(7·0)	13 50	57 18 27·3
April 6	0·26			28·0
26	0·31			29·4
May 1	0·33			26·3
15	0·37			26·6
23	0·39			30·5
24	0·39			27·3
B.A.C. 4678.				
April 26	0·31	(7·0)	h. m. 13 56	° ′ ″ 57 41 17·2
28	0·32			13·9
May 8	0·35			15·7
B.A.C. 4696, α Draconis.				
Mar. 29	0·24	3·0	14 1	24 58 41·5
31	0·24			41·0
April 6	0·26			41·2
10	0·27			42·4
11	0·27			40·3
28	0·32			42·3
May 1	0·33			41·9
8	0·35			45·2
15	0·37			44·1
19	0·38			43·7
23	0·39			43·1
24	0·39			42·2
B.A.C. 4723.				
May [illegible]	0·39	(7·0)	14 8	60 15 45·7
B.A.C. 4729, α Bootis.				
May 1	0·33	(1·0)	14 9	70 6 50·4
8	0·35			44·3
15	0·37			51·2
19	0·38			44·6
23	0·39			51·0
B.A.C. 4756.				
May 17	0·37	6·0	14 14	37 20 37·6
B.A.C. 4797.				
May 8	0·35	(6·0)	14 23	53 11 53·8
15	0·37			54·2
23	0·39			53·7
24	0·39			50·8
B.A.C. 4809.				
May 17	0·37	(6·0)	14 26	62 43 27·3
B.A.C. 4820.				
May 8	0·35	(6·0)	h. m. 14 28	° ′ ″ 56 52 20·2
15	0·37			21·2
B.A.C. 4863.				
May 8	0·35	(6·0)	14 37	52 40 1·8
15	0·37			0·8
23	0·39			2·5
24	0·39			1·1
B.A.C. 4876, ε Bootis.				
May 1	0·33	(3·0)	14 39	62 21 13·8
25	0·39			16·6
B.A.C. 4934.				
May 15	0·37	(6·5)	14 51	48 19 7·8
23	0·39			6·0
24	0·39			6·1
B.A.C. 4942.				
June 7	0·43	(6·0)	14 54	49 49 3·7
B.A.C. 4955.				
May 15	0·37	(5·5)	14 58	44 49 36·6
23	0·39			35·3
24	0·39			35·7
31	0·41			34·6
B.A.C. 4992.				
May 17	0·37	(5·5)	15 2	34 55 22·0
June 7	0·43			22·1
B.A.C. 5000.				
May 15	0·37	(6·5)	15 5	56 24 31·2
24	0·39			23·3

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1865.
B.A.C. 5071. (a)				
			h. m.	° ′ ″
May 15	0·37	(6·0)	15 16	37 33 14·9
17	0·37			15·3
23	0·39			14·7
June 7	0·43			15·2
B.A.C. 5284, γ Serpentis.				
June 7	0·43	(3·0)	15 50	73 53 45·8
12	0·44			47·4
B.A.C. 5415. (b)				
June 7	0·43	(6·0)	16 7	31 42 32·8
12	0·44			35·7
13	0·45			36·2
B.A.C. 5452.				
June 7	0·43	(6·0)	16 14	68 32 21·3
13	0·45			22·9
B.A.C. 5493.				
June 12	0·44	6·0	16 20	87 20 39·0
B.A.C. 5597.				
June 13	0·45	(6·0)	16 35	64 52 44·9
23	0·47			42·4
B.A.C. 5615.				
June 12	0·44	(6·0)	16 38	53 14 8·4
B.A.C. 5647.				
June 7	0·43	(6·0)	16 43	76 30 4·1
B.A.C. 5686.				
June 13	0·45	(6·0)	16 47	74 22 1·7
B.A.C. 5716.				
June 7	0·43	(6·5)	16 52	74 20 33·6

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1865.
B.A.C. 5726.				
			h. m.	° ′ ″
June 13	0·45	(6·5)	16 54	83 12 41·2
B.A.C. 5777.				
June 13	0·45	(7·5)	17 2	54 29 43·0
B.A.C. 5787.				
June 7	0·43	(6·0)	17 3	79 46 57·6
12	0·44			58·4
B.A.C. 5821, α Herculis.				
June 13	0·45	(3·5)	17 8	75 27 10·8
B.A.C. 5863, ω Herculis.				
June 7	0·43	(6·0)	17 16	57 21 26·2
12	0·44			26·2
13	0·45			26·6
B.A.C. 5917.				
June 7	0·43	(6·0)	17 24	29 50 16·1
B.A.C. 6035.				
June 12	0·44	(6·5)	17 44	80 6 26·8
13	0·45			28·1
B.A.C. 6213.				
June 22	0·47	(6·0)	18 12	82 47 33·2
B.A.C. 6245.				
June 23	0·47	(6·0)	18 17	72 14 49·9
B.A.C. 6302, χ Draconis.				
June 22	0·47	(4·5)	18 23	17 19 38·5
B.A.C. 7561, ι Pegasi.				
Sept. 22	0·72	(2·5)	21 38	80 44 34·3

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1865.
B.A.C. 7644.				
			h. m.	° ′ ″
Sept. 22	0·72	(7·0)	21 50	18 8 49·6
B.A.C. 7688, α Aquarii.				
Sept. 22	0·72	(3·0)	21 59	90 58 27·6
B.A.C. 7906, ζ Pegasi.				
Sept. 22	0·72	(3·0)	22 34	79 52 20·3
25	0·73			24·0
Oct. 3	0·75			23·0
B.A.C. 7996.				
Oct. 3	0·75	6·0	22 51	86 54 43·3
B.A.C. 8024.				
Sept. 22	0·72	7·0	22 56	33 37 10·2
25	0·73			11·5
B.A.C. 8034, α Pegasi.				
Oct. 3	0·75	(2·0)	22 58	75 31 15·2
B.A.C. 8083.				
Oct. 3	0·75	(6·0)	23 7	33 34 34·4
B.A.C. 8135.				
Sept. 25	0·73	(6·0)	23 14	46 37 18·0
Oct. 3	0·75			16·5
B.A.C. 8139.				
Sept. 22	0·72	(7·5)	23 15	52 9 24·5
B.A.C. 8204.				
Sept. 22	0·72	(7·0)	23 27	18 44 37·8
Oct. 3	0·75			37·0
B.A.C. 8247.				
Sept. 22	0·72	(7·5)	23 35	72 4 52·2

(a) 5071 Tab. N.P.D. in error by 2′. (b) 5415 Tab. N.P.D. in error by 7′.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1865.
B.A.C. 8252.				
Oct. 3	0·75	(7·0)	h. m. 23 36	° ′ ″ 37 35 46·7
B.A.C. 8298.				
Sept. 22	0·72	7·0	23 45	13 8 55·8
B.A.C. 8315.				
Sept. 26	0·73	7·0	h. m. 23 48	° ′ ″ 82 31 47·1
Oct. 3	0·75			43·3
B.A.C. 8338.				
Sept. 22	0·72	7·0	23 54	28 34 28·1
B.A.C. 8364.				
Oct. 3	0·75	(7·0)	h. m. 23 58	° ′ ″ 32 13 9·9
B.A.C. 8372.				
Oct. 27	0·82	6·5	23 59	32 19 0·4

EXPLANATIONS OF THE MURAL CIRCLE OBSERVATIONS IN 1865.

The observations with the Mural Circle in 1865 were taken by Mr Peter Williamson, Second Assistant Astronomer, under the supervision of the Astronomer.

The subjects observed were chiefly stars remarkable for proper motion. They are designated as far as possible by the number in the British Association Catalogue in col. 2, and by proper name or description in col. 3, assisted if necessary by notes at the foot of the page, as well as by approximate estimate of the magnitude in col. 4, and time of transit past centre of field (by an uncorrected sidereal journeyman clock, but showing fairly differences from star to star) in col. 5.

In Polar distance the star was always carefully bisected when crossing the centre of the field, either at the precise instant if its motion was steady, or in its mean path through several seconds if unsteady or undulatory, as was too often the case. Such bisection being performed by bringing the stellar image between two parallel lines about 7 seconds of space apart: the lines being illuminated in a dark field.

The same general principles of observation as in former years have been kept up with improved details described in 1860. The completion of every observation therefore in Polar distance still depends largely on the Telescope micrometer, whose numbers are a necessary addition to the readings both of the Pointer on the Limb of the Circle and of the two horizontal Microscopes A, B; all which numerical particulars are given in columns 6, 7, 8, and 9.

In columns 10 and 12, the readings of the Barometer and exterior thermometer are noted for refraction purposes: the interior thermometer being assumed to be practically the same as the exterior, for all star-observations when a thorough draught was kept up through the observing room, as was always the case during star observations. During observations for the Nadir-point, on the contrary, all shutters and windows were closed to prevent disturbance to the mercury, and then a sensible difference between the thermometers usually occurred, and is shown by the figures in the narrow column 11, compared with those in column 12.

Columns 13, 14, and 15 contain various points connected with the meteorologic and other circumstances of the observations, as they appeared to the observer at the time; and column 16 contains the reduction of the angular observations in columns 6 to 9, to the stage of "Apparent Zenith Distance South."

To this end, the readings of the Microscopes have been corrected for the error of their runs, as ascertained over 5′ spaces on the limb of the Circle, with the telescope directed first to the Zenith and then to the Nadir: also for the difference between the mean of two and the mean of six Microscopes as ascertained by examination in 1855 (see p. 76, vol. xii.); also for the Telescope micrometer readings converted into arc on the estimate of one revolution being equal to 27·704″, as ascertained by observations in the Mercury trough with the collimating eye-piece, combined with readings of all the six circumferential Microscopes. The Circle positions are then converted into Apparent Zenith Distances, by the application of a reading for the Zenith point derived from observation of the Nadir, as shown by making the bisecting wire cover its illuminated image in the Mercury trough, an observation made generally both at the beginning and conclusion of every series of star measures. The chief data of these several corrections are contained in the following Tables I., II., and III.

TABLE I.

CORRECTION FOR RUNS OF MICROSCOPES IN 1865.

Date.	Thermometer.		Runs Correction observed.				Adopted Runs Correction.	For Period
	Interior.	Exterior.	Nadir.	Zenith.	Means of Obs.	Collected Means.		
1865.	°F.	°F.	″	″	″	″	″	1865.
Feb. 6	36·0	38·7	+1·9 +0·6	+0·3 −0·2	+1·1 +0·5	+0·8	+1·0	Jan. 6 to Jan. 20.
May 8	50·6	47·5	+0·9 +0·2	+0·9 +1·4	+0·9 +0·8	+0·8	+0·8	Feb. 6 to June 23.
June 7	60·0	60·0	+0·3	+1·4	+0·8	+0·8		
Sept. 26	58·6	55·5	+1·0	+0·9	+1·0	+1·0	+1·0	Sept. 22 to Sept. 26.
Oct. 19.	46·0	45·9	+1·4 +0·3	+3·0 +1·3	+2·2 +0·8	+1·5	+1·5	Oct. 3 to Oct. 27.
Nov. 27	42·7	37·7	+0·8	+1·0	+0·9	+0·9	+0·9	Nov. 1 to Nov. 27.
Dec. 21	50·8	49·0	+0·8 −0·8	+1·8 +0·4	+1·3 −0·2	+0·6	+0·6	Dec. 1 to Dec. 27.

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TABLE II.

CORRECTION TO REDUCE THE MEAN OF THE TWO HORIZONTAL, TO THE MEAN OF THE WHOLE SIX, MICROSCOPES FOR THE YEAR 1865.

Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.
0° & 180°	+1·0	30° & 210°	+0·2	60° & 240°	+0·5	90° & 270°	+2·4	120° & 300°	+3·1	150° & 330°	+2·4
1 181	+0·9	31 211	+0·2	61 241	+0·6	91 271	+2·4	121 301	+3·1	151 331	+2·4
2 182	+0·8	32 212	-0·1	62 242	+0·7	92 272	+2·5	122 302	+3·0	152 332	+2·3
3 183	+0·8	33 213	+0·1	63 243	+0·7	93 273	+2·5	123 303	+3·0	153 333	+2·3
4 184	+0·7	34 214	0·0	64 244	+0·8	94 274	+2·6	124 304	+2·9	154 334	+2·2
5 185	+0·6	35 215	0·0	65 245	+0·9	95 275	+2·6	125 305	+2·9	155 335	+2·2
6 186	+0·6	36 216	0·0	66 246	+0·9	96 276	+2·6	126 306	+2·9	156 336	+2·1
7 187	+0·6	37 217	+0·1	67 247	+1·0	97 277	+2·7	127 307	+2·9	157 337	+2·1
8 188	+0·5	38 218	+0·1	68 248	+1·0	98 278	+2·7	128 308	+2·8	158 338	+2·0
9 189	+0·5	39 219	+0·2	69 249	+1·1	99 279	+2·8	129 309	+2·8	159 339	+2·0
10 190	+0·5	40 220	+0·2	70 250	+1·1	100 280	+2·8	130 310	+2·8	160 340	+1·9
11 191	+0·4	41 221	+0·2	71 251	+1·2	101 281	+2·9	131 311	+2·8	161 341	+1·9
12 192	+0·4	42 222	+0·2	72 252	+1·2	102 282	+2·9	132 312	+2·8	162 342	+1·9
13 193	+0·3	43 223	+0·1	73 253	+1·3	103 283	+3·0	133 313	+2·7	163 343	+1·8
14 194	+0·3	44 224	+0·1	74 254	+1·3	104 284	+3·0	134 314	+2·7	164 344	+1·8
15 195	+0·2	45 225	+0·1	75 255	+1·4	105 285	+3·1	135 315	+2·7	165 345	+1·8
16 196	+0·2	46 226	+0·2	76 256	+1·5	106 286	+3·1	136 316	+2·7	166 346	+1·7
17 197	+0·2	47 227	+0·2	77 257	+1·6	107 287	+3·2	137 317	+2·7	167 347	+1·6
18 198	+0·2	48 228	+0·3	78 258	+1·7	108 288	+3·2	138 318	+2·8	168 348	+1·6
19 199	+0·2	49 229	+0·3	79 259	+1·8	109 289	+3·3	139 319	+2·8	169 349	+1·5
20 200	+0·2	50 230	+0·4	80 260	+1·9	110 290	+3·3	140 320	+2·8	170 350	+1·4
21 201	+0·2	51 231	+0·4	81 261	+1·9	111 291	+3·3	141 321	+2·8	171 351	+1·4
22 202	+0·2	52 232	+0·3	82 262	+2·0	112 292	+3·3	142 322	+2·8	172 352	+1·3
23 203	+0·2	53 233	+0·3	83 263	+2·0	113 293	+3·4	143 323	+2·7	173 353	+1·3
24 204	+0·2	54 234	+0·2	84 264	+2·1	114 294	+3·4	144 324	+2·7	174 354	+1·2
25 205	+0·2	55 235	+0·2	85 265	+2·1	115 295	+3·4	145 325	+2·7	175 355	+1·2
26 206	+0·2	56 236	+0·3	86 266	+2·2	116 296	+3·3	146 326	+2·6	176 356	+1·2
27 207	+0·2	57 237	+0·3	87 267	+2·2	117 297	+3·3	147 327	+2·6	177 357	+1·1
28 208	+0·2	58 238	+0·4	88 268	+2·3	118 298	+3·2	148 328	+2·5	178 358	+1·1
29 209	+0·2	59 239	+0·4	89 269	+2·3	119 299	+3·2	149 329	+2·5	179 359	+1·0

TABLE III.

NADIR AND ZENITH POINTS ON MURAL CIRCLE IN 1865.

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1865. Jan. 6	38·5	254° 1′ 51″·2	74° 1′ 51″·2	50″·7
10	41·0	49·8 50·8	50·3	50·7
16	36·9	51·3 51·4	51·4	51·0
19	38·0	51·6	51·6	51·4
20	35·2	50·8 51·4	51·1	51·1
Feb. 8	36·7	50·9 48·4	49·6	49·6
9	31·6	48·6 48·4	48·5	49·4
15	33·1	52·2 52·3	52·2	51·7
20	32·0	50·8 51·4	51·1	51·1
24	38·8	50·4 50·6	50·5	50·5
28	38·9	49·2 49·6	49·4	50·0
Mar. 2	38·0	51·4 51·6	51·5	51·0
6	37·6	50·3 50·1	50·2	50·5
8	37·6	49·9 49·6	49·8	50·3
9	37·8	51·2 51·4	51·3	51·[illegible]
15	38·9	51·6	51·6	51·2

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1865. Mar. 21	35·8	254° 1′ 50″·0 50·2	74° 1′ 50″·1	50″·5
23	37·5	50·8 50·9	50·8	50·5
29	40·6	48·4 48·7	48·6	49·4
31	45·6	50·8 53·3	52·0	51·0
April 4	47·0	49·9	49·9	50·3
6	46·9	50·2	50·2	50·2
10	47·3	50·6 50·5	50·6	50·5
11	49·2	50·4	50·4	50·4
26	53·0	47·0 47·2	47·1	47·8
28	46·6	49·4 49·5	49·4	49·4
May 1	49·0	49·6 49·8	49·7	49·7
8	50·8	48·8 49·8	49·3	49·5
15	45·2	49·6 49·8	49·7	49·5
17	49·5	49·0 49·2	49·1	49·5
19	55·6	50·0 50·2	50·1	50·0
23	59·0	49·2 48·6	48·9	49·3

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1865.				
May 24	58·1	254° 1′ 49″·9 50·2	74° 1′ 50″·0	50″·0
25	60·0	48·8 49·0	48·9	49·2
31	51·6	50·6 50·8	50·7	50·5
June 7	61·0	49·3 49·2	49·2	49·4
12	54·9	48·9 49·0	49·0	49·0
13	57·4	48·4 49·4	48·9	49·0
22	64·0	49·0 49·2	49·1	49·1
23	61·1	49·1 49·2	49·2	49·2
Sept. 22	55·9	254 2 17·1 20·3	74 2 18·7	18·5
25	59·0	17·1	17·1	17·7
26	58·8	17·2 17·2	17·2	17·5
Oct. 3	56·3	19·6 18·8	19·2	19·2
27	42·5	20·7 19·2	20·0	19·8
Nov. 1	45·0	19·8 19·8	19·8	19·8
3	43·3	19·0 19·7	19·4	19·7
1865				
Nov. 6	40·1	254° 2′ 19″·5 20·4	74° 2′ 20″·0	19″·8
9	40·8	19·6 20·2	19·9	19·8
13	40·7	18·5 20·0	19·2	19·5
15	43·2	19·2 20·3	19·8	19·5
17	46·2	18·7 18·7	18·7	19·0
22	47·0	18·3	18·3	18·6
23	47·3	18·8	18·8	18·5
27	41·0	16·9	16·9	17·9
Dec. 1	42·3	20·4	20·4	19·6
8	48·4	18·3 17·5	17·9	18·5
13	43·2	17·5 19·1	18·3	18·3
14	43·0	17·8 18·6	18·2	18·2
21	49·4	18·6 16·7	17·6	18·0
22	49·0	18·2	18·2	18·0
26	44·4	18·0 18·4	18·2	18·1
27	44·4	18·4 18·2	18·3	18·2

For the remaining reductions, the refractions have been computed by Bessel's Table, as represented in the Rev. R. Sheepshank's compendious forms; the Latitude of the Observatory has been assumed as in former years $=55° 57' 23''·2$; and the *Apparent* N. Polar Distances on the day of observation have been converted into *Mean* North Polar Distances for the beginning of the

year of observation, by applying the corrections for precession, nutation, aberration, and proper motions, taken from the elements and subsidiary tables given in the Nautical Almanac and the British Association Catalogue; and whose sum is represented in the last column of each observation-page. The individual results for magnitude and place of each star are collected on pp. 466 to 472.

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ROYAL OBSERVATORY, EDINBURGH.

CATALOGUE

OF

THE MEAN PLACES OF ALL STARS

OBSERVED WITH

EITHER THE TRANSIT INSTRUMENT OR MURAL CIRCLE,

DURING

THE YEAR, AND

REDUCED TO JANUARY 1,

1865.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.			h m s		° ′ ″		R. A.	N. P. D.
4	α Andromedæ	(1·0) (a)	……	0 1 21·88	0·70	61 39 …	……	13	0
18	……	……	6·5	0 3 …	……	31 4 42·7	0·73	0	3
26	γ Pegasi	(2·0)	……	0 6 17·21	0·65	75 34 2·3	0·75	13	1
48	……	……	7·0	0 10 …	……	76 50 2·0	0·78	0	2
57	……	……	(6·5)	0 11 …	……	89 3 44·4	0·75	0	1
83	……	……	(6·0)	0 18 …	……	37 42 3·8	0·78	0	2
112	12 Ceti	(6·0)	……	0 23 8·90	0·82	94 42 …	……	2	0
120	……	……	(6·0)	0 24 …	……	57 9 52·2	0·78	0	2
177	……	……	(7·0)	0 34 …	……	81 22 56·6	0·78	0	2
218	η Cassiopeæ	……	(4·0)	0 41 …	……	32 54 5·1	0·82	0	1
259	……	……	(4·0)	0 49 …	……	52 14 2·0	0·82	0	1
263	……	……	(6·0)	0 50 …	……	63 43 54·5	0·75	0	1
288	ε Piscium	……	(4·0)	0 55 56·30	0·50	82 50 …	……	5	0
290	……	……	(7·0)	0 56 …	……	36 31 9·0	0·82	0	1
299	……	……	(6·0)	0 57 …	……	61 3 44·2	0·75	0	1
335	……	……	(6·5)	1 2 …	……	26 30 58·8	0·85	0	1
357	……	……	(9·0)	1 5 …	……	58 38 28·6	0·78	0	2
420	θ Ceti	(3·0)	……	1 17 16·45	0·45	98 53 …	……	2	0
453	η Piscium	(4·0)	……	1 24 15·81	0·59	75 21 …	……	10	0
455	……	……	(8·0)	1 24 …	……	73 44 33·0	0·84	0	3
514	……	……	(6·5)	1 34 …	……	60 38 12·6	0·86	0	2
518	ν Piscium	(5·0)	……	1 34 24·42	0·80	85 12 …	……	2	0
538	……	……	(6·5)	1 39 …	……	73 15 52·2	0·84	0	3
547	……	(6·0)	……	1 41 …	……	12 46 37·2	0·85	0	1
577	β Arietis	(3·0)	……	1 47 11·24	0·53	69 51 …	……	9	0
588	……	……	(6·5)	1 49 …	……	26 2 15·0	0·84	0	4
645	……	……	6·0	1 59 …	……	64 48 56·1	0·85	0	4
648	α Arietis	(2·0)	……	1 59 34·10	0·61	67 10 …	……	6	0
694	……	7·5	……	2 8 25·47	0·85	26 12 9·8	0·85	3	5
702	……	7·5	……	2 9 52·91	0·85	26 17 …	……	3	0
704	67 Ceti	(6·0)	……	2 10 14·99	0·84	97 3 …	……	3	0
718	……	7·0	……	2 12 24·75	0·86	33 22 42·7	……	2	1
728	……	……	(6·5)	2 15 …	……	79 46 49·4	0·86	0	3
738	……	8·0	……	2 16 56·98	0·86	80 20 …	……	3	0
760	ξ Ceti	(4·0)	……	2 20 59·04	0·86	82 [illegible] …	……	4	0
764	……	7·2	……	2 22 23·02	0·85	81 2 19·4	0·84	3	4
776	……	6·0	……	2 24 31·26	0·85	88 19 59·4	0·84	3	1
793	……	7·0	……	2 28 40·96	0·85	83 45 33·2	0·86	3	7
834	……	(6·5)	……	2 35 1·58	0·88	64 56 16·8	0·86	1	6
837	γ Ceti	(3·0)	……	2 36 18·46	0·83	87 20 …	……	5	0
881	ε Arietis	6·0	……	2 44 2·60	0·85	75 28 …	……	3	0
891	……	(8·0)	……	2 45 31·13	0·85	84 4 51·7	0·85	3	4
920	……	7·0	……	2 51 9·12	0·85	68 55 29·4	0·88	3	4
949	……	(2·5)	……	2 55 13·46	0·86	86 26 34·3	0·87	10	1
962	ι Persei	4·0	……	2 59 20·63	0·85	40 54 20·2	0·86	2	5
980	……	6·5	……	3 2 26·43	0·85	63 37 21·6	0·91	2	2
986	δ Arietis	(4·0)	……	3 3 54·84	0·87	70 47 …	……	8	0
1035	……	7·8	……	3 16 44·04	0·90	68 26 28·3	0·89	2	5
1087	f Tauri	5·2	……	3 23 25·33	0·90	77 32 …	……	3	0
1101	……	7·0	……	3 27 14·44	0·93	58 46 25·6	0·91	2	5
1126	11 Tauri	(6·0)	……	3 32 42·86	0·90	65 7 …	……	3	0

(a) Magnitudes in parenthesis are taken from the British Association Catalogue.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.			h. m. s.		° ′ ″		R. A.	N. P. D.
1166	η Tauri	(3·0)	......	3 39 27·86	0·74	66 18 55·2	0·95	10	1
1282	....	(6·0)	......	4 3 43·22	0·95	41 15 25·1	0·95	1	4
1318	....	(6·0)	......	4 10 53·69	0·95	33 49 21·5	0·96	1	2
1361	....	(6·0)	......	4 17 5·24	0·95	71 16 16·5	0·97	1	1
1376	ε Tauri	(3·5)	......	4 20 44·23	0·91	71 7 ...	......	2	0
1420	α Tauri	(1·0)	......	4 28 10·62	0·94	73 46 ...	......	6	0
1434	....	(5·0)	......	4 30 36·78	0·96	77 45 47·3	0·96	2	5
1459	....	......	(6·5)	4 37 ...	......	34 38 35·9	0·95	0	1
1463	....	7·0	......	4 37 33·72	0·98	66 37 25·2	0·97	2	3
1491	....	6·0	......	4 43 15·41	0·96	81 20 5·1	0·96	2	4
1501	....	(6·0)	......	4 45 42·18	0·96	34 23 51·9	0·95	2	1
1520	ι Aurigæ	(4·0)	......	4 48 12·44	0·76	57 3 ...	......	5	0
1623	β Orionis	(1·0)	......	5 8 2·96	0·02	98 22 ...	......	1	0
1626	....	6·0	......	5 9 15·12	0·96	49 11 3·9	0·96	3	4
1656	....	(6·0)	......	5 14 22·65	0·96	81 42 30·6	0·96	3	2
1681	β Tauri	(2.0)	......	5 17 45·64	0·73	61 30 ...	......	8	0
1683	....	(6·0)	......	5 17 52·45	0·95	55 43 51·6	0·73	1	4
1730	δ Orionis	(2·0)	......	5 25 6·59	0·68	90 24 7·3	0·77	10	5
1765	ε Orionis	(2·5)	......	5 29 21·75	0·59	91 17 ...	......	10	0
1772	....	......	(6·0)	5 30 ...	......	60 51 58·7	0·95	0	1
1826	....	7·0	......	5 39 27·50	0·95	80 31 51·6	0·77	2	5
1883	α Orionis	......	2·0	5 47 51·76	0·66	82 37 17·6	0·58	8	5
1930	....	......	(6·5)	5 55 ...	......	72 20 15·5	0·65	0	3
1958	ν Orionis	(4·5)	......	5 59 51·83	0·02	75 13 ...	......	1	0
2022	....	......	(6·0)	6 9 ...	......	80 0 43·9	0·02	0	1
2046	....	......	(7·0)	6 15 ...	......	33 38 53·3	0·97	0	1
2101	....	......	(7·5)	6 22 ...	......	67 22 6·6	0·03	0	2
2163	γ Geminorum	(2·5)	......	6 29 54·74	0·50	73 29 ...	......	4	0
2184	....	......	7·0	6 33 ...	......	73 28 48·4	0·04	0	2
2238	....	......	(6·0)	6 43 ...	......	66 14 32·3	0·04	0	3
2292	....	......	(6·0)	6 53 ...	......	79 11 17·8	0·03	0	2
2334	....	......	(6·0)	7 1 ...	......	39 59 36·1	0·02	0	1
2363	....	......	(7·5)	7 6 ...	......	65 3 39·8	0·04	0	1
2379	....	......	(5·0)	7 8 ...	......	40 17 54·2	0·04	0	2
2410	δ Geminorum	(3·0)	......	7 12 3·50	0·11	67 46 21·2	0·04	4	1
2463	....	......	7·0	7 20 ...	......	62 10 36·3	0·08	0	2
2465	α² Geminorum	(1·5)	......	7 25 58·98	0·13	57 49 ...	......	6	0
2468	....	......	6·0	7 26 ...	......	43 31 34·4	0·04	0	2
2522	α Canis Minoris	(1·0)	......	7 32 13·[illegible]	0·10	84 25 55·5	0·06	3	3
2555	β Geminorum	(2·0)	......	7 37 3·06	0·14	61 39 ...	......	7	0
2586	....	......	7·0	7 41 ...	......	61 27 58·4	0·08	0	2
2672	6 Cancri	(5·5)	......	7 55 13·35	0·13	61 50 ...	......	3	0
2683	....	......	(6·0)	7 57 ...	......	70 46 44·9	0·12	0	3
2737	....	......	(7·0)	8 3 ...	......	74 58 26·1	0·12	0	3
2748	....	......	7·0	8 5 ...	......	75 35 44·6	0·11	0	1
2862	φ Cancri	(6·0)	......	8 24 53·92	0·12	69 6 ...	......	2	0
2867	....	......	(6·5)	8 25 ...	......	79 28 43·6	0·16	0	2
2971	ε Hydræ	(4·0)	......	8 39 37·47	0·15	83 5 16·4	0·15	3	3
3053	....	......	(6·0)	8 50 ...	......	80 5 41·0	0·16	0	2
3083	....	......	(6·5)	8 56 ...	......	38 38 27·0	0·17	0	2
3133	....	......	(6·0)	9 5 ...	......	85 34 53·9	0·17	0	2

Stars. No. in B. A. C.	Stars. Name or Description.	Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place. R. A.	No. of Observations for Place. N. P. D.
				h. m. s.		° ′ ″			
3223	α Hydræ	(2·0)	......	9 20 57·10	0·15	98 5 ...	......	1	0
3242	θ Ursæ Majoris	......	(3·0)	9 23 ...	......	37 42 34·0	0·15	[illegible]	3
3331	ε Leonis	(3·0)	......	9 38 11·04	0·24	65 36 22·2	0·18	6	4
3375	......	......	(6·5)	9 45 ...	......	54 22 57·9	0·15	[illegible]	1
3380	......	......	(6·0)	9 46 ...	......	83 24 26·8	0·19	0	2
3415	π Leonis	(4·5)	......	9 53 4·65	0·15	81 19 ...	......	1	0
3418	......	......	(8·0)	9 54 ...	......	80 [illegible] 4·6	0·18	0	2
3459	α Leonis	(1·0)	......	10 1 10·79	0·24	77 22 ...	......	7	0
3484	......	8·0	......	10 6 24·85	0·15	57 56 ...	......	1	0
3523	γ¹ Leonis	(2·0)	......	10 12 31·49	0·19	69 29 ...	......	4	0
3529	......	......	(6·0)	10 13 ...	......	82 53 29·2	0·16	0	4
3592	......	(6·0)	......	10 22 46·49	0·15	87 48 52·8	0·16	1	2
3609	ρ Leonis	(4·0)	......	10 25 42·05	0·20	80 0 ...	......	2	0
3662	......	......	(7·5)	10 34 ...	......	78 33 22·5	0·17	0	4
3708	l Leonis	(6·0)	......	10 42 9·52	0·20	78 44 ...	......	4	0
3726	......	......	(6·0)	10 45 ...	......	88 15 32·7	0·17	0	3
3768	d Leonis	6·0	......	10 53 35·29	0·15	85 40 ...	......	1	0
3780	......	8·0	......	10 56 40·06	0·15	81 41 26·9	0·20	1	3
3788	χ Leonis	(4·5)	......	10 58 3·11	0·21	81 56 ...	......	5	0
3821	......	7·0	......	11 3 31·61	0·15	20 59 ...	......	1	0
3834	δ Leonis	(2·5)	......	11 6 55·50	0·23	68 44 15·5	0·19	12	3
3869	......	7·0	6·0	11 15 25·00	0·16	71 [illegible] 20·8	0·22	2	2
3900	τ Leonis	5·5	......	11 20 59·66	0·16	86 24 ...	......	3	0
3946	υ Leonis	(4·5)	......	11 30 2·18	0·22	90 5 ...	......	9	0
3995	β Leonis	(2·5)	......	11 42 10·32	0·26	74 40 ...	......	13	0
3996	......	7·0	......	11 42 11·94	0·16	84 3 40·7	0·23	1	2
4005	(a)	7·0	......	11 43 59·52	0·16	76 58 ...	......	1	0
4052	π Virginis	6·0	......	11 53 57·27	0·16	82 38 ...	......	2	0
4145	η Virginis	(3·5)	......	12 12 59·97	0·29	89 55 ...	......	3	0
4153	......	6·0	......	12 13 32·36	0·16	62 37 37·1	0·26	1	3
4199	......	7·0	......	12 20 53·17	0·16	63 20 ...	......	1	0
4205	......	......	(6·0)	12 22 ...	......	63 1 33·5	0·27	0	1
4231	......	7·0	......	12 26 48·61	0·16	64 48 21·2	0·26	1	3
4340	δ Virginis	3·0	......	12 48 48·24	0·16	85 52 ...	......	1	0
4364	......	7·0	......	12 54 58·63	0·16	68 0 10·7	0·30	1	4
4421	β Comæ	......	(4·5)	13 5 ...	......	61 26 12·1	0·29	[illegible]	7
4457	......	......	(6·5)	13 13 ...	......	54 9 42·8	0·28	[illegible]	5
4468	......	......	(6·0)	13 14 ...	......	75 8 29·2	0·30	0	2
4503	......	......	(7·0)	13 22 ...	......	85 25 45·5	0·34	0	2
4513	......	......	(6·0)	13 24 ...	......	65 3 55·2	0·27	0	1
4526	......	......	(6·5)	13 26 ...	......	64 57 5·6	0·25	0	2
4532	ζ Virginis	(4·0)	......	13 27 48·94	0·34	89 54 ...	......	18	0
4550	......	......	(7·5)	13 31 ...	......	36 37 18·1	0·32	[illegible]	1
4552	......	5·0	......	13 31 27·66	0·38	53 1 2·5	0·32	3	3
4575	......	6·0	......	13 37 22·57	0·38	66 37 4·1	0·35	3	6
4606	......	......	(7·0)	13 42 ...	......	57 55 30·7	0·26	0	2
4607	η Ursæ Majoris	(2·5)	......	13 42 13·10	0·38	40 1 ...	......	3	0
4610	......	......	(6·0)	13 42 ...	......	[illegible] 8 18·6	0·33	0	1
4621	......	......	(6·0)	13 43 ...	......	70 41 56·4	0·36	[illegible]	2
4627	......	......	(7·0)	13 45 ...	......	54 33 28·1	0·36	0	3
4632	......	6·0	......	13 45 50·26	0·38	54 [illegible] ...	......	1	0

(a) Tab. R. A. in error by 2 secs. according to the observations of 1862 and 1866.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
4648	η Bootis	(3·0)	......	13 48 15·40	0·32	70 55 ...	......	20	0
4652	....	......	(7·0)	13 50 ...	......	57 18 27·9	0·33	0	7
4672	τ Virginis	(4·5)	......	13 54 46·66	0·32	87 48 ...	......	16	0
4678	....	......	(7·0)	13 56 ...	......	57 41 15·6	0·33	0	3
4696	α Draconis	......	3·0	14 0 44·37	0·32	24 58 42·4	0·32	11	12
4723	....	8·0	......	14 7 54·56	0·37	60 15 45·7	0·39	3	1
4729	α Bootis	(1·0)	......	14 9 30·33	0·31	70 6 48·3	0·36	13	5
4737	....	6·7	......	14 11 1·36	0·37	74 7 ...	......	3	0
4738	....	(7·0)	......	14 10 54·79	0·39	40 38 ...	......	1	0
4756	....	7·0	6·0	14 13 47·57	0·38	37 20 37·6	0·37	3	1
4797	....	6·7	......	14 22 41·09	0·37	53 11 53·1	0·38	3	4
4808	ρ Bootis	(4·0)	......	14 26 0·73	0·37	59 2 ...	......	7	0
4809	....	(6·0)	......	14 26 21·83	0·39	62 43 27·3	0·37	1	1
4820	....	(6·0)	......	14 28 27·23	0·38	56 52 20·7	0·36	3	2
4863	....	(6·0)	......	14 37 12·04	0·38	52 40 1·6	0·38	4	4
4876	ε Bootis	(3·0)	......	14 39 5·50	0·37	62 21 16·3	0·36	11	2
4934	....	(6·5)	......	14 50 54·41	0·39	48 19 6·6	0·38	2	3
4942	....	7·0	......	14 54 15·54	0·38	49 49 3·7	0·43	3	1
4965	....	6·5	......	14 55 20·57	0·38	44 49 35·6	0·39	2	4
4969	ψ Bootis	(5·0)	......	14 58 39·72	0·37	62 32 ...	......	1	0
4992	....	5·8	......	15 2 25·66	0·38	34 55 22·0	0·40	3	2
5000	....	......	(6·5)	15 5 ...	......	56 21 29·8	0·38	0	2
5001	....	(6·5)	......	15 5 13·36	0·39	60 15 ...	......	2	0
5034	β Libræ	(2·5)	......	15 9 44·71	0·40	96 53 ...	......	5	0
5071	(a)	(6·0)	......	15 16 7·23	0·39	37 33 15·0	0·39	1	4
5091	....	(6·0)	......	15 20 23·94	0·39	26 10 ...	......	1	0
5143	α Coronæ Borealis	(2·5)	......	15 28 58·41	0·43	62 50 ...	......	8	0
5196	α Serpentis	(2·5)	......	15 37 37·17	0·44	83 9 ...	......	6	0
5284	γ Serpentis	......	(3·0)	15 50 ...	......	73 53 46·6	0·44	0	2
5414	δ Ophiuchi	(3·0)	......	16 7 16·30	0·47	93 21 ...	......	4	0
5415	(b)	......	(6·0)	16 7 ...	......	31 42 34·9	0·44	0	3
5452	....	......	(6·0)	16 14 ...	......	68 32 22·1	0·44	0	2
5493	....	......	6·0	16 20 ...	......	87 20 39·0	0·44	0	1
5597	....	......	(6·0)	16 35 ...	......	64 52 43·6	0·46	0	2
5604	ζ Herculis	(3·0)	......	16 36 11·90	0·52	58 9 ...	......	8	0
5615	....	......	(6·0)	16 38 ...	......	53 14 8·4	0·44	0	1
5647	....	......	(6·0)	16 43 ...	......	76 30 4·1	0·43	0	1
5686	....	......	(6·0)	16 47 ...	......	74 22 1·7	0·45	0	1
5708	κ Ophiuchi	(4·0)	......	16 51 16·74	0·49	80 25 ...	......	8	0
5716	....	......	(6·5)	16 52 ...	......	74 20 33·6	0·43	0	1
5726	....	......	(6·5)	16 54 ...	......	83 12 41·2	0·45	0	1
5777	....	......	(7·5)	17 2 ...	......	54 29 43·6	0·45	0	1
5787	....	......	(6·0)	17 3 ...	......	79 46 58·0	0·44	0	2
5821	α Herculis	(3·5)	......	17 8 29·54	0·50	75 27 10·8	0·45	11	1
5863	ω Herculis	......	(6·0)	17 16 ...	......	57 21 26·3	0·44	0	3
5917	....	......	(6·0)	17 24 ...	......	29 50 16·1	0·43	0	1
5941	α Ophiuchi	(2·0)	......	17 28 40·11	0·51	77 21 ...	......	11	0
6021	μ Herculis	(4·0)	......	17 41 10·59	0·52	62 12 ...	......	10	0
6035	....	......	(6·5)	17 44 ...	......	80 6 27·4	0·44	0	2
6213	....	......	(6·0)	18 12 ...	......	82 47 33·2	0·47	0	1
6245	....	......	(6·0)	18 17 ...	......	72 14 49·9	0·47	0	1

(a) Tab. N. P. D. in error by 2′. (b) Tab. N. P. D. in error by 7′.

Stars. No. in B. A. C.	Stars. Name or Description.	Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place. R. A.	No. of Observations for Place. N. P. D.
				h. m. s.		° ′ ″			
6302	χ Draconis	......	(4·5)	18 23 ...	......	17 19 38·5	0·47	0	1
6355	α Lyræ	(1·0)	......	18 32 22·02	0·42	51 21 ...	......	3	0
6429	β Lyræ	(3·0)	......	18 45 5·85	0·47	56 48 ...	......	7	0
6528	ζ Aquilæ	(3·0)	......	18 59 12·32	0·56	76 20 ...	......	7	0
6595	ω Aquilæ	(5·0)	......	19 11 28·79	0·54	78 39 ...	......	3	0
6646	δ Aquilæ	(3·5)	......	19 18 41·47	0·58	87 9 ...	......	5	0
6772	γ Aquilæ	(3·0)	......	19 39 50·48	0·65	79 43 ...	......	9	0
6802	α Aquilæ	(1·5)	......	19 44 11·74	0·64	81 29 ...	......	8	0
6833	β Aquilæ	(3·5)	......	19 48 40·87	0·66	83 56 ...	......	6	0
7368	ζ Cygni	(3·0)	......	21 7 11·53	0·66	60 20 ...	......	2	0
7478	β Aquarii	(3·0)	......	21 24 26·98	0·67	96 10 ...	......	1	0
7561	ι Pegasi	(2·5)	......	21 37 33·28	0·69	80 44 34·3	0·72	4	1
7627	16 Pegasi	(5·5)	......	21 46 55·38	0·72	64 43 ...	......	2	0
7644	......	......	(7·0)	21 50 ...	......	18 8 49·6	0·72	0	1
7686	α Aquarii	(3·0)	......	21 58 50·57	0·71	90 58 27·6	0·72	5	1
7773	θ Aquarii	(4·5)	......	22 [illegible] 42·42	0·67	98 25 ...	......	1	0
7868	η Aquarii	(4·0)	......	22 28 25·06	0·70	90 49 ...	......	3	0
7908	ζ Pegasi	(3·0)	......	22 34 43·78	0·61	79 52 22·4	0·73	7	3
7958	μ Pegasi	4·0	......	22 43 29·38	0·75	66 7 ...	......	1	0
7977	......	7·5	......	22 46 58·55	0·75	88 52 ...	......	1	0
7996	......	7·0	6·0	22 50 40·36	0·75	86 54 43·3	0·75	1	1
8024	......	......	7·0	22 56 ...	......	33 37 10·8	0·72	0	2
8034	α Pegasi	(2·0)	......	22 58 2·25	0·64	75 31 15·2	0·75	8	1
8065	......	7·0	......	23 2 28·69	0·75	88 35 ...	......	1	0
8083	(a)	5·0	......	23 6 48·10	0·75	33 34 34·4	0·75	1	1
8105	γ Piscium	(4·5)	......	23 10 10·00	0·75	87 27 ...	......	8	0
8135	......	......	(6·0)	23 14 ...	......	46 37 17·2	0·74	0	2
8139	......	7·0	......	23 14 48·56	0·75	52 9 24·5	0·72	1	1
8169	κ Piscium	(5·5)	......	23 20 0·68	0·71	89 29 ...	......	2	0
8204	......	......	(7·0)	23 27 ...	......	18 44 37·4	0·74	0	2
8233	ι Piscium	(4·5)	......	23 33 0·41	0·75	85 6 ...	......	12	0
8247	......	......	(7·5)	23 35 ...	......	72 4 52·2	0·72	0	1
8252	......	......	(7·0)	23 36 ...	......	37 35 46·7	0·75	0	1
8269	......	8·0	......	23 40 50·92	0·75	86 31 ...	......	1	0
8298	......	......	7·0	23 45 ...	......	13 8 55·8	0·72	0	1
8315	......	......	7·0	23 48 ...	......	82 31 45·2	0·74	0	2
8331	ω Piscium	(4·5)	......	23 52 22·75	0·73	83 53 ...	......	6	0
8338	......	......	7·0	23 54 ...	......	28 34 28·1	0·72	0	1
8364	......	......	(7·0)	23 58 ...	......	32 13 9·9	0·75	0	1
8372	......	......	6·5	23 59 ...	......	32 19 0·4	0·82	0	1

(a) Differs from Tab. R. A. by 2·6 secs. even after allowance of Tab. Proper Motion.

ROYAL OBSERVATORY, EDINBURGH.

OBSERVATIONS

MADE WITH

THE TRANSIT INSTRUMENT,

AND

CALCULATION

OF

APPARENT RIGHT ASCENSIONS.

1866.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance nearly.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1866.
				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
1866.														
Jan. 4	1883	α Orionis	....	82 37	18·4	26·9	35·4	43·6	48 51·9	5 48 35·24	− 0·46	− 37·99	− 37·97	− 1·72
	2047	μ Geminorum	....	67 25	13·6	22·4	31·5	40·4	15 49·2	6 15 31·42	− 0·38	− 37·94	− 37·97	− 1·88
	2163	γ Geminorum	....	73 29	21·1	30·0	38·4	47·0	30 55·5	6 30 38·40	− 0·41	− 37·98	− 37·97	− 1·60
	2410	δ Geminorum	....	67 46	29·4	38·4	47·4	56·2	13 5·1	7 12 47·30	− 0·38	− 37·98	− 37·96	− 1·93
Jan. 5	1623	β Orionis	....	98 21	29·0	37·3	45·9	54·1	9 [illegible]	5 8 45·70	− 0·54	− 37·70	− 37·69	− 1·56
	1683	....	6·0	55 43	16·5	26·5	36·9	46·6	18 56·4	5 18 36·58	− 0·32	....	− 37·69	− 2·07
	1730	δ Orionis	....	90 23	33·0	41·2	49·6	57·8	26 6·0	5 25 49·52	− 0·49	− 37·72	− 37·69	− 1·63
	1765	ι Orionis	....	91 17	48·[illegible]	56·2	4·9	13·0	30 21·1	5 30 4·64	− 0·50	− 37·66	− 37·69	− 1·64
	1813	....	....	21 34	28·6	50·8	13·9	36·1	39 58·4	5 39 13·56	− 0·49	....	− 37·69	− 4·44
	1883	α Orionis	....	82 37	18·2	26·5	35·0	43·3	48 51·5	5 48 34·90	− 0·46	− 37·65	− 37·70	− 1·72
	6281	δ Ursæ Minoris S. P.	....	3 24	12·5	31·0	49·0	13·0	20 32·0	6 15 51·50	− 3·85	....	− 37·70	+ 24·26
	2163	γ Geminorum	....	73 29	21·0	29·5	38·3	47·[illegible]	30 55·5	6 30 38·26	− 0·41	− 37·83	− 37·70	− 1·61
	2485	α² Geminorum	....	57 49	23·2	33·0	43·0	52·5	27 2·3	7 26 42·80	− 0·33	− 37·74	− 37·70	− 1·96
	2522	α Canis Minoris	....	84 26	40·4	48·5	57·1	5·4	33 13·7	7 32 57·02	− 0·46	− 37·64	− 37·70	− 1·72
	2555	β Geminorum	....	61 39	27·9	37·2	46·7	56·0	38 5·2	7 37 46·60	− 0·35	− 37·64	− 37·70	− 1·65
Jan. 8	1681	β Tauri	....	61 30	10·7	20·0	29·6	39·0	18 48·2	5 18 29·50	− 0·32	− 37·85	− 37·84	− 1·91
	1730	δ Orionis	....	90 23	33·0	41·1	49·6	57·9	26 6·0	5 25 49·52	− [illegible]·49	− 37·72	− 37·80	− 1·63
	1883	α Orionis	....	82 37	18·2	26·5	35·0	43·4	48 51·8	5 48 34·98	− 0·44	− 37·75	− 37·80	− 1·72
	2410	δ Geminorum	....	67 46	29·1	38·2	47·3	56·1	13 5·0	7 12 47·20	− 0·36	− 37·56	− 37·82	− 1·97
	2522	α Canis Minoris	....	84 26	40·6	49·0	57·3	5·5	33 13·8	7 32 57·28	− 0·45	− 37·88	− 37·83	− 1·75
	2555	β Geminorum	....	61 39	28·2	37·5	47·0	56·4	38 5·8	7 37 46·98	− 0·32	− 38·02	− 37·84	− 1·67
Jan. 16	1681	β Tauri	....	61 30	11·5	20·9	30·4	39·8	18 49·1	5 18 30·34	− 0·29	− 38·75	− 38·69	− 1·90
	1730	δ Orionis	....	90 23	33·9	42·0	50·4	58·5	26 6·8	5 25 50·32	− 0·43	− 38·61	− 38·69	− 1·60
	1765	ι Orionis	....	91 17	48·9	57·1	5·6	13·9	30 22·0	5 30 5·50	− 0·43	− 38·62	− 38·69	− 1·61
	6281	δ Ursæ Minoris S. P.	....	3 24	14·0	32·0	51·0	14·0	20 32·0	6 15 52·60	− 3·49	....	− 38·69	+ 23·67
	2163	γ Geminorum	....	73 29	21·9	30·2	39·3	47·8	30 56·3	6 30 39·10	− 0·34	− 38·69	− 38·69	− 1·66
	2410	δ Geminorum	....	67 46	30·2	39·0	48·2	57·0	13 6·0	7 12 48·08	− 0·33	− 38·71	− 38·69	− 1·93
	2485	α² Geminorum	....	57 49	24·4	34·0	44·0	53·6	27 3·2	7 26 43·88	− 0·28	− 38·75	− 38·69	− 2·04
	2555	β Geminorum	....	61 39	29·0	38·2	47·9	57·2	38 6·5	7 37 47·76	− 0·29	− 38·72	− 38·69	− 1·93
Jan. 18	2410	δ Geminorum	....	67 46	30·0	38·9	48·0	56·9	13 5·9	7 12 47·94	− 0·32	− 38·57	− 38·55	− 1·94
	2485	α² Geminorum	....	57 49	24·3	34·0	43·9	53·5	27 3·2	7 26 43·78	− 0·27	− 38·64	− 38·55	− 2·05
	2522	α Canis Minoris	....	84 26	41·2	49·4	58·0	6·2	33 14·5	7 32 57·86	− 0·40	− 38·42	− 38·55	− 1·64
	2555	β Geminorum	....	61 39	28·9	38·2	47·7	57·0	38 6·3	7 37 47·62	− 0·28	− 38·58	− 38·55	− 1·99
	2672	6 Cancri	....	61 50	39·1	48·3	58·0	7·2	56 16·5	7 55 57·82	− 0·28	− 38·54	− 38·55	− 1·67
Jan. 22	2163	γ Geminorum	....	73 29	21·4	30·1	39·0	47·5	30 56·0	6 30 38·80	− 0·33	− 38·39	− 38·35	− 1·67
	2410	δ Geminorum	....	67 46	29·9	38·8	47·9	56·[illegible]	13 5·4	7 12 47·72	− 0·32	− 38·33	− 38·35	− 1·96
	2485	α Geminorum	....	57 49	24·0	33·5	43·4	53·2	27 3·0	7 26 43·42	− 0·27	− 38·28	− 38·35	− 2·10
	2522	α Canis Minoris	....	84 26	41·0	49·4	57·8	6·1	33 14·3	7 32 57·72	− 0·40	− 38·26	− 38·35	− 1·66
	2555	β Geminorum	....	61 39	28·6	38·0	47·8	57·0	38 6·1	7 37 47·50	− 0·28	− 38·43	− 38·35	− 2·02
	2672	6 Cancri	....	61 50	39·0	48·2	58·0	7·0	56 16·5	7 55 57·74	− 0·28	− 38·42	− 38·35	− 2·01
Jan. 23	2410	δ Geminorum	....	67 46	29·6	38·4	47·5	56·3	13 5·2	7 12 47·40	− 0·32	− 38·01	− 38·05	− 1·96
	2462	β Canis Minoris	....	81 27	16·7	24·9	33·2	41·7	20 50·0	7 20 33·30	− 0·39	....	− 38·05	− 1·67
	2485	α² Geminorum	....	57 49	23·6	33·3	43·2	53·0	27 2·8	7 26 43·18	− 0·27	− 38·02	− 38·05	− 2·10
	2522	α Canis Minoris	....	84 26	40·9	49·1	57·4	5·7	33 14·0	7 32 57·42	− 0·40	− 37·96	− 38·05	− 1·86
	2555	β Geminorum	....	61 39	28·2	37·8	47·2	56·5	38 5·9	7 37 47·12	− 0·28	− 38·04	− 38·05	− 2·00

Digitized

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1866.
1866.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Jan. 23	2586	…………	………	61 29	0·4	9·8	19·4	28·6	42 38·0	7 42 19·24	− 0·27	………	− 38·05	− 2·04
	2672	6 Cancri	………	61 50	38·8	48·0	57·5	7·0	56 16·1	7 55 57·48	− 0·28	− 38·16	− 38·05	− 2·01
	2737	…………	………	74 59	50·2	58·7	7·5	16·0	4 24·5	8 4 7·38	− 0·35	………	− 38·05	− 1·90
	2748	…………	………	75 37	15·4	24·0	32·6	41·0	5 49·6	8 5 32·52	− 0·35	………	− 38·05	− 1·90
	2761	…………	………	76 34	17·2	25·6	34·4	42·9	7 51·2	8 7 34·26	− 0·36	………	− 38·05	− 1·90
	2778	β Cancri	………	80 25	38·2	46·5	55·1	3·6	10 12·0	8 9 55·06	− 0·38	………	− 38·05	− 1·88
	2862	η Cancri	………	69 7	20·0	28·8	37·9	46·6	25 55·2	8 25 37·70	− 0·32	− 38·11	− 38·05	− 1·91
Jan. 29	6281	(a) δ Ursæ Minoris S. P.	………	3 24	13·0	31·0	51·5	14·0	20 32·0	6 15 52·30	− 3·50	………	− 36·34	+ 21·67
	2163	γ Geminorum	………	73 29	19·5	28·0	37·0	45·4	30 54·0	6 30 36·78	− 0·34	− 36·38	− 36·34	− 1·85
	2184	…………	………	73 29	59·5	8·0	16·6	25·3	34 33·8	6 34 16·68	− 0·34	………	− 36·34	− 1·85
	2292	…………	7·0	79 12	55·8	4·0	12·8	21·0	54 29·4	6 54 12·60	− 0·38	………	− 36·34	− 1·65
	2306	…………	6·0	78 52	34·5	42·7	51·1	59·5	57 7·9	6 56 51·14	− 0·38	………	− 36·34	− 1·66
	2329	…………	………	74 16	54·0	2·6	11·3	19·9	1 28·4	7 1 11·24	− 0·35	………	− 36·34	− 1·90
	2363	…………	………	65 4	36·1	45·3	54·6	3·8	7 12·9	7 6 54·58	− 0·30	………	− 36·34	− 2·00
	2410	δ Geminorum	………	67 46	27·9	36·6	45·9	54·5	13 3·4	7 12 45·66	− 0·33	− 36·25	− 36·34	− 1·97
	2462	β Canis Minoris	………	81 27	14·8	23·0	31·5	40·0	20 48·1	7 20 31·48	− 0·40	………	− 36·34	− 1·88
	2485	α² Geminorum	………	57 49	22·0	31·8	41·8	51·4	27 1·0	7 26 41·60	− 0·28	− 36·41	− 36·34	− 2·12
	2522	α Canis Minoris	………	84 26	39·1	47·2	55·9	4·[illegible]	33 12·2	7 32 55·68	− 0·41	− 36·19	− 36·34	− 1·88
	2555	β Geminorum	………	61 39	26·8	36·0	45·5	55·[illegible]	38 4·2	7 37 45·50	− 0·29	− 36·39	− 36·34	− 2·05
	2586	…………	………	61 29	58·8	8·0	17·7	27·[illegible]	42 36·3	7 42 17·56	− 0·28	………	− 36·34	− 2·06
	2672	6 Cancri	………	61 50	37·0	46·2	55·9	5·2	56 14·4	7 55 55·74	− 0·29	− 36·37	− 36·34	− 2·05
	2688	(b) …………	………	62 6	44·1	53·3	2·9	12·1	58 21·5	7 58 2·78	− 0·29	………	− 36·34	− 2·05
	2737	…………	………	74 59	48·3	57·0	6·0	14·5	4 22·9	8 4 5·70	− 0·36	………	− 36·34	− 1·94
	2748	…………	………	75 37	13·7	22·2	31·0	39·4	5 48·0	8 5 30·86	− 0·36	………	− 36·34	− 1·94
	2761	…………	………	76 34	15·7	24·0	32·8	41·1	7 49·6	8 7 32·64	− 0·37	………	− 36·34	− 1·93
	2778	β Cancri	………	80 25	36·8	44·9	53·5	1·8	10 10·0	8 9 53·40	− 0·38	………	− 36·34	− 1·92
	2937	γ Cancri	………	68 4	52·4	1·3	10·4	19·2	36 28·0	8 36 10·26	− 0·33	………	− 36·34	− 1·96
	2971	ι Hydræ	………	83 6	2·8	11·0	19·4	27·7	40 36·0	8 40 19·38	− 0·41	− 36·40	− 36·34	− 1·90
Feb. 1	2462	β Canis Minoris	………	81 27	15·0	23·1	31·8	40·0	20 48·2	7 20 31·62	− 0·39	………	− 36·35	− 1·88
	2485	α² Geminorum	………	57 49	22·0	31·6	41·7	51·1	27 1·0	7 26 41·54	− 0·28	− 36·35	− 36·35	− 2·12
	2522	α Canis Minoris	………	84 26	39·1	47·3	55·9	4·0	33 12·2	7 32 55·70	− 0·40	− 36·22	− 36·35	− 1·88
	2555	β Geminorum	………	61 39	26·6	36·0	45·4	55·0	38 4·3	7 37 45·46	− 0·29	− 36·34	− 36·35	− 2·06
	2586	…………	7·5	61 29	58·8	8·0	17·7	27·0	42 36·4	7 42 17·58	− 0·28	………	− 36·35	− 2·06
	2672	6 Cancri	………	61 50	37·0	46·4	55·9	5·2	56 14·6	7 55 55·82	− 0·29	− 36·44	− 36·35	− 2·06
	2688	(b) …………	………	62 6	44·0	53·4	3·0	12·3	58 21·7	7 58 2·88	− 0·29	………	− 36·35	− 2·06
	2737	…………	………	74 59	48·5	57·0	5·8	14·5	4 22·9	8 4 5·70	− 0·35	………	− 36·35	− 1·95
	2748	…………	………	75 37	13·9	22·4	31·0	39·5	5 48·0	8 5 30·96	− 0·36	………	− 36·35	− 1·94
	2761	…………	………	76 34	15·7	24·0	32·8	41·1	7 49·6	8 7 32·64	− 0·36	………	− 36·35	− 1·94
	2778	β Cancri	………	80 25	36·8	45·0	53·5	1·9	10 10·3	8 9 53·50	− 0·38	………	− 36·35	− 1·93
	2867	…………	………	79 30	44·0	52·4	1·0	9·3	26 17·8	8 26 0·90	− 0·38	………	− 36·35	− 1·94
	2882	…………	………	29 36	20·5	37·0	54·2	10·7	29 27·2	8 28 53·92	− 0·03	………	− 36·35	− 3·04
	2937	γ Cancri	………	68 4	52·4	1·4	10·4	19·1	36 28·2	8 36 10·36	− 0·33	………	− 36·35	− 1·98
	2971	ι Hydræ	………	83 6	2·8	11·0	19·5	27·8	40 36·0	8 40 19·42	− 0·40	− 36·43	− 36·35	− 1·92
	2988	…………	………	34 34	14·5	28·9	44·0	58·4	44 12·8	8 43 43·72	− 0·08	………	− 36·35	− 2·68
	3048	ι Ursæ Majoris	………	41 27	15·1	27·5	40·3	52·8	51 5·2	8 50 40·16	− 0·15	………	− 36·35	− 2·38
	3083	…………	………	38 40	4·6	17·8	31·3	44·4	56 57·7	8 56 31·16	− 0·14	………	− 36·35	− 2·46
	3103	…………	………	72 22	6·0	14·6	23·7	32·0	59 40·9	8 59 23·44	− 0·35	………	− 36·35	− 1·93
	3133	…………	………	85 36	34·9	43·4	51·6	59·9	6 8·1	9 5 51·52	− 0·41	………	− 36·35	− 1·92
	3157	…………	7·0	29 40	18·5	35·0	52·2	8·8	11 25·2	9 10 51·94	− 0·03	………	− 36·35	− 2·82
	3331	ι Leonis	………	65 37	34·9	43·9	53·1	2·0	39 11·2	9 38 53·02	− 0·31	− 36·39	− 36·35	− 1·88

(a) Definition bad. Unsteady. (b) Double 8 and 10 Mags.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1866.
1866.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Feb. 2	2163	γ Geminorum	....	73 29	19·8	28·1	37·0	45·5	30 54·0	6 30 36·68	− 0·34	− 36·51	− 36·46	− 1·42
	2184	....	7·0	73 29	59·4	8·0	16·9	25·3	34 34·0	6 34 16·72	− 0·34	....	− 36·46	− 1·84
	2236	....	6·0	66 15	12·5	21·4	30·9	39·5	44 48·7	6 44 30·60	− 0·30	....	− 36·46	− 1·34
	2292	....	7·0	79 12	55·9	4·2	12·9	21·1	54 29·5	6 54 12·72	− 0·37	....	− 36·47	− 1·84
	2306	....	6·0	78 52	31·2	42·6	51·3	59·9	57 8·0	6 56 51·20	− 0·37	....	− 36·47	− 1·84
	2329	....	7·5	74 16	54·1	2·6	11·5	20·0	1 28·5	7 1 11·34	− 0·34	....	− 36·47	− 1·35
	2363	....	7·0	65 4	36·4	45·4	54·8	3·9	7 12·9	7 6 54·68	− 0·30	....	− 36·48	− 1·99
	2379	....	6·0	40 18	34·4	47·0	0·1	12·9	9 25·5	7 8 59·98	− 0·14	....	− 36·48	− 2·55
	2410	δ Geminorum	....	67 46	28·0	36·9	45·9	54·8	13 3·8	7 12 45·88	− 0·32	− 36·49	− 36·48	− 1·94
	2488	....	6·0	43 32	2·8	14·5	26·9	38·9	27 50·6	7 27 26·74	− 0·17	....	− 36·48	− 2·46
	2522	α Canis Minoris	....	84 26	39·1	47·4	56·0	4·2	33 12·4	7 32 55·82	− 0·40	− 36·35	− 36·48	− 1·67
	2555	β Geminorum	....	61 39	26·6	36·2	45·6	55·1	38 4·3	7 37 45·60	− 0·28	− 36·49	− 36·48	− 2·05
	2672	6 Cancri	....	61 50	37·0	46·4	56·[illegible]	5·2	56 14·6	7 55 55·84	− 0·28	− 36·47	− 36·49	− 2·04
	2882	....	7·0	29 36	20·2	37·0	54·2	10·8	29 27·2	8 28 53·88	− 0·03	....	− 36·49	− 3·04
	2937	γ Cancri	....	68 4	52·8	1·4	10·8	19·4	36 28·3	8 36 10·54	− 0·32	....	− 36·50	− 1·98
	3331	ε Leonis	....	65 37	35·0	44·0	53·3	2·3	39 11·3	9 38 53·18	− 0·30	− 36·55	− 36·51	− 1·40
Feb. 10	2410	δ Geminorum	....	67 46	28·4	37·3	46·2	55·0	13 4·1	7 12 46·20	− 0·31	− 36·85	− 36·86	− 1·93
	2485	α² Geminorum	....	57 49	22·5	32·0	42·2	51·8	27 1·6	7 26 42·02	− 0·26	− 36·88	− 36·86	− 2·49
	2522	α Canis Minoris	....	84 26	39·6	48·0	56·4	4·5	33 12·8	7 32 56·26	− 0·38	− 36·83	− 36·86	− 1·55
	2555	β Geminorum	....	61 39	27·1	36·4	46·1	55·4	38 4·8	7 37 45·96	− 0·28	− 36·87	− 36·86	− 2·04
Feb. 13	2522	α Canis Minoris	....	84 26	40·0	48·2	56·6	5·0	33 13·2	7 32 56·60	− 0·35	− 37·22	− 37·35	− 1·63
	2555	β Geminorum	....	61 39	27·5	36·9	46·6	56·0	38 5·2	7 37 46·44	− 0·27	− 37·38	− 37·36	− 2·02
	2672	6 Cancri	....	61 50	38·0	47·2	57·0	6·1	56 15·4	7 55 56·74	− 0·27	− 37·40	− 37·37	− 2·01
	2688	....	....	62 6	45·0	54·3	4·0	13·3	58 22·5	7 58 3·82	− 0·27	....	− 37·37	− 2·04
	2867	....	6·0	79 30	45·0	53·4	2·0	10·4	26 18·6	8 26 1·88	− 0·33	....	− 37·39	− 1·95
	2882	....	7·0	29 36	21·4	37·8	55·0	11·8	29 28·4	8 28 54·88	− 0·09	....	− 37·39	− 3·01
	2971	ε Hydræ	....	83 6	3·7	12·0	20·5	28·8	40 37·0	8 40 20·40	− 0·35	− 37·42	− 37·40	− 1·94
	2988	....	7·5	34 34	15·6	30·0	45·[illegible]	59·3	44 13·9	8 43 44·76	− 0·13	....	− 37·40	− 2·72
	3048	ι Ursæ Majoris	3·0	41 27	16·2	28·6	41·5	53·9	51 6·3	8 50 41·30	− 0·17	....	− 37·41	− 2·43
	3171	83 Cancri	....	71 44	52·3	1·0	9·9	18·4	12 27·0	9 12 9·72	− 0·31	− 37·51	− 37·43	− 1·99
Feb. 16	2862	η Cancri	....	69 7	20·2	29·0	38·1	47·0	25 55·9	8 25 38·[illegible]	− 0·29	− 38·41	− 38·40	− 1·98
	2971	ε Hydræ	....	83 6	4·7	13·0	21·4	29·8	40 38·0	8 40 21·38	− 0·35	− 38·41	− 38·40	− 1·95
	3331	ε Leonis	....	65 37	37·0	46·0	55·2	4·0	39 13·3	9 38 55·10	− 0·28	− 38·37	− 38·41	− 2·01
	3459	α Leonis	....	77 23	37·9	46·1	54·9	3·1	2 11·5	10 1 54·70	− 0·32	− 38·44	− 38·42	− 1·95
Feb. 20	2410	δ Geminorum	....	67 46	30·2	39·2	48·4	57·1	13 [illegible]·0	7 12 48·18	− 0·28	− 38·95	− 38·93	− 1·64
	2485	α² Geminorum	....	57 49	24·4	34·2	44·1	54·0	27 3·4	7 26 44·02	− 0·25	− 38·96	− 38·93	− 2·40
	2522	α Canis Minoris	....	84 26	41·5	49·9	58·2	6·5	33 14·7	7 32 58·16	− 0·34	− 38·84	− 38·94	− 1·76
	2555	β Geminorum	....	61 39	29·4	38·5	48·1	57·4	38 6·8	7 37 48·04	− 0·26	− 39·05	− 38·94	− 1·96
	2688	....	....	62 6	46·9	56·0	5·8	14·7	58 24·2	7 58 5·52	− 0·26	....	− 38·94	− 2·40
	2867	....	....	79 30	46·9	55·0	3·5	12·0	26 20·2	8 26 3·52	− 0·32	....	− 38·95	− 1·93
	2971	ε Hydræ	....	83 6	5·1	13·3	22·0	30·2	40 38·5	8 40 21·82	− 0·33	− 38·87	− 38·95	− 1·95
	2988	....	....	34 34	17·0	31·6	46·5	1·0	44 15·6	8 43 46·34	− 0·15	....	− 38·95	− 2·49
	3063	....	....	38 40	7·4	20·4	34·0	47·2	57 0·5	8 56 33·90	− 0·17	....	− 38·96	− 2·52
	3103	....	....	72 22	8·8	17·2	26·2	34·8	59 43·4	8 59 26·08	− 0·30	....	− 38·96	− 1·99
	3133	....	....	85 36	37·6	45·9	54·2	2·4	6 10·5	9 5 54·12	− 0·34	....	− 38·96	− 1·93
	3157	....	....	29 40	21·2	37·8	55·0	11·5	11 28·[illegible]	9 10 51·70	− 0·11	....	− 38·96	− 2·02
	3312	ε Leonis	....	79 31	24·4	32·6	41·2	49·5	34 57·9	9 34 41·12	− 0·32	....	− 38·96	− 2·00

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1866.
1866.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Feb. 20	3325	....	....	26 9	22·7	41·1	0·4	19·1	38 37·8	9 38 0·22	– 0·08	....	– 38·97	– 3·08
	3371	μ Leonis........................	....	63 23	31·1	40·3	49·8	59·0	46 8·1	9 45 49·66	– 0·26	....	– 38·97	– 2·03
	3418	....	....	80 25	19·3	27·5	36·0	44·4	54 52·9	9 54 36·02	– [illegible]·32	....	– 38·98	– 2·00
	3430	....	....	81 9	36·8	44·9	53·4	1·6	57 10·0	9 56 53·34	– 0·33	....	– 38·98	– 2·00
	3438	....	....	84 21	12·5	20·8	29·3	37·4	58 45·5	9 58 29·10	– 0·35	....	– 38·98	– 2·01
	3459	α Leonis........................	....	77 23	38·4	46·7	55·4	3·8	2 12·2	10 1 55·30	– 0·30	– 39·03	– 38·99	– 1·98
Feb. 22	6281	δ Ursæ Minoris S. P. ...	....	3 [illegible]	20·5	40·0	58·0	20·0	20 39·5	6 15 59·60	– 1·66	....	– 39·38	+ 15·53
	2163	γ Geminorum	....	73 29	22·2	30·8	39·5	48·1	30 56·8	6 30 39·16	– 0·28	– 39·38	– 39·39	– 1·61
	2485	α^2 Geminorum	....	57 49	21·9	34·5	44·5	54·2	27 4·[illegible]	7 26 44·42	– [illegible]·24	– 39·42	– 39·40	– 1·97
	2555	β Geminorum	....	61 39	29·5	38·9	48·4	57·8	38 7·1	7 37 48·34	– 0·25	– 39·38	– 39·41	– 1·94
	2971	ι Hydræ........................	....	83 6	5·6	13·9	22·4	30·8	40 39·[illegible]	8 40 22·34	– 0·32	– 39·[illegible]	– 39·41	– 1·94
	3331	ι Leonis........................	....	65 37	38·0	47·0	56·4	5·3	39 14·3	9 38 56·20	– 0·26	– 39·47	– 39·42	– 2·03
	3371	μ Leonis........................	....	63 23	31·5	40·7	50·2	59·3	46 8·6	9 45 50·06	– 0·25	....	– 39·43	– 2·04
Feb. 23	3171	83 Cancri........................	....	71 44	54·6	3·2	12·2	20·9	12 29·5	9 12 12·08	– 0·33	– 39·85	– 39·76	– 1·99
	3331	ι Leonis........................	....	65 37	38·5	47·4	56·7	5·[illegible]	39 14·5	9 38 56·51	– 0·30	– 39·77	– 39·77	– 2·03
	3415	π Leonis........................	....	81 20	33·2	41·5	50·0	58·3	54 [illegible]·8	9 53 49·96	– 0·35	– 39·80	– 39·77	– 2·00
	3459	α Leonis........................	....	77 23	29·0	47·4	56·1	4·5	2 13·0	10 1 56·00	– 0·33	– 39·69	– 39·78	– 1·99
	3523	γ^1 Leonis........................	....	69 30	50·3	8·0	17·[illegible]	25·8	13 34·5	10 13 16·92	– 0·32	....	– 39·78	– 1·99
Feb. 24	2672	6 Cancri	....	61 50	40·5	49·9	59·4	8·7	56 18·0	7 55 59·30	– 0·30	– 40·01	– 40·02	– 1·96
	2862	η Cancri........................	....	69 7	22·0	30·7	40·0	48·7	25 57·4	8 25 39·76	– 0·33	– 40·13	– 40·03	– 1·94
	2971	ι Hydræ........................	....	83 6	6·2	14·5	23·0	31·3	40 39·5	8 40 22·90	– 0·38	– 39·92	– 40·03	– 1·93
	3171	83 Cancri........................	....	71 44	55·0	3·4	12·4	21·0	12 29·7	9 12 12·30	– 0·35	– 40·05	– 40·04	– 1·99
Feb. 27	2672	(a) 6 Cancri	....	61 50	41·7	51·0	0·5	9·7	56 19·0	7 56 0·38	– 0·32	– 41·10	– 40·94	– 1·93
	2971	ι Hydræ	....	83 6	7·1	15·4	24·0	32·2	40 40·4	8 40 23·82	– 0·41	– 40·83	– 40·94	– 1·91
	3331	ι Leonis........................	....	65 37	39·8	48·4	58·0	6·9	39 16·[illegible]	9 38 57·82	– 0·34	– 41·01	– 40·94	– 2·03
	3415	π Leonis........................	....	81 20	34·4	42·7	51·2	59·4	54 7·8	9 53 51·10	– 0·41	– 40·87	– 40·94	– 2·01
	3459	α Leonis........................	....	77 23	40·2	48·9	57·2	5·9	2 14·2	10 1 57·28	– 0·39	– 40·91	– 40·94	– 1·99
Mar. 13	3171	83 Cancri........................	....	71 44	[illegible]·0	8·5	17·6	26·1	12 34·8	9 12 17·40	– 0·47	– 45·12	– 45·07	– 1·90
	3331	(a) ι Leonis........................	....	65 37	43·9	52·8	2·2	11·0	39 20·0	9 39 1·98	– 0·44	– 45·13	– 45·07	– 1·97
	3415	π Leonis........................	....	81 20	38·6	46·8	55·5	3·7	54 12·0	9 53 55·32	– 0·50	– 45·04	– 45·07	– 1·97
	3459	α Leonis........................	....	77 [illegible]	44·5	52·9	1·6	10·1	2 18·4	10 2 1·50	– 0·49	– 45·05	– 45·07	– 1·97
	3609	ζ Leonis	....	80 1	16·0	24·3	33·0	41·2	26 49·5	10 26 32·80	– 0·50	– 45·05	– 45·07	– 2·03
	3834	δ Leonis........................	....	68 45	28·4	37·2	46·4	55·2	8 4·0	11 7 46·24	– 0·46	– 45·03	– 45·07	– 2·03
Mar. 14	3706	l Leonis........................	....	78 46	43·8	52·1	0·6	9·0	43 17·4	10 43 0·58	– 0·51	– 45·34	– 45·32	– 2·04
	3788	χ Leonis........................	....	81 57	37·4	45·5	54·2	2·5	59 10·7	10 58 54·06	– 0·53	– 45·29	– 45·33	– 2·06
	3834	δ Leonis	....	68 45	28·9	37·5	46·7	55·4	8 4·3	11 7 46·56	– 0·47	– 45·34	– 45·33	– 2·03
	3946	υ Leonis........................	....	90 6	36·8	45·0	53·4	1·6	31 9·8	11 30 53·32	– 0·57	– 45·37	– 45·34	– 2·13
	3995	β Leonis........................	....	74 42	44·0	52·6	1·3	9·9	43 18·3	11 43 1·22	– 0·50	– 45·33	– 45·35	– 2·02
Mar. 20	3706	(b) l Leonis........................	....	78 46	46·0	54·3	3·0	11·4	43 19·8	10 43 2·90	– 0·56	– 47·63	– 47·64	– 2·02
	3788	χ Leonis........................	....	[illegible] 57	39·9	48·0	56·5	4·8	59 13·2	10 [illegible] 56·48	– 0·57	– 47·68	– 47·65	– 2·05
	3834	δ Leonis........................	....	68 45	31·0	39·9	49·2	58·0	8 6·6	11 7 48·94	– 0·51	– 47·68	– 47·66	– 2·03
	3946	υ Leonis........................	....	90 6	39·2	47·4	55·6	4·0	[illegible] [illegible]·1	11 30 55·66	– 0·62	– 47·65	– 47·66	– 2·14
	3995	β Leonis........................	....	74 42	46·4	54·9	3·6	12·2	43 20·7	11 43 3·56	– [illegible]·54	– 47·61	– 47·67	– 2·04
	4145	η Virginis	....	89 56	37·0	45·2	53·5	1·9	14 10·0	12 13 53·52	– 0·62	– 47·73	– 47·68	– 2·15

(a) Definition very bad. (b) Definition bad.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1. 1866.
				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
1866. Mar. 29	3331	ε Leonis	....	65 37	48·5	57·5	6·9	15·9	39 25·0	9 39 6·76	– 0·53	– 49·98	– 49·89	– 1·81
	3415	π Leonis	....	81 20	43·4	51·5	0·2	8·4	54 16·9	9 54 0·08	– 0·62	– 49·80	– 49·89	– 1·65
	3459	α Leonis	....	77 23	49·4	57·7	6·1	15·0	2 23·3	10 2 6·36	– 0·59	– 49·92	– 49·89	– 1·66
	3609	ρ Leonis	....	80 1	20·9	29·0	37·8	46·1	26 54·4	10 26 37·64	– 0·61	– 49·87	– 49·89	– 1·94
	3634	δ Leonis	....	68 45	33·4	42·2	51·3	0·0	8 8·9	11 7 51·16	– 0·55	– 49·69	– 49·[illegible]	– 2·00
April 13	3708	l Leonis	....	78 46	50·2	58·4	7·1	15·5	43 24·0	10 43 7·04	– 0·63	– 51·81	– 51·82	– 1·86
	3788	χ Leonis	....	81 57	43·9	52·1	0·8	9·0	59 17·1	10 59 0·58	– 0·69	– 51·79	– 51·82	– 1·92
	3634	δ Leonis	....	68 45	35·5	44·1	53·2	2·0	8 10·9	11 7 53·14	– 0·61	– 51·91	– 51·82	– 1·90
	3946	υ Leonis	....	90 6	43·4	51·5	0·0	8·2	31 16·4	11 30 59·90	– 0·75	– 51·81	– 51·82	– 2·03
	3995	β Leonis	....	74 42	50·8	59·1	8·0	16·3	43 25·0	11 43 7·64	– 0·65	– 51·82	– 51·82	– 2·00
	4532	ζ Virginis	....	89 55	30·2	38·4	47·0	55·1	29 3·3	13 28 46·60	– 0·75	– 51·75	– 51·82	– 2·29
	4648	η Bootis	....	70 56	55·4	4·0	13·0	21·[illegible]	49 30·2	13 49 12·84	– 0·63	– 51·82	– 51·82	– 2·11
April 14	3609	ρ Leonis	....	80 1	23·0	31·3	39·9	48·2	26 56·4	10 26 39·76	– 0·72	– 52·02	– 52·02	– 1·60
	3788	χ Leonis	....	81 57	44·1	52·4	1·0	9·2	59 17·5	10 59 0·84	– 0·73	– 52·02	– 52·03	– 1·91
	3634	δ Leonis	....	68 45	35·5	44·2	53·4	2·2	8 11·0	11 7 53·26	– 0·64	– 52·01	– 52·03	– 1·93
	3946	υ Leonis	....	90 6	43·8	51·8	0·2	8·5	31 16·7	11 31 0·20	– 0·79	– 52·08	– 52·04	– 2·08
	3995	β Leonis	....	74 42	51·0	59·5	8·2	16·6	43 25·1	11 43 8·06	– 0·68	– 52·04	– 52·05	– 1·93
April 16	3788	(a) χ Leonis	....	81 57	44·9	53·1	1·5	10·0	59 18·1	10 59 1·52	– 0·77	– 52·67	– 52·63	– 1·94
	3634	δ Leonis	....	68 45	36·1	44·9	54·0	2·6	8 11·6	11 7 53·88	– 0·67	– 52·61	– 52·63	– 1·88
	3995	β Leonis	....	74 42	51·5	0·0	8·8	17·1	43 25·9	11 43 8·66	– 0·72	– 52·59	– 52·63	– 1·16
	360	(b) α Ursæ Minoris S. P.	....	1 24	28·0	1·0	......	......	....	13 10 43·34	– 14·57	....	– 52·63	+ 21·52
	4648	η Bootis	....	70 56	56·2	5·0	13·9	22·5	49 31·1	13 49 13·74	– 0·69	– 52·64	– 52·63	– 2·13
	4729	α Bootis	....	70 8	11·0	19·5	28·5	37·2	10 46·0	14 10 28·44	– 0·68	– 52·64	– 52·63	– 2·10
April 17	4268	γ¹ Virginis	....	90 44	31·1	39·7	48·0	56·2	36 4·4	12 35 47·94	– 0·74	....	– 52·93	– 2·23
	4401	θ Virginis	....	94 50	40·2	48·5	57·0	5·2	4 13·4	13 3 56·86	– 0·76	– 52·94	– 52·94	– 2·34
	360	α Ursæ Minoris S. P.	....	1 24	27·0	3·5	36·0	21·0	21 57·5	13 10 41·00	– 11·68	....	– 52·94	+ 21·31
	4532	ζ Virginis	....	89 55	31·4	39·5	48·0	56·2	29 4·4	13 28 47·90	– 0·74	– 52·85	– 52·94	– 2·30
	4648	η Bootis	....	70 56	56·5	5·1	14·0	22·[illegible]	49 31·5	13 49 13·98	– 0·61	– 52·95	– 52·95	– 2·14
	4672	τ Virginis	....	87 49	29·1	37·3	45·9	54·0	56 2·2	13 55 45·70	– 0·72	– 52·98	– 52·96	– 2·29
	4729	α Bootis	....	70 8	11·2	19·8	28·7	37·6	10 46·3	14 10 28·72	– 0·61	– 52·98	– 52·97	– 2·11
	4808	ρ Bootis	....	59 3	39·5	49·0	59·0	8·7	27 18·2	14 26 58·88	– 0·53	– 52·96	– 52·98	– 2·07
April 19	4401	θ Virginis	....	94 50	40·4	48·7	57·1	5·4	4 13·8	13 3 57·08	– 0·74	– 53·17	– 53·19	– 2·35
	360	α Ursæ Minoris S. P.	....	1 24	26·5	3·0	36·0	20·0	21 57·0	13 10 40·50	– 10·39	....	– 53·19	+ 20·45
	4532	ζ Virginis	....	89 55	31·7	40·0	48·4	56·5	29 4·8	13 28 48·28	– 0·70	– 53·26	– 53·20	– 2·31
	4648	η Bootis	....	70 56	56·6	5·4	14·3	23·0	49 31·6	13 49 14·22	– 0·60	– 53·19	– 53·20	– 2·15
	4672	τ Virginis	....	87 49	29·3	37·5	46·0	54·2	56 2·4	13 55 45·88	– 0·70	– 53·17	– 53·21	– 2·31
	4729	α Bootis	....	70 8	11·3	20·0	29·0	37·8	10 46·5	14 10 28·92	– 0·59	– 53·19	– 53·21	– 2·18
April 20	4401	θ Virginis	....	94 50	40·7	48·9	57·3	5·6	4 13·9	13 3 57·28	– 0·72	– 53·39	– 53·38	– 2·33
	360	(c) α Ursæ Minoris S. P.	....	1 24	27·0	2·0	33·5	24·5	21 54·0	13 10 40·20	– [illegible]·90	....	– 53·38	+ 20·64
	4532	ζ Virginis	....	89 55	31·9	40·0	48·5	56·6	29 4·9	13 28 48·38	– 0·69	– 53·36	– 53·38	– 2·33
	4648	η Bootis	....	70 56	56·9	5·4	14·6	23·2	49 31·6	13 49 14·34	– 0·59	– 53·32	– 53·38	– 2·15
	4672	τ Virginis	....	87 49	29·5	37·6	46·1	54·3	56 2·6	13 55 46·02	– 0·68	– 53·32	– 53·38	– 2·31
	4729	α Bootis	....	70 8	11·6	20·2	29·2	38·0	10 46·8	14 10 29·16	– 0·58	– 53·43	– 53·38	– 2·13
	4808	ρ Bootis	....	59 3	40·0	49·5	59·5	9·0	27 18·5	14 26 59·30	– 0·51	– 53·39	– 53·38	– 2·10
	4876	ε Bootis	....	62 22	45·5	54·6	4·2	13·5	40 22·8	14 40 4·12	– 0·53	– 53·39	– 53·39	– 2·11

(a) The clock errors this night shew that apparent change in the rate of the clock, which occurs so often, but is caused most probably in truth by the swerving of the piers carrying the Transit Instrument, on account of change of temperature. (b) Cloudy. (c) Very unsteady. Bad observation.

Date	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1. 1866.
1866				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
April 24	4401	θ Virginis	....	94 50	40·5	48·9	57·3	5·2	4 13·6	13 3 57·10	− 0·74	−53·19	−53·25	− 2·35
	360	α Ursæ Minoris S. P.	....	1 21	28·5	4·0	36·0	22·0	21 56·5	13 10 41·40	−10·63	....	−53·25	+19·42
	4532	ζ Virginis	....	89 55	31·8	40·0	48·6	56·4	29 4·8	13 28 48·32	− 0·71	−53·27	−53·25	− 2·33
	4648	η Bootis	....	70 56	57·0	5·4	14·3	23·1	49 31·7	13 49 11·30	− 0·60	−53·25	−53·25	− 2·17
	4672	τ Virginis	....	87 49	29·4	37·6	46·0	51·2	56 2·5	13 55 45·94	− 0·71	−53·19	−53·25	− 2·33
	4729	α Bootis	....	70 8	11·6	20·1	29·0	37·7	10 46·4	14 10 28·96	− 0·60	−53·10	−53·25	− 2·15
	4808	ρ Bootis	....	59 3	40·0	49·5	59·2	9·0	27 18·5	14 26 59·24	− 0·52	−53·29	−53·25	− 2·13
	4876	ε Bootis	....	62 22	45·4	54·6	4·4	13·5	40 22·7	14 40 4·12	− 0·54	−53·35	−53·25	− 2·13
April 28	3788	(a) χ Leonis	....	81 57	45·9	54·0	2·6	10·8	59 19·2	10 59 2·50	− 0·77	−53·78	−53·70	− 1·77
	3834	δ Leonis	....	68 45	37·0	45·8	55·0	3·8	8 12·5	11 7 54·82	− 0·68	−53·67	−53·70	− 1·75
	3946	υ Leonis	....	90 6	45·1	53·3	2·0	10·1	31 18·3	11 31 1·76	− 0·83	−53·70	−53·69	− 1·98
	3995	β Leonis	....	74 42	52·5	1·0	9·9	18·4	43 26·9	11 43 9·74	− 0·72	−53·76	−53·69	− 1·89
	4401	θ Virginis	....	94 50	41·0	49·3	57·9	6·0	4 14·2	13 3 57·68	− 0·87	−53·64	−53·69	− 2·35
	360	α Ursæ Minoris S. P.	....	1 24	37·0	7·0	38·0	28·0	22 3·[illegible]	13 10 46·60	−13·40	....	−53·69	+18·01
	4532	ζ Virginis	....	89 55	32·4	40·6	49·[illegible]	57·1	29 5·2	13 28 48·66	− 0·83	−53·69	−53·68	− 2·33
	4648	η Bootis	....	70 56	57·3	5·9	15·0	23·5	49 32·2	13 49 14·78	− 0·70	−53·62	−53·68	− 2·18
May 3	360	α Ursæ Minoris S. P.	....	1 24	30·0	6·5	43·5	27·0	22 4·5	13 10 46·30	−10·44	....	−54·33	+15·91
	4648	η Bootis	....	70 56	58·0	6·6	15·4	24·0	49 32·9	13 49 15·38	− 0·64	−54·27	−54·33	− 2·19
	4729	α Bootis	....	70 8	12·6	21·3	30·4	39·0	10 47·8	14 10 30·22	− 0·63	−54·30	−54·33	− 2·18
	4808	ρ Bootis	....	59 3	41·0	50·8	0·3	10·0	27 19·5	14 27 0·32	− 0·55	−54·29	−54·33	− 2·18
	4876	ε Bootis	....	62 22	46·5	55·8	5·4	14·5	40 24·0	14 40 5·24	− 0·58	−54·36	−54·33	− 2·20
May 9	4808	ρ Bootis	....	59 3	41·9	51·2	1·0	10·7	27 20·3	14 27 1·02	− 0·56	−54·97	−54·93	− 2·19
	4876	ε Bootis	....	62 22	47·0	56·4	5·9	15·1	40 24·5	14 40 5·78	− 0·58	−54·88	−54·93	− 2·22
	4969	ψ Bootis	....	62 32	21·3	30·7	40·3	49·5	59 58·8	14 59 40·12	− 0·5[illegible]	−55·02	−54·93	− 2·24
	5034	β Libræ	....	98 34	29·5	37·8	46·1	54·5	11 3·[illegible]	15 10 46·24	− 0·80	−54·87	−54·93	− 2·65
	5143	α Coronæ Borealis	....	62 50	40·0	49·3	58·9	8·0	30 17·2	15 29 58·68	− 0·59	−54·90	−54·93	− 2·27
	5196	α Serpentis	....	83 9	21·5	29·8	38·2	46·6	38 55·0	15 38 38·22	− 0·70	−54·95	−54·94	− 2·43
May 15	3609	ρ Leonis	....	80 1	25·9	34·2	42·7	51·0	26 59·4	10 26 42·64	− 0·69	−55·33	−55·22	− 1·40
	3788	χ Leonis	....	81 57	47·0	55·2	3·9	12·1	59 20·4	10 59 3·72	− 0·71	−55·25	−55·22	− 1·56
	3834	δ Leonis	....	68 45	38·4	47·0	56·3	5·0	8 13·9	11 7 56·12	− 0·64	−55·22	−55·22	− 1·54
	4672	(b) τ Virginis	....	87 49	31·4	39·7	48·2	56·2	56 4·4	13 55 47·98	− 0·74	−55·15	−55·22	− 2·38
	4729	α Bootis	....	70 8	13·4	22·0	31·1	39·8	10 48·7	14 10 31·00	− 0·65	−55·13	−55·22	− 2·20
	4808	ρ Bootis	....	59 3	42·0	51·3	1·6	11·0	27 20·8	14 27 1·34	− 0·58	−55·26	−55·22	− 2·20
	4876	(c) ε Bootis	....	62 22	47·2	56·8	6·3	15·5	40 24·8	14 40 6·12	− 0·59	−55·20	−55·22	− 2·23
May 16	4532	ζ Virginis	....	89 55	33·5	41·8	50·2	58·5	29 6·8	13 28 50·16	− 0·76	−55·07	−55·06	− 2·32
	4648	η Bootis	....	70 56	58·8	7·2	16·4	25·0	49 33·7	13 49 16·22	− 0·65	−55·11	−55·06	− 2·18
	4672	τ Virginis	....	87 49	31·1	39·4	48·0	56·2	56 4·4	13 55 47·82	− 0·74	−54·99	−55·06	− 2·36
	4729	α Bootis	....	70 8	13·3	22·0	31·1	39·6	10 48·5	14 10 30·90	− 0·65	−55·03	−55·06	− 2·20
	4808	ρ Bootis	....	59 3	41·9	51·5	1·2	11·0	27 20·6	14 27 1·24	− 0·58	−55·16	−55·06	− 2·20
	4876	ε Bootis	....	62 22	47·3	56·5	6·0	15·4	40 24·5	14 40 5·94	− 0·59	−55·02	−55·06	− 2·23
May 17	4808	ρ Bootis	....	59 3	41·8	51·3	1·2	10·8	27 20·2	14 27 1·06	− 0·58	−54·99	−54·95	− 2·19
	4876	ε Bootis	....	62 22	47·1	56·5	6·0	15·2	40 24·5	14 40 5·86	− 0·59	−54·93	−54·95	− 2·21
	4969	ψ Bootis	....	62 32	21·4	30·5	40·2	49·4	59 58·8	14 59 40·06	− 0·60	−54·92	−54·95	− 2·27
	5143	α Coronæ Borealis	....	62 50	40·1	49·4	58·9	8·0	30 17·2	15 29 58·72	− 0·60	−54·87	−54·95	− 2·33
	5196	α Serpentis	....	83 9	21·8	30·0	38·5	46·6	38 55·0	15 38 38·38	− 0·71	−55·03	−54·95	− 2·50

(a) Definition very bad. (b) Definition bad. (c) This night's clock errors are another striking example of fictitious change of clock-rate produced really by temperature-swerving of the piers carrying the Transit Instrument.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1866.
				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
1866. May 21	4808	ρ Bootis	....	59 3	41·5	51·1	1·0	10·5	27 20·2	14 27 0·86	− 0·59	−54·78	−54·80	− 2·19
	4876	ι Bootis	....	62 22	47·1	56·2	6·0	15·1	40 24·4	14 40 5·76	− 0·60	−54·82	−54·79	− 2·24
	4969	ψ Bootis	....	62 32	21·4	30·5	40·1	49·3	59 58·6	14 59 39·98	− 0·61	−54·82	−54·78	− 2·28
	5143	α Coronæ Borealis	....	62 50	40·0	49·4	58·8	7·9	30 17·1	15 29 58·64	− 0·61	−54·76	−54·77	− 2·33
	5196	α Serpentis	....	83 9	21·6	29·8	38·1	46·4	38 54·8	15 38 38·14	− 0·73	−54·73	−54·76	− 2·54
May 22	4729	α Bootis	....	70 8	12·9	21·6	30·5	39·1	10 48·0	14 10 30·42	− 0·66	−54·55	−54·65	− 2·19
	4808	ρ Bootis	....	59 3	41·5	51·0	0·9	10·4	27 20·0	14 27 0·76	− 0·59	−54·68	−54·65	− 2·19
	4876	ι Bootis	....	62 22	47·0	56·1	5·6	15·0	40 24·2	14 40 5·58	− 0·60	−54·64	−54·65	− 2·24
	4969	ψ Bootis	....	62 32	21·2	30·5	40·0	49·2	59 58·4	14 59 39·86	− 0·61	−54·70	−54·65	− 2·28
	5143	α Coronæ Borealis	....	62 50	40·0	49·2	58·6	8·0	30 17·1	15 29 58·58	− 0·61	−54·70	−54·65	− 2·33
	5196	α Serpentis	....	83 9	21·5	29·6	38·0	46·4	38 54·7	15 38 38·04	− 0·73	−54·63	−54·65	− 2·54
May 25	4969	ψ Bootis	....	62 32	21·1	30·6	40·2	49·3	59 58·6	14 59 40·02	− 0·63	−54·84	−54·87	− 2·28
	5034	β Libræ	....	98 54	29·5	37·8	46·2	54·6	11 3·0	15 10 46·22	− 0·83	−54·72	−54·87	− 2·75
	5196	α Serpentis	....	83 9	21·7	29·9	38·5	46·9	38 55·1	15 38 38·42	− 0·74	−54·98	−54·88	− 2·56
	5414	δ Ophiuchi	....	93 21	1·4	9·4	18·0	26·1	8 34·3	16 8 17·84	− 0·79	−54·84	−54·89	− 2·72
	5604	ζ Herculis	....	58 9	52·8	2·2	12·2	22·0	37 31·7	16 37 12·18	− 0·60	−55·03	−54·91	− 2·42
May 26	4876	ι Bootis	....	62 22	47·2	56·6	6·3	15·4	40 24·6	14 40 6·02	− 0·63	−55·06	−55·14	− 2·23
	4969	ψ Bootis	....	62 32	21·7	30·9	40·5	49·9	59 59·0	14 59 40·40	− 0·64	−55·21	−55·14	− 2·23
	5034	β Libræ	....	98 54	29·9	38·0	46·5	55·0	11 3·2	15 10 46·52	− 0·84	−55·01	−55·14	− 2·75
	5143	α Coronæ Borealis	....	62 50	40·5	49·5	59·2	8·4	30 17·7	15 29 59·06	− 0·64	−55·14	−55·14	− 2·36
	5196	α Serpentis	....	83 9	22·0	30·2	38·9	47·0	38 55·1	15 38 38·64	− 0·75	−55·19	−55·14	− 2·56
May 28	4648	(a) η Bootis	....	70 50	59·0	7·8	16·6	25·2	49 34·0	13 49 16·52	− 0·70	−55·42	−55·43	− 2·12
	4808	ρ Bootis	....	59 3	42·1	52·0	1·9	11·2	27 20·8	14 27 1·60	− 0·63	−55·51	−55·43	− 2·16
	4876	ι Bootis	....	62 22	47·5	57·0	6·4	15·7	40 25·0	14 40 6·32	− 0·64	−55·36	−55·43	− 2·22
	4969	ψ Bootis	....	62 32	22·0	31·2	40·9	50·0	59 59·2	14 59 40·66	− 0·65	−55·46	−55·43	− 2·25
	5143	α Coronæ Borealis	....	62 50	41·0	50·0	59·6	8·7	30 18·0	15 29 59·46	− 0·65	−55·53	−55·43	− 2·35
	5196	α Serpentis	....	83 9	22·2	30·2	39·0	47·2	38 55·4	15 38 38·80	− 0·76	−55·32	−55·43	− 2·56
May 29	5034	β Libræ	....	98 54	30·1	38·5	47·2	55·5	11 3·9	15 10 47·01	− 0·85	−55·51	−55·62	− 2·76
	5143	α Coronæ Borealis	....	62 50	41·1	50·2	59·6	9·0	30 18·1	15 29 59·60	− 0·65	−55·66	−55·63	− 2·37
	5196	α Serpentis	....	83 9	22·5	30·6	39·1	47·3	38 55·8	15 38 39·06	− 0·76	−55·58	−55·64	− 2·58
	5414	δ Ophiuchi	....	93 21	2·0	10·2	18·8	27·0	8 35·2	16 8 18·64	− 0·81	−55·59	−55·66	− 2·75
	5604	ζ Herculis	....	58 9	53·6	3·1	13·2	23·0	37 32·5	16 37 13·08	− 0·62	−55·88	−55·68	− 2·45
May 30	5143	α Coronæ Borealis	....	62 50	41·2	50·5	59·9	9·2	30 18·4	15 29 59·84	− 0·65	−55·90	−55·86	− 2·37
	5196	α Serpentis	....	83 9	22·7	30·9	39·4	47·7	38 56·0	15 38 39·34	− 0·76	−55·86	−55·86	− 2·55
	5414	δ Ophiuchi	....	93 21	2·2	10·5	18·9	27·1	8 35·4	16 8 18·82	− 0·81	−55·76	−55·86	− 2·76
	5604	ζ Herculis	....	58 9	53·6	3·1	13·3	23·0	37 32·8	16 37 13·16	− 0·62	−55·95	−55·86	− 2·46
	5708	κ Ophiuchi	....	80 25	2·0	10·2	19·0	27·1	52 35·5	16 52 18·76	− 0·74	−55·85	−55·86	− 2·61
	5821	α Herculis	....	75 27	14·4	22·9	31·5	40·0	9 48·4	17 9 31·44	− 0·71	−55·65	−55·86	− 2·57
June 8	360	α Ursæ Minoris S. P.	....	1 24	58·0	31·0	4·0	50·5	[illegible] 26·0	13 11 9·90	− 8·28	....	−56·25	− 7·53
	4480	α Virginis	....	100 28	50·4	59·0	7·8	16·0	19 24·4	13 19 7·52	− 0·87	−56·18	−56·25	− 2·31
	4532	ζ Virginis	....	89 55	34·7	42·8	51·4	59·6	29 7·8	13 28 51·26	− 0·81	−56·24	−56·25	− 2·20
	4876	ι Bootis	....	62 22	48·5	57·9	7·3	16·5	40 25·9	14 40 7·22	− 0·67	−56·28	−56·26	− 3·17
	5143	α Coronæ Borealis	....	62 50	41·6	51·9	0·3	9·5	30 18·9	15 30 0·24	− 0·68	−56·28	−56·26	− 2·33
	5196	α Serpentis	....	83 9	23·2	31·3	39·8	48·0	38 56·4	15 38 39·74	− 0·78	−56·21	−56·26	− 2·41

(a) Definition bad. Unsteady.

Date.	No. in British Association Catalogue.	OBJECT OBSERVED.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1866.
1866.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
June 8	5414	δ Ophiuchi	....	93 21	2·9	11·0	19·5	27·8	8 36·0	16 8 19·44	− 0·82	−56·31	−56·27	− 2·82
	5604	ζ Herculis	....	58 9	51·1	3·9	13·8	23·4	37 33·0	16 37 13·64	− 0·65	−56·35	−56·27	− 2·51
	5821	α Herculis	....	75 27	14·7	23·4	32·2	40·4	9 49·0	17 9 31·94	− 0·73	−56·24	−56·28	− 2·66
June 10	4969	ψ Bootis	....	62 32	22·8	32·0	41·5	50·8	0 0·0	14 59 41·42	− 0·68	−56·23	−56·14	− 2·24
	5034	β Libræ	....	98 54	30·9	39·1	47·8	56·9	11 4·3	15 10 47·62	− 0·87	−56·05	−56·14	− 2·78
	5143	α Coronæ Borealis	....	62 50	41·6	50·8	0·3	9·4	30 18·6	15 30 0·14	− 0·68	−56·18	−56·14	− 2·36
	5196	α Serpentis	....	83 9	23·0	31·2	39·8	48·0	38 56·3	15 38 39·66	− 0·79	−56·12	−56·14	− 2·60
June 15	4876	ι Bootis	....	62 22	48·5	57·6	7·2	16·4	40 25·9	14 40 7·12	− 0·69	−56·21	−56·22	− 2·12
	5821	α Herculis	....	75 27	14·9	23·3	32·0	40·5	9 49·0	17 9 31·94	− 0·76	−56·16	−56·23	− 2·71
	5941	α Ophiuchi	....	77 20	25·6	34·0	42·8	51·1	29 59·4	17 29 42·58	− 0·77	−56·17	−56·23	− 2·75
	6021	μ Herculis	....	62 12	54·0	3·1	12·9	22·0	42 31·4	17 42 12·68	− 0·69	−56·39	−56·25	− 2·68
June 18	5821	α Herculis	....	75 27	15·5	24·0	32·9	41·2	9 49·8	17 9 32·68	− 0·77	−56·87	−56·94	− 2·73
	5941	α Ophiuchi	....	77 20	26·3	34·8	43·5	52·0	30 0·4	17 29 43·40	− 0·78	−56·96	−56·96	− 2·77
	6021	μ Herculis	....	62 12	54·7	3·9	13·5	22·6	42 32·0	17 42 13·34	− 0·71	−57·01	−56·97	− 2·70
	6129	β Lyræ	....	56 47	48·8	58·5	8·5	18·2	46 28·2	18 46 8·44	− 0·69	−56·99	−56·99	− 2·79
June 19	5604	ζ Herculis	....	58 9	55·0	4·5	14·4	24·2	37 34·0	16 37 14·42	− 0·71	−57·05	−57·00	− 2·53
	5708	κ Ophiuchi	....	80 25	3·4	11·4	20·2	28·5	52 36·7	16 52 20·04	− 0·80	−56·92	−57·00	− 2·76
	5821	α Herculis	....	75 27	15·8	24·1	33·0	41·4	9 49·7	17 9 32·80	− 0·78	−56·98	−57·00	− 2·73
	5941	α Ophiuchi	....	77 20	26·7	34·8	43·4	51·8	30 0·1	17 29 43·36	− 0·79	−56·90	−57·00	− 2·78
	6021	μ Herculis	....	62 12	54·9	4·0	13·5	22·9	42 32·1	17 42 13·48	− 0·72	−57·13	−57·00	− 2·71
	6281	δ Ursæ Minoris	....	3 24	1·0	21·0	45·0	4·5	21 23·0	18 16 42·90	+ 2·05	....	−57·00	−13·71
June 23	5604	ζ Herculis	....	58 9	54·5	4·2	14·3	24·0	37 33·7	16 37 14·14	− 0·68	−56·81	−56·70	− 2·52
	5708	κ Ophiuchi	....	80 25	3·0	11·2	19·8	28·2	52 36·5	16 52 19·74	− 0·77	−56·65	−56·68	− 2·76
	5821	α Herculis	....	75 27	15·4	23·9	32·8	41·0	9 49·5	17 9 32·52	− 0·75	−56·71	−56·68	− 2·75
	5941	α Ophiuchi	....	77 20	26·1	34·1	43·1	51·4	30 0·0	17 29 43·00	− 0·75	−56·55	−56·66	− 2·81
June 26	4648	η Bootis	....	70 56	59·3	8·0	17·0	25·5	49 34·2	13 49 16·80	− 0·72	−55·93	−55·96	− 1·87
	4729	α Bootis	....	70 8	14·0	22·7	31·6	40·4	10 49·1	14 10 31·56	− 0·71	−55·89	−55·96	− 1·94
	5941	α Ophiuchi	....	77 20	25·5	33·8	42·4	51·0	29 59·3	17 29 42·40	− 0·73	−55·96	−55·96	− 2·82
	6021	μ Herculis	....	62 12	53·8	2·9	12·3	21·8	42 31·0	17 42 12·36	− 0·68	−56·02	−55·96	− 2·74
	6281	δ Ursæ Minoris	....	3 24	2·0	20·5	44·0	2·5	21 22·0	18 16 42·20	+ 1·36	....	−55·96	−13·37
	6355	α Lyræ	....	51 20	2·3	12·9	23·8	34·2	33 44·6	18 33 23·56	− 0·64	−55·92	−55·96	− 2·90
	6528	ζ Aquilæ	....	76 19	57·7	6·0	14·9	23·1	0 31·7	19 0 14·68	− 0·73	−56·03	−55·96	− 2·89
July 2	6021	(a) μ Herculis	....	62 12	54·0	3·2	12·9	22·0	42 31·2	17 42 12·66	− 0·72	−56·27	−56·29	− 2·75
	6281	δ Ursæ Minoris	....	3 24	1·5	20·5	43·5	1·0	21 20·5	18 16 41·40	+ 1·81	....	−56·29	−12·81
	6355	α Lyræ	....	51 20	2·9	13·4	24·3	34·8	33 45·1	18 33 24·10	− 0·68	−56·38	−56·29	− 2·94
	6429	β Lyræ	....	56 47	48·2	57·9	8·0	17·7	46 27·6	18 46 7·88	− 0·70	−56·28	−56·29	− 2·93
	6528	ζ Aquilæ	....	76 19	58·0	16·3	15·2	23·5	0 32·0	19 0 15·00	− 0·78	−56·23	−56·29	− 2·96
July 3	6355	(b) α Lyræ	....	51 20	3·0	13·4	24·3	34·9	33 45·2	18 33 24·16	− 0·66	−56·46	−56·54	− 2·94
	6429	β Lyræ	....	56 47	48·6	58·2	8·3	18·1	46 28·0	18 46 8·24	− 0·69	−56·64	−56·54	− 2·94
	6528	ζ Aquilæ	....	76 19	58·2	6·5	15·5	24·0	0 32·2	19 0 15·28	− 0·76	−56·52	−56·55	− 2·97
	6595	ω Aquilæ	....	78 38	15·0	23·4	32·0	40·3	12 48·8	19 12 31·90	− 0·78	−56·57	−56·55	− 2·98
	6646	δ Aquilæ	....	87 8	28·2	36·5	45·0	53·2	20 1·3	19 19 44·84	− 0·81	−56·54	−56·56	− 3·04

(a) Observing clock partly cleaned by Mr Ritchie. (b) Definition very bad.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1866.
1866.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
July 11	6355	α Lyræ	....	51 20	3·4	13·8	24·4	35·0	33 45·5	18 33 24·42	− 0·64	− 56·72	− 56·71	− 2·96
	6429	β Lyræ	....	56 47	48·5	58·2	8·4	18·2	46 28·0	18 46 8·26	− 0·66	− 56·65	− 56·70	− 2·95
	6528	ζ Aquilæ	....	76 19	58·6	6·9	15·7	24·1	0 32·5	19 0 15·56	− 0·71	− 56·79	− 56·70	− 3·03
	6595	ω Aquilæ	....	78 38	15·1	23·3	32·2	40·6	12 49·0	19 12 32·04	− 0·73	− 56·68	− 56·69	− 3·46
	6646	δ Aquilæ	....	87 8	28·4	36·8	45·1	53·3	20 1·5	19 19 45·02	− 0·76	− 56·68	− 56·69	− 3·13
July 12	6355	α Lyræ	....	51 20	2·8	13·5	24·3	34·8	33 45·3	18 33 24·14	− 0·[illegible]	− 56·44	− 56·55	− 2·96
	6528	(a) ζ Aquilæ	....	76 19	58·3	6·8	15·5	24·0	0 32·6	19 0 15·44	− 0·71	− 56·66	− 56·55	− 3·04
	6646	δ Aquilæ	....	87 8	28·4	36·6	45·0	53·2	20 1·4	19 19 44·92	− 0·74	− 56·60	− 56·55	− 3·11
	6772	γ Aquilæ	....	79 42	37·0	45·2	53·8	2·0	41 10·3	19 40 53·66	− 0·73	− 56·50	− 56·55	− 3·09
July 13	5143	α Coronæ Borealis	....	62 50	41·4	50·5	0·1	9·3	30 18·5	15 29 59·96	− 0·67	− 56·26	− 56·35	− 2·11
	5193	α Serpentis	....	83 9	23·0	31·3	39·7	48·0	38 56·2	15 38 39·64	− 0·72	− 56·31	− 56·35	− 2·47
	5941	α Ophiuchi	....	77 20	25·8	34·1	43·0	51·2	29 59·5	17 29 42·72	− 0·69	− 56·31	− 56·35	− 2·43
	6281	δ Ursæ Minoris	....	3 24	1·0	20·0	42·5	2·0	21 21·0	18 16 41·30	+ 0·46	....	− 56·35	− 11·82
	6355	α Lyræ	....	51 20	2·8	13·2	24·1	34·6	33 45·1	18 33 23·96	− 0·63	− 56·28	− 56·35	− 2·95
	6429	β Lyræ	....	56 47	48·1	58·0	8·2	18·0	46 27·8	18 46 8·02	− 0·65	− 56·42	− 56·35	− 2·98
	6528	ζ Aquilæ	....	76 19	58·2	6·5	15·3	23·8	0 32·1	19 0 15·18	− 0·70	− 56·41	− 56·35	− 3·04
	6595	ω Aquilæ	....	78 39	15·0	23·3	32·0	40·3	12 48·5	19 12 31·82	− 0·71	− 56·48	− 56·35	− 3·06
	6646	(b) δ Aquilæ	....	87 8	28·0	36·2	44·9	53·1	20 1·2	19 19 44·68	− 0·73	− 56·36	− 56·35	− 3·14
July 19	3995	β Leonis	....	74 42	54·0	2·5	11·1	19·4	43 28·2	11 43 11·04	− 0·66	− 56·00	− 55·98	− 1·01
	360	α Ursæ Minoris S. P.	....	1 24	6·0	2·5	24·0	0·5	22 39·5	13 11 26·50	+ 10·91	....	− 55·98	− 43·71
	4480	α Virginis	....	100 28	50·0	58·3	6·6	14·8	19 23·5	13 19 6·64	− 0·66	− 55·93	− 55·97	− 1·49
	4532	ζ Virginis	....	89 55	33·9	42·1	50·5	58·7	29 7·0	13 28 50·44	− 0·65	− 56·00	− 55·97	− 1·75
	6429	β Lyræ	....	56 47	47·8	57·6	7·5	16·9	46 27·2	18 46 7·10	− 0·70	− 55·75	− 55·82	− 2·96
	6528	ζ Aquilæ	....	76 19	57·6	6·2	14·4	22·8	0 31·8	19 0 14·56	− 0·65	− 55·81	− 55·82	− 3·07
	6595	ω Aquilæ	....	78 38	14·4	22·9	31·1	39·2	12 48·0	19 12 31·12	− 0·65	− 55·80	− 55·82	− 3·10
	6646	δ Aquilæ	....	87 8	27·7	36·0	44·3	52·2	20 0·7	19 19 44·18	− 0·65	− 55·90	− 55·82	− 3·18
	6772	γ Aquilæ	....	79 42	36·3	44·5	52·9	1·0	41 9·8	19 40 52·90	− 0·65	− 55·77	− 55·82	− 3·14
	6802	α Aquilæ	....	81 28	57·5	6·0	14·6	22·3	45 31·3	19 45 14·34	− 0·65	− 55·84	− 55·82	− 3·16
	6833	β Aquilæ	....	83 54	27·0	35·2	43·5	51·7	50 0·1	19 49 43·50	− 0·65	− 55·65	− 55·82	− 3·17
July 20	3995	β Leonis	....	74 42	54·0	2·4	11·0	19·3	43 28·2	11 43 10·98	− 0·64	− 55·97	− 55·94	− 1·00
	360	α Ursæ Minoris S. P.	....	1 24	7·0	2·0	24·0	0·0	22 39·5	13 11 26·50	+ 11·62	....	− 55·94	− 44·55
	4480	α Virginis	....	100 28	49·8	58·2	6·6	14·6	19 23·7	13 19 6·58	− 0·63	− 55·91	− 55·94	− 1·55
	6281	(c) δ Ursæ Minoris	....	3 24	10·0	26·0	47·0	0·0	21 27·5	18 16 46·10	− 5·23	....	− 55·93	− 9·47
	6355	α Lyræ	....	51 20	2·5	13·0	23·5	33·9	33 45·0	18 33 23·58	− 0·72	− 55·82	− 55·93	− 2·94
	6429	β Lyræ	....	56 47	47·9	57·8	7·6	17·0	46 27·5	18 46 7·56	− 0·68	− 55·93	− 55·93	− 2·95
	6528	ζ Aquilæ	....	76 19	57·8	6·1	14·6	23·0	0 31·8	19 0 14·66	− 0·63	− 55·93	− 55·93	− 3·07
	6595	ω Aquilæ	....	78 38	14·7	23·0	31·3	39·4	12 48·3	19 12 31·34	− 0·63	− 56·04	− 55·93	− 3·10
	6646	δ Aquilæ	....	87 8	27·8	36·0	44·4	52·2	20 1·0	19 19 44·28	− 0·62	− 56·02	− 55·93	− 3·19
	6772	γ Aquilæ	....	79 42	36·2	44·6	53·0	1·2	41 9·9	19 40 52·98	− 0·63	− 55·86	− 55·93	− 3·15
	6802	α Aquilæ	....	81 28	57·9	6·2	14·5	22·5	45 31·2	19 45 14·46	− 0·63	− 55·97	− 55·93	− 3·17
	6833	(d) β Aquilæ	....	83 54	27·0	35·2	43·7	51·5	50 0·4	19 49 43·56	− 0·63	− 55·92	− 55·93	− 3·18
July 21	6281	δ Ursæ Minoris	....	3 24	6·0	26·0	46·5	59·0	21 26·5	18 16 44·80	− 5·14	....	− 55·86	− 9·65
	6355	α Lyræ	....	51 20	2·4	13·1	23·7	33·8	33 45·0	18 33 23·60	− 0·72	− 55·85	− 55·86	− 2·40
	6429	β Lyræ	....	56 47	47·9	57·7	7·5	17·0	46 27·4	18 46 7·50	− 0·69	− 55·86	− 55·86	− 2·96
	6528	ζ Aquilæ	....	76 19	57·8	6·1	14·5	22·9	0 31·8	19 0 14·62	− 0·61	− 55·88	− 55·86	− 3·07

(a) Faint.
(c) Bad definition.
(b) July 14.—Mr Adie removed Transit Micrometer, and put in a new set of Wires. Returned July 19th.
(d) Definition very bad.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	interpolated.	Correction to Mean R.A., Jan. 1, 1866.
1866.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Aug. 4	6528	(a) ζ Aquilæ	....	76 19	57·5	5·9	14·4	22·6	0 31·6	19 0 14·40	− 0·72	−55·60	−55·60	− 3·05
	6595	ω Aquilæ	....	78 38	14·2	22·8	31·0	39·3	12 48·0	19 12 31·06	− 0·72	−55·67	−55·61	− 3·10
	6646	δ Aquilæ	....	87 8	27·9	35·9	44·0	52·0	20 0·7	19 19 44·10	− 0·72	−55·73	−55·62	− 3·20
	6772	γ Aquilæ	....	79 42	36·0	44·5	53·0	1·0	41 9·8	19 40 52·86	− 0·72	−55·61	−55·62	− 3·18
	6802	α Aquilæ	....	81 28	57·5	5·9	14·3	22·3	45 31·1	19 45 14·22	− 0·72	−55·59	−55·61	− 3·22
	6833	β Aquilæ	....	83 54	26·8	35·0	43·4	51·2	50 0·2	19 49 43·32	− 0·72	−55·53	−55·60	− 3·[illegible]
Aug. 6	6281	δ Ursæ Minoris	....	3 24	0·0	21·5	41·0	55·5	21 21·0	18 16 39·80	− 3·94	....	−55·64	− 5·78
	6355	α Lyræ	....	51 20	2·2	12·9	23·2	33·5	33 44·6	18 33 23·28	− 0·77	−55·61	−55·65	− 2·80
	6429	β Lyræ	....	56 47	47·5	57·4	7·2	16·9	46 27·2	18 46 7·21	− 0·75	−55·63	−55·66	− 2·89
	6528	ζ Aquilæ	....	76 19	57·8	6·0	14·6	22·8	0 31·6	19 0 14·56	− 0·74	−55·74	−55·66	− 3·05
	6595	ω Aquilæ	....	78 38	14·2	22·6	31·0	39·3	12 48·0	19 12 31·02	− 0·74	−55·61	−55·65	− 3·10
	6646	δ Aquilæ	....	87 8	27·5	35·8	44·1	52·0	20 0·7	19 19 44·02	− 0·74	−55·63	−55·64	− 3·20
Aug. 29	7561	ι Pegasi	....	80 43	18·0	26·3	34·9	42·9	38 51·6	21 38 34·74	− 0·70	−54·34	−54·29	− 3·41
	7627	16 Pegasi	....	64 41	38·3	47·5	56·5	5·2	48 15·0	21 47 56·50	− 0·70	−54·27	−54·29	− 3·54
	7688	α Aquarii	....	90 57	35·8	44·1	52·5	0·3	0 9·0	21 59 52·34	− 0·71	−54·22	−54·29	− 3·43
	7868	η Aquarii	....	90 47	10·1	18·4	26·5	34·5	29 43·3	22 29 26·56	− 0·71	−54·28	−54·29	− 3·42
	7908	ζ Pegasi	....	79 50	28·6	36·9	45·3	53·3	36 2·1	22 35 45·24	− 0·71	−54·32	−54·29	− 3·48
	8034	α Pegasi	....	75 29	46·9	55·2	3·9	12·0	59 21·0	22 59 3·80	− 0·70	−54·33	−54·30	− 3·54
Aug. 30	7256	(b) 32 Vulpeculæ	....	62 26	30·9	40·1	49·4	58·4	50 8·0	20 49 49·36	− 0·71	−54·35	−54·34	− 3·32
	7368	ζ Cygni	....	60 18	53·5	3·0	12·5	21·8	8 31·9	21 8 12·54	− 0·71	−54·38	−54·34	− 3·42
	7627	16 Pegasi	....	64 41	38·3	47·4	56·5	5·3	48 15·0	21 47 56·50	− 0·70	−54·27	−54·34	− 3·[illegible]
	7688	α Aquarii	....	90 57	36·0	44·1	52·4	0·3	0 9·0	[illegible] 59 52·36	− 0·71	−54·24	−54·34	− 3·43
	7908	ζ Pegasi	....	79 50	28·8	37·0	45·4	53·4	36 2·2	22 35 45·36	− 0·71	−54·44	−54·34	− 3·48
	8034	α Pegasi	....	75 29	46·8	55·4	3·9	12·0	59 21·1	22 59 3·84	− 0·70	−54·36	−54·34	− 3·55
Aug. 31	6772	γ Aquilæ	....	79 42	34·7	43·0	51·2	59·2	41 8·2	19 40 51·20	− 0·70	−54·19	−54·32	− 3·03
	6802	α Aquilæ	....	81 28	56·1	4·4	12·8	20·9	45 29·7	19 45 12·78	− 0·70	−54·31	−54·32	− 3·08
	6833	β Aquilæ	....	83 54	25·2	33·7	42·0	50·0	49 58·8	19 49 41·94	− 0·70	−54·31	−54·33	− 3·10
	7368	ζ Cygni	....	60 18	53·5	3·0	12·5	21·8	8 31·5	21 8 12·46	− 0·70	−54·31	−54·35	− 3·42
	7908	ζ Pegasi	....	79 50	28·8	37·0	45·4	53·5	36 2·2	22 35 45·38	− 0·70	−54·46	−54·36	− 3·49
	8034	α Pegasi	....	75 29	46·8	55·5	4·0	12·1	59 21·1	22 59 3·90	− 0·69	−54·43	−54·36	− 3·55
Sept. 3	7256	32 Vulpeculæ	....	62 26	30·8	40·0	49·1	58·5	50 8·1	20 49 49·38	− 0·70	−54·40	−54·38	− 3·28
	7368	ζ Cygni	....	60 18	53·6	3·0	12·5	21·8	8 31·3	21 8 12·56	− 0·70	−54·43	−54·38	− 3·40
	7561	ι Pegasi	....	80 43	18·0	26·2	34·9	42·9	38 51·5	21 38 34·70	− 0·70	−54·31	−54·39	− 3·40
	7627	16 Pegasi	....	64 41	38·4	47·5	56·7	5·3	48 15·0	21 47 56·58	− 0·69	−54·37	−54·39	− 3·53
	7688	α Aquarii	....	90 57	36·0	44·3	52·6	0·5	0 9·1	21 59 52·54	− 0·70	−54·43	−54·39	− 3·43
	7908	ζ Pegasi	....	79 50	28·8	37·0	45·3	53·3	36 2·2	22 35 45·32	− 0·70	−54·39	−54·40	− 3·50
	8034	α Pegasi	....	75 29	46·9	55·2	4·0	12·1	59 21·2	22 59 3·86	− 0·69	−54·39	−54·40	− 3·57
Sept. 10	7561	ι Pegasi	....	80 43	18·5	26·8	35·2	43·2	38 52·0	21 38 35·14	− 0·68	−54·79	−54·85	− 3·38
	7627	16 Pegasi	....	64 41	38·9	48·0	57·0	5·6	48 15·4	21 47 57·02	− 0·68	−54·85	−54·85	− 3·50
	7688	α Aquarii	....	90 57	36·5	44·7	53·0	1·0	[illegible] 9·6	21 59 52·96	− 0·70	−54·86	−54·85	− 3·42
	7868	η Aquarii	....	90 47	10·9	18·9	27·2	35·0	29 43·8	22 29 27·16	− 0·70	−54·85	−54·85	− 3·46
	7908	ζ Pegasi	....	79 50	29·0	37·4	45·9	54·0	36 2·8	22 35 45·82	− 0·69	−54·88	−54·85	− 3·52
Sept. 17	7627	16 Pegasi	....	64 41	39·0	48·1	57·4	6·0	48 15·8	21 47 57·26	− 0·66	−55·15	−55·14	− 3·46
	7688	α Aquarii	....	90 57	36·7	45·0	53·1	1·2	0 9·9	21 59 53·18	− 0·66	−55·13	−55·14	− 3·39

(a) Another of these perplexing cases of apparent change of clock-rate, but caused really by temperature swerving the piers of the Transit Instrument.
(b) Bad definition.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1866.
				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
1866. Sept. 17	7868	η Aquarii	....	90 47	11·0	19·2	27·4	35·3	29 44·0	22 29 27·38	− 0·68	−55·10	−55·14	− 3·45
	7908	ζ Pegasi	....	79 50	29·4	37·8	46·1	54·1	36 3·0	22 35 46·08	− 0·68	−55·15	−55·14	− 3·52
	8034	α Pegasi	....	75 29	47·8	56·0	4·7	13·0	59 22·0	22 59 4·70	− 0·67	−55·18	−55·15	− 3·62
Sept. 18	7688	α Aquarii	....	90 57	36·7	45·0	53·1	1·0	0 9·8	21 59 53·12	− 0·68	−55·07	−55·08	− 3·39
	7868	η Aquarii	....	90 47	10·9	19·1	27·5	35·4	29 44·0	22 29 27·38	− 0·68	−55·10	−55·08	− 3·45
	7908	ζ Pegasi	....	79 50	29·2	37·4	46·0	54·1	36 3·0	22 35 45·94	− 0·68	−55·01	−55·08	− 3·52
	8034	α Pegasi	....	75 29	47·7	56·0	4·8	12·9	59 21·9	22 59 4·66	− 0·67	−55·14	−55·08	− 3·42
	8105	γ Piscium	....	87 25	55·9	4·2	12·4	20·4	11 29·2	23 11 12·42	− 0·68	−55·08	−55·08	− 3·55
Sept. 20	7688	α Aquarii	....	90 57	36·8	45·0	53·2	1·1	0 10·0	21 59 53·[illegible]	− 0·68	−55·18	−55·18	− 3·38
	7868	η Aquarii	....	90 47	10·9	19·2	27·4	35·4	29 44·1	22 29 27·40	− 0·68	−55·13	−55·18	− 3·44
	7908	ζ Pegasi	....	79 50	29·4	37·8	46·1	54·2	36 3·0	22 35 46·10	− 0·67	−55·19	−55·18	− 3·51
	8034	α Pegasi	....	75 29	47·8	56·1	4·8	13·0	59 21·9	22 59 4·72	− 0·66	−55·21	−55·19	− 3·62
	8105	γ Piscium	....	87 25	56·0	4·2	12·5	20·4	11 29·1	23 11 12·44	− 0·67	−55·11	−55·19	− 3·55
	8169	κ Piscium	....	89 27	46·8	55·0	3·2	11·1	21 19·9	23 21 3·20	− 0·67	−55·26	−55·19	− 3·51
Sept. 21	7868	η Aquarii	....	90 47	11·2	19·4	27·7	35·5	29 44·3	22 29 27·62	− 0·67	−55·36	−55·32	− 3·44
	7908	ζ Pegasi	....	79 50	29·5	38·0	46·2	54·2	36 3·0	22 35 46·18	− 0·66	−55·28	−55·32	− 3·51
	8034	α Pegasi	....	75 29	47·9	56·3	4·9	13·0	59 22·1	22 59 4·84	− 0·65	−55·35	−55·32	− 3·61
	8105	γ Piscium	....	87 25	56·0	4·4	12·8	20·5	11 29·2	23 11 12·58	− 0·65	−55·27	−55·32	− 3·55
	8169	κ Piscium	....	89 27	46·9	55·0	3·2	11·2	21 20·0	23 21 3·26	− 0·66	−55·33	−55·33	− 3·51
Sept. 22	7627	16 Pegasi	....	64 41	39·4	48·4	57·5	6·2	48 16·0	21 47 57·50	− 0·65	−55·45	−55·47	− 3·41
	7688	α Aquarii	....	90 57	37·0	45·3	53·4	1·4	0 10·0	21 59 53·42	− 0·67	−55·41	−55·48	− 3·36
	7868	η Aquarii	....	90 47	11·3	19·5	27·7	35·9	29 44·4	22 29 27·76	− 0·67	−55·51	−55·49	− 3·43
	7908	ζ Pegasi	....	79 50	29·8	38·1	46·5	54·8	36 3·3	22 35 46·50	− 0·66	−55·61	−55·50	− 3·50
	8034	α Pegasi	....	75 29	48·0	56·5	5·0	13·1	59 22·1	22 59 4·94	− 0·65	−55·45	−55·51	− 3·61
Sept. 24	8034	α Pegasi	....	75 29	48·2	56·8	5·2	13·5	59 22·5	[illegible] 59 5·24	− 0·64	−55·76	−55·78	− 3·41
	8105	γ Piscium	....	87 25	56·5	4·9	13·1	21·0	11 29·8	23 11 13·06	− 0·65	−55·78	−55·79	− 3·55
	8233	ι Piscium	....	85 4	47·0	55·2	3·5	11·4	34 20·2	23 34 3·46	− 0·64	−55·75	−55·80	− 3·55
	8331	ω Piscium	....	83 51	9·3	17·7	25·9	34·0	53 42·8	23 53 25·94	− 0·64	−55·85	−55·80	− 3·68
	26	γ Pegasi	....	75 32	3·5	12·0	20·5	28·9	7 37·8	0 7 20·54	− 0·65	−55·88	−55·82	− 3·74
Sept. 25	7908	ζ Pegasi	....	79 50	30·0	38·4	46·8	55·0	36 3·8	22 35 46·60	− 0·63	−55·95	−55·88	− 3·46
	8034	α Pegasi	....	75 29	48·4	57·0	5·2	13·5	59 22·2	22 59 5·26	− 0·62	−55·80	−55·88	− 3·41
	8105	γ Piscium	....	87 25	56·8	5·0	13·2	21·[illegible]	11 29·9	23 11 13·18	− 0·64	−55·88	−55·88	− 3·55
	8169	κ Piscium	....	89 27	47·3	55·6	4·0	11·8	21 20·5	23 21 3·84	− 0·64	−55·92	−55·88	− 3·52
	8233	ι Piscium	....	85 4	47·0	55·2	3·7	11·7	34 20·3	23 34 3·58	− 0·63	−55·88	−55·88	− 3·58
	8331	ω Piscium	....	83 51	9·5	17·5	26·[illegible]	34·0	53 42·9	23 53 25·98	− 0·63	−55·89	−55·88	− 3·41
	4	α Andromedæ	....	61 37	9·8	19·1	28·5	37·6	2 47·3	0 2 28·40	− 0·64	−55·81	−55·88	− 4·45
	26	γ Pegasi	....	75 32	3·4	12·0	20·6	28·9	7 37·6	0 7 20·50	− 0·63	−55·86	−55·88	− 3·74
Sept. 27	7908	ζ Pegasi	....	79 50	30·0	38·2	46·7	54·8	36 3·4	22 35 46·62	− 0·63	−55·79	−55·75	− 3·45
	8034	α Pegasi	....	75 29	48·1	56·9	5·2	13·4	59 22·2	22 59 5·16	− 0·61	−55·72	−55·75	− 3·48
	8233	ι Piscium	....	85 4	47·0	55·3	3·5	11·5	34 20·2	23 34 3·50	− 0·63	−55·79	−55·75	− 3·48
	4	α Andromedæ	....	61 37	9·6	19·0	28·3	37·5	2 47·3	0 2 28·34	− 0·63	−55·70	−55·75	− 4·03
	26	γ Pegasi	....	75 32	3·5	12·0	20·4	28·7	7 37·5	0 7 20·42	− 0·62	−55·77	−55·75	− 3·76

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1866.
1866.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Oct. 7	8034	α Pegasi	....	75 29	46·1	54·6	3·2	11·3	59 20·3	22 59 3·10	− 0·61	− 53·71	− 53·77	− 3·55
	8105	γ Piscium	....	87 25	54·5	2·7	11·0	19·0	11 27·9	23 11 11·02	− 0·62	− 53·78	− 53·77	− 3·51
	8169	κ Piscium	....	89 27	45·2	53·4	1·8	9·6	21 18·2	23 21 1·64	− 0·63	− 53·76	− 53·77	− 3·49
	8233	ι Piscium	....	85 4	44·9	53·3	1·5	9·6	34 18·2	23 34 1·50	− 0·61	− 53·83	− 53·77	− 3·57
Oct. 8	288	ε Piscium	....	82 48	40·6	48·9	57·3	5·0	57 14·0	0 56 57·16	− 0·61	− 53·37	− 53·42	− 3·73
	360	α Ursæ Minoris	....	1 24	14·0	52·5	32·0	53·0	23 50·0	1 12 28·30	− 7·48	....	− 53·42	− 89·55
	518	ν Piscium	....	85 10	8·7	17·0	25·4	33·3	35 42·0	1 35 25·28	− 0·61	− 53·43	− 53·42	− 3·69
	577	β Arietis	....	69 49	55·0	3·8	12·6	21·0	48 30·4	1 48 12·56	− 0·61	− 53·42	− 53·42	− 4·04
	648	α Arietis	....	67 9	17·8	26·6	35·4	44·6	0 53·9	2 0 35·66	− 0·60	− 53·46	− 53·42	− 4·13
Oct. 15	8169	(a) κ Piscium	....	89 27	44·0	52·2	0·5	8·4	21 17·0	23 21 0·42	− 0·62	− 52·59	− 52·58	− 3·45
	8233	ι Piscium	....	85 4	43·9	52·0	0·3	8·3	34 17·0	23 34 0·30	− 0·60	− 52·67	− 52·58	− 3·54
	4	α Andromedæ	....	61 37	6·5	15·9	25·0	34·2	2 44·0	0 2 25·12	− 0·59	− 52·52	− 52·57	− 4·05
	518	ν Piscium	....	85 10	8·0	16·2	24·5	32·4	35 41·2	1 35 24·46	− 0·60	− 52·57	− 52·56	− 3·74
	577	β Arietis	....	69 49	54·2	3·0	11·9	20·1	48 29·5	1 48 11·74	− 0·59	− 52·51	− 52·56	− 4·11
	648	α Arietis	....	67 9	17·0	25·9	34·9	43·4	[illegible] 52·9	2 0 34·82	− 0·59	− 52·55	− 52·55	− 4·21
Oct. 16	8233	ι Piscium	....	85 4	43·4	51·7	0·0	8·0	34 16·8	23 33 59·98	− 0·60	− 52·35	− 52·35	− 3·54
	26	γ Pegasi	....	75 32	0·0	8·5	17·0	25·1	7 34·1	0 7 16·94	− 0·59	− 52·32	− 52·35	− 3·76
	42	....	8·0	86 28	44·6	53·0	1·3	9·2	10 17·9	[illegible] 10 1·20	− 0·61	....	− 52·35	− 3·61
	57	....	7·0	89 2	34·9	43·2	51·4	59·2	12 7·9	[illegible] 11 51·32	− 0·62	....	− 52·35	− 3·58
	112	12 Ceti	....	94 40	52·0	0·3	8·6	16·6	24 25·2	[illegible] 24 8·54	− 0·63	− 52·38	− 52·35	− 3·54
	133	....	8·0	70 17	18·5	27·4	36·[illegible]	44·5	27 53·9	0 27 36·06	− 0·59	....	− 52·35	− 3·93
	164	ι Andromedæ	4·0	61 24	7·0	16·6	26·[illegible]	35·0	32 45·0	0 32 25·92	− 0·58	....	− 52·35	− 4·19
	577	β Arietis	....	69 49	54·1	2·9	11·6	20·0	48 29·4	1 48 11·60	− 0·59	− 52·10	− 52·35	− 4·12
	704	67 Ceti	....	97 1	57·9	6·0	14·5	22·6	11 31·5	2 11 14·50	− 0·63	− 52·31	− 52·35	− 3·54
Oct. 19	8233	ι Piscium	....	85 4	43·2	51·5	59·8	7·6	34 16·3	23 33 59·68	− 0·63	− 52·04	− 52·09	− 3·52
	4	α Andromedæ	....	61 37	6·0	15·3	24·9	33·9	2 43·8	0 2 24·78	− 0·60	− 52·19	− 52·09	− 4·03
	26	γ Pegasi	....	75 32	59·9	8·1	16·7	24·8	7 33·9	[illegible] 7 16·68	− 0·61	− 52·04	− 52·09	− 3·76
	288	ε Piscium	....	82 48	39·2	47·6	56·0	4·0	57 12·8	0 56 55·92	− 0·62	− 52·09	− 52·09	− 3·76
	360	α Ursæ Minoris	....	1 24	11·0	49·5	29·0	52·0	23 48·0	1 12 25·90	− 5·87	....	− 52·09	− 89·98
Oct. 24	453	η Piscium	....	75 19	57·9	6·3	14·9	23·0	25 32·0	1 25 14·82	− 0·61	− 51·25	− 51·28	− 3·99
	518	(b) ν Piscium	....	85 10	6·9	15·0	23·3	31·2	35 40·0	1 35 23·26	− [illegible]·62	− 51·32	− 51·28	− 3·79
	577	β Arietis	....	69 49	53·0	1·9	10·6	19·0	48 28·4	1 48 10·56	− 0·60	− 51·31	− 51·28	− 4·18
	648	α Arietis	....	67 9	15·7	24·6	33·5	42·2	0 51·8	2 0 33·56	− 0·59	− 51·22	− 51·28	− 4·28
Oct. 30	453	η Piscium	....	75 19	57·6	6·0	14·4	22·6	25 31·7	1 25 14·46	− 0·59	− 50·90	− 50·92	− 4·00
	518	ν Piscium	....	85 10	6·3	14·7	23·0	31·0	35 39·9	1 35 22·98	− 0·61	− 51·01	− 50·92	− 3·81
	577	β Arietis	....	69 49	52·7	1·6	10·1	18·8	48 27·9	1 48 10·22	− 0·58	− 50·94	− 50·92	− 4·21
	648	α Arietis	....	67 9	15·4	24·3	33·3	41·9	0 51·3	2 0 33·24	− 0·58	− 50·87	− 50·92	− 4·32
	837	γ Ceti	....	87 18	0·3	8·6	16·9	25·0	37 33·6	2 37 16·88	− 0·62	− 50·89	− 50·92	− 3·82
	949	α Ceti	....	86 25	55·5	3·6	12·0	19·9	56 28·8	2 56 11·96	− 0·61	− 50·91	− 50·92	− 3·85
Nov. 3	288	ε Piscium	....	82 48	38·0	46·3	54·7	2·8	57 11·5	0 56 54·66	− 0·60	− 50·85	− 50·84	− 3·76
	360	α Ursæ Minoris	....	1 [illegible]	4·0	45·0	24·[illegible]	50·0	23 43·0	1 12 21·20	− 4·48	....	− 50·84	− 87·87
	453	η Piscium	....	75 19	57·3	5·8	14·4	22·8	25 31·6	1 25 14·38	− 0·58	− 50·82	− 50·84	− 4·01
	518	ν Piscium	....	85 [illegible]	6·3	14·5	22·9	30·9	35 39·7	1 35 22·86	− 0·61	− 50·88	− 50·84	− 3·82
	577	β Arietis	....	69 49	52·5	1·4	10·0	18·6	48 28·0	1 48 10·10	− 0·57	− 50·82	− 50·84	− 4·22

(a) Cloudy. Faint throughout. (b) Faint.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1866.
1866.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Nov. 3	648	α Arietis	....	67 9	15·4	24·3	33·2	41·9	0 51·2	2 0 33·20	− 0·57	− 50·82	− 50·84	− 4·34
Nov. 5	453	η Piscium	....	75 19	57·5	5·9	14·4	22·8	25 31·6	1 25 14·44	− 0·57	− 50·89	− 50·87	− 4·01
	760	ξ² Ceti	....	82 12	41·0	49·3	57·8	5·8	22 14·6	2 21 57·70	− 0·68	− 50·84	− 50·87	− 3·93
	837	γ Ceti	....	87 18	0·4	8·8	17·0	25·0	37 33·5	2 37 16·94	− 0·59	− 50·93	− 50·87	− 3·47
	949	α Ceti	....	86 25	55·5	3·7	12·0	20·0	56 28·5	2 56 11·94	− 0·59	− 50·85	− 50·87	− 3·91
	986	δ Arietis	....	70 46	36·5	45·4	54·0	2·4	5 11·6	3 4 53·98	− 0·57	− 50·82	− 50·87	− 4·35
Nov. 8	6772	γ Aquilæ	....	79 42	30·0	38·2	46·6	54·8	41 3·6	19 40 46·64	− 0·56	− 50·85	− 50·86	− 1·59
	6802	α Aquilæ	....	81 28	51·4	59·8	8·1	16·1	45 25·0	19 45 8·05	− 0·56	− 50·86	− 50·86	− 1·97
	6833	β Aquilæ	....	83 51	20·6	29·0	37·2	45·2	49 54·0	19 49 37·20	− 0·57	− 50·79	− 50·86	− 2·01
	760	ξ² Ceti	....	82 12	41·0	49·3	57·7	5·8	22 14·5	2 21 57·66	− 0·56	− 50·91	− 50·88	− 4·00
	837	γ Ceti	....	87 18	0·4	8·6	16·9	24·9	37 33·6	2 37 16·88	− 0·58	− 50·87	− 50·89	− 3·89
	986	δ Arietis	....	70 46	36·7	45·4	54·2	2·5	5 11·8	3 4 54·12	− 0·55	− 50·95	− 50·90	− 4·38
	1166	η Tauri	....	66 17	9·6	18·4	27·5	36·2	40 45·9	3 40 27·52	− 0·54	− 51·06	− 50·92	− 4·53
Nov. 9	760	ξ² Ceti	....	82 12	41·0	49·3	57·6	5·8	22 14·4	2 21 57·62	− 0·56	− 50·86	− 50·81	− 4·01
	837	γ Ceti	....	87 18	0·4	8·5	17·0	24·9	37 33·4	2 37 16·81	− 0·58	− 50·82	− 50·81	− 3·93
	949	α Ceti	....	86 25	55·4	3·5	12·0	19·9	56 28·7	2 56 11·90	− 0·58	− 50·79	− 50·81	− 3·34
	986	δ Arietis	....	70 46	36·6	45·2	54·0	2·3	5 11·8	3 4 53·98	− 0·56	− 50·79	− 50·81	− 4·39
	1166	η Tauri	....	66 17	9·3	18·3	27·3	36·0	40 45·7	3 40 27·32	− 0·54	− 50·83	− 50·81	− 4·51
Nov. 13	453	η Piscium	....	75 19	57·5	6·1	14·6	22·8	25 31·8	1 25 14·56	− 0·54	− 51·05	− 50·98	− 4·00
	577	β Arietis	....	69 49	52·9	1·5	10·3	18·9	48 28·0	1 48 10·32	− 0·53	− 51·07	− 50·98	− 4·22
	704	67 Ceti	....	97 1	56·6	5·0	13·3	21·3	11 30·0	2 11 13·24	− 0·59	− 50·94	− 50·98	− 3·69
	837	γ Ceti	....	87 18	0·5	8·7	17·0	25·0	37 33·8	2 37 17·00	− 0·56	− 50·98	− 50·98	− 3·92
	949	α Ceti	....	86 25	55·5	3·8	12·0	20·0	56 26·9	2 56 12·04	− 0·55	− 50·93	− 50·98	− 3·95
	1166	η Tauri	....	66 17	9·3	18·6	27·5	36·2	40 45·6	3 40 27·44	− 0·53	− 50·[illegible]	− 50·98	− 4·51
Nov. 14	453	η Piscium	....	79 19	57·2	5·9	14·4	22·7	25 31·6	1 25 14·36	− 0·52	− 50·87	− 50·90	− 4·09
	577	β Arietis	....	69 49	52·6	1·4	10·2	18·9	48 28·0	1 48 10·22	− 0·51	− 50·99	− 50·90	− 4·23
	648	α Arietis	....	67 9	15·2	24·3	33·2	42·0	0 51·4	2 0 33·22	− 0·51	− 50·87	− 50·90	− 4·35
	694	....	7·5	26 11	51·8	10·4	29·6	47·4	10 7·0	2 9 29·24	− 0·56	....	− 50·90	− 7·44
	702	....	7·5	26 16	19·4	38·0	56·9	14·9	11 34·5	2 10 56·74	− 0·56	....	− 50·90	− 7·41
	725	....	8·0	33 12	59·8	15·0	30·0	44·5	15 0·6	2 14 29·96	− 0·53	....	− 50·90	− 6·35
	738	....	8·0	80 19	39·0	47·3	55·9	3·8	18 12·8	2 17 55·76	− 0·53	....	− 50·90	− 4·05
	764	....	7·0	81 1	5·0	13·4	21·6	29·6	23 38·4	2 23 21·60	− 0·53	....	− 50·90	− 4·44
	776	....	6·0	88 19	13·0	21·4	29·8	37·7	25 46·2	2 25 29·62	− 0·55	....	− 50·90	− 3·99
	837	γ Ceti	....	87 18	0·5	8·5	17·0	24·9	37 33·6	2 37 16·90	− 0·55	− 50·89	− 50·90	− 3·91
	881	σ Arietis	6·0	75 27	44·6	53·0	1·6	9·8	45 18·9	2 45 1·58	− 0·52	....	− 50·90	− 4·24
	891	(a)	....	84 4	13·4	21·3	30·0	38·0	46 46·8	2 46 29·90	− 0·54	....	− 50·90	− 4·03
	920	....	8·0	68 54	50·8	59·6	8·4	17·0	52 26·2	2 52 8·40	− 0·51	....	− 50·90	− 4·46
	949	α Ceti	....	86 25	55·5	3·8	12·0	20·0	56 28·8	2 56 12·02	− 0·54	− 50·92	− 50·90	− 3·95
	1055	....	8·0	68 25	25·8	34·6	43·5	52·0	18 1·4	3 17 43·46	− 0·50	....	− 50·90	− 4·51
	1087	f Tauri	5·0	77 31	7·5	16·0	24·4	32·6	24 41·4	3 24 24·38	− 0·52	....	− 50·90	− 4·53
	1101	....	8·0	68 45	55·5	5·0	14·6	23·9	28 34·0	3 28 14·60	− 0·50	....	− 50·90	− 4·53
	1126	11 Tauri	6·5	65 6	24·2	33·4	42·6	51·4	34 1·0	3 33 42·52	− 0·50	....	− 50·90	− 4·65
	1166	η Tauri	....	66 17	9·3	18·4	27·4	36·1	40 45·6	3 40 27·36	− 0·51	− 50·86	− 50·90	− 4·60
Nov. 16	837	γ Ceti	....	87 18	0·4	8·8	17·0	25·0	37 33·5	2 37 16·94	− 0·53	− 50·93	− 50·89	− 3·91
	949	α Ceti	....	86 25	55·5	3·7	12·0	20·0	56 28·7	2 56 11·98	− 0·52	− 50·89	− 50·89	− 3·95

(a) Double, each 10th mag.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1866.
1866.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Nov. 16	962	ι Persei	4·0	40 53	57·0	9·8	22·5	34·8	0 47·6	3 0 22·34	− 0·49	....	−50·89	− 6·03
	980	....	6·0	63 36	7·8	16·9	26·0	35·0	3 44·8	3 3 26·10	− 0·48	....	−50·89	− 4·69
	986	δ Arietis	....	70 46	36·5	45·4	54·2	2·5	5 11·6	3 4 54·04	− 0·50	−50·86	−50·89	− 4·44
	1055	....	8·0	68 25	25·8	34·8	43·5	52·0	18 1·3	3 17 43·48	− 0·49	....	−50·89	− 4·53
	1087	f Tauri	4·0	77 31	7·4	16·0	24·4	32·4	24 41·4	3 24 21·32	− 0·51	....	−50·89	− 4·25
	1101	....	7·0	58 45	55·3	4·8	14·6	23·9	28 34·0	3 28 14·52	− 0·48	....	−50·89	− 4·94
	1126	11 Tauri	8·0	65 6	24·2	33·4	42·3	51·4	34 0·8	3 33 42·12	− 0·49	....	−50·89	− 4·67
	1166	η Tauri	....	66 17	9·3	18·4	27·6	36·1	40 45·6	3 40 27·40	− 0·49	−50·89	−50·89	− 4·63
	1282	....	8·0	41 15	20·0	32·5	45·0	57·2	5 10·2	4 4 44·94	− 0·49	....	−50·89	− 6·10
	1318	....	6·5	33 49	27·3	42·0	57·0	11·2	12 27·0	4 11 56·90	− 0·51	....	−50·89	− 6·93
	1347	....	8·0	65 54	2·8	11·9	21·0	29·6	16 39·0	4 16 20·86	− 0·49	....	−50·89	− 4·64
	1361	....	6·0	71 16	47·3	55·9	4·4	13·0	18 22·2	4 18 4·56	− 0·50	....	−50·89	− 4·45
	1376	ι Tauri	....	71 6	26·1	34·9	43·6	51·9	22 1·2	4 21 43·54	− 0·50	−50·93	−50·89	− 4·45
	1420	α Tauri	....	73 45	52·4	1·2	9·8	18·1	29 27·1	4 29 9·72	− 0·50	−50·83	−50·89	− 4·36
Nov. 19	618	α Arietis	....	67 9	15·0	24·0	32·9	41·4	0 51·0	2 0 32·86	− 0·48	−50·53	−50·48	− 4·38
	694	....	8·0	26 11	51·5	10·2	28·8	47·0	10 6·5	2 9 28·80	− 0·55	....	−50·48	− 7·63
	702	....	7·0	26 16	18·1	37·8	56·4	14·5	11 34·0	2 10 56·22	− 0·55	....	−50·48	− 7·63
	738	....	7·5	80 19	38·5	46·9	55·3	3·3	18 12·1	2 17 55·22	− 0·50	....	−50·48	− 4·06
	760	ξ^{2} Ceti	....	82 12	40·6	49·0	57·2	5·2	22 14·0	2 21 57·20	− 0·50	−50·48	−50·48	− 4·03
	776	....	6·5	88 19	12·5	21·0	29·2	37·2	25 46·0	2 25 29·18	− 0·51	....	−50·48	− 3·89
	793	....	7·0	83 45	22·5	31·0	39·3	47·3	29 56·0	2 29 39·22	− 0·50	....	−50·48	− 4·01
	822	(a)	....	47 52	11·5	22·8	34·0	44·6	31 56·2	2 34 33·82	− 0·47	....	−50·48	− 5·40
	837	γ Ceti	....	87 18	0·0	8·4	16·5	24·5	37 33·1	2 37 16·56	− 0·51	−50·57	−50·48	− 3·93
	891	(b)	....	84 4	13·0	21·2	29·5	37·4	46 46·3	2 46 29·16	− 0·50	....	−50·48	− 4·04
	920	....	7·5	68 54	50·2	59·2	8·0	16·5	52 26·0	2 52 7·98	− 0·48	....	−50·47	− 4·18
	949	α Ceti	....	86 25	55·0	3·2	11·5	19·4	56 28·2	2 56 11·16	− 0·51	−50·36	−50·47	− 4·00
	1166	η Tauri	....	66 17	9·1	18·0	27·0	35·9	40 45·2	3 40 27·04	− 0·48	−50·51	−50·47	− 4·66
	1282	....	....	41 15	19·8	32·2	45·0	57·0	5 10·0	4 4 44·80	− 0·49	....	−50·46	− 6·16
	1309	o^{2} Eridani	....	97 51	44·3	52·7	1·0	9·0	10 17·8	4 10 0·96	− 0·54	....	−50·46	− 3·80
	1328	γ Tauri	....	74 41	48·5	57·0	5·8	13·9	13 22·9	4 13 5·62	− 0·49	....	−50·46	− 4·38
	1347	....	8·0	65 54	2·2	11·5	20·5	29·3	16 38·8	4 16 20·46	− 0·48	....	−50·46	− 4·68
	1361	....	6·0	71 16	46·5	55·6	4·3	12·7	18 21·9	4 18 4·20	− 0·49	....	−50·46	− 4·49
	1376	ι Tauri	....	71 6	25·8	34·4	43·2	51·6	22 0·9	4 21 43·18	− 0·49	−50·53	−50·46	− 4·50
	1420	α Tauri	....	73 45	52·3	0·7	9·4	17·5	29 26·6	4 29 9·40	− 0·48	−50·37	−50·46	− 4·41
Nov. 25	704	67 Ceti	....	97 1	56·0	4·4	12·6	20·5	11 29·3	2 11 12·56	− 0·50	−50·36	−50·42	− 3·68
	760	ξ^{2} Ceti	....	82 12	40·6	49·0	57·2	5·2	22 14·0	2 21 57·20	− 0·49	−50·48	−50·42	− 4·04
	837	γ Ceti	....	87 18	59·9	8·1	16·5	24·2	37 33·0	2 37 16·34	− 0·48	−50·37	−50·41	− 3·94
	949	α Ceti	....	86 25	55·0	3·3	11·3	19·6	56 28·2	2 56 11·48	− 0·48	−50·39	−50·40	− 4·02
	986	δ Arietis	....	70 46	36·1	45·0	53·7	2·1	5 11·3	3 4 53·64	− 0·46	−50·45	−50·40	− 4·49
Nov. 27	949	α Ceti	....	86 25	54·9	3·1	11·1	19·3	56 28·0	2 56 11·34	− 0·47	−50·25	−50·29	− 4·03
	962	ι Persei	....	40 53	56·4	9·2	21·8	34·0	0 47·2	3 0 21·72	− 0·46	....	−50·29	− 6·09
	986	δ Arietis	....	70 46	36·0	44·8	53·5	2·0	5 11·0	3 4 53·46	− 0·45	−50·27	−50·29	− 4·50
	1055	....	7·5	68 25	25·0	34·0	42·8	51·4	18 0·7	3 17 42·76	− 0·44	....	−50·29	− 4·60
	1087	f Tauri	6·0	77 31	7·0	15·4	23·8	31·9	24 40·8	3 24 23·78	− 0·46	....	−50·29	− 4·32
	1101	....	8·0	58 45	54·6	4·4	14·0	23·3	28 33·5	3 28 13·96	− 0·44	....	−50·29	− 5·03
	1126	(c) 11 Tauri	....	65 6	24·0	33·0	42·0	50·8	34 0·3	3 33 42·02	− 0·44	....	−50·29	− 4·76
	1166	(d) η Tauri	....	66 17	9·0	18·0	27·0	35·6	40 45·2	3 40 26·96	− 0·44	−50·40	−50·29	− 4·73
	1520	ι Aurigæ	....	57 2	52·5	2·3	12·1	21·5	49 32·0	4 49 12·08	− 0·44	−50·24	−50·28	− 5·17

(a) Two stars nearly equal in mag. in the field following. (b) Double. (c) Faint. (d) Cloudy.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1. [illegible]
1866.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Nov. 29	949	α Ceti	....	86 25	54·2	2·6	11·0	18·9	56 27·6	2 56 10·86	– 0·47	– 49·77	– 49·83	– 4·83
	1166	(a) η Tauri	....	66 17	8·2	17·3	26·6	35·3	40 44·8	3 40 26·44	– 0·43	– 49·88	– 49·83	– 4·74
	1420	α Tauri	....	73 45	51·9	0·2	9·0	17·0	29 26·1	4 29 8·64	– 0·44	– 49·83	– 49·82	– 4·31
	1520	ι Aurigæ	....	57 2	51·9	1·8	11·9	21·2	49 31·6	4 49 11·68	– 0·43	– 49·62	– 49·82	– 5·00
Nov. 30	949	(b) α Ceti	....	86 25	54·1	2·4	10·5	18·8	56 27·3	2 56 10·62	– 0·46	– 49·[illegible]	– 49·63	– 4·03
	986	δ Arietis	....	70 46	35·4	44·1	52·9	1·2	5 10·4	3 4 52·80	– 0·43	– 49·63	– 49·63	– 4·50
	1055	....	....	68 25	24·6	33·4	42·2	50·9	18 0·1	3 17 42·24	– 0·42	....	– 49·63	– 4·62
	1087	f Tauri	....	77 31	6·1	14·8	23·1	31·2	24 40·0	3 24 23·04	– 0·45	....	– 49·63	– 4·14
	1166	η Tauri	....	66 17	8·2	17·2	26·2	35·0	40 44·6	3 40 26·24	– 0·43	– 49·68	– 49·63	– 4·74
	1376	ε Tauri	....	71 6	25·2	33·7	42·3	50·8	21 59·9	4 21 42·38	– [illegible]·43	– 49·66	– 49·63	– 4·63
	1420	α Tauri	....	73 45	51·5	0·1	8·7	17·0	29 26·0	4 29 8·66	– 0·43	– 49·66	– 49·63	– 4·51
Dec. 3	6772	γ Aquilæ	....	79 42	28·2	36·6	44·9	53·0	41 1·8	19 40 44·90	– 0·45	– 49·50	– 49·40	– 1·61
	6802	α Aquilæ	....	81 28	49·5	57·9	6·2	14·0	45 23·1	19 45 6·14	– 0·44	– 49·32	– 49·40	– 1·69
	6833	β Aquilæ	....	83 54	18·8	27·0	35·4	43·5	49 52·2	19 49 35·38	– 0·45	– 49·37	– 49·40	– 1·73
	949	α Ceti	....	86 25	54·0	2·3	10·5	18·5	56 27·2	2 56 10·50	– 0·45	– 49·43	– 49·46	– 4·03
	962	ι Persei	4·0	40 53	55·8	8·3	20·9	33·0	0 46·4	3 0 20·88	– 0·44	....	– 49·47	– 6·09
	980	....	6·0	63 36	6·1	15·5	24·7	33·6	3 43·2	3 3 24·62	– 0·42	....	– 49·47	– 4·76
	986	δ Arietis	....	70 46	35·2	44·0	52·9	1·0	5 10·2	3 4 52·66	– 0·43	– 49·48	– 49·47	– 4·51
	1101	....	7·0	58 45	54·0	3·4	13·2	22·5	28 32·6	3 28 13·14	– 0·42	....	– 49·48	– 5·66
	1126	....	....	65 6	22·9	32·0	41·2	49·9	33 59·4	3 33 41·08	– 0·42	....	– 49·48	– 4·50
	1166	η Tauri	....	66 17	8·0	17·0	26·1	34·9	40 44·3	3 40 26·06	– 0·42	– 49·49	– 49·48	– 4·76
	1309	o^2 Eridani	....	97 51	43·4	51·6	0·0	8·0	10 16·8	4 9 59·96	– 0·48	....	– 49·49	– 3·92
	1347	....	8·0	65 54	1·4	10·8	19·5	28·2	16 37·9	4 16 19·56	– 0·42	....	– 49·49	– 4·64
	1361	....	....	71 16	45·9	54·5	3·4	11·8	18 21·0	4 18 3·32	– 0·43	....	– 49·50	– 4·64
	1376	ε Tauri	....	71 6	24·8	33·6	42·3	50·8	21 59·9	4 21 42·28	– 0·43	– 49·54	– 49·50	– 4·65
	1420	α Tauri	....	73 45	51·4	0·0	8·5	16·8	29 25·9	4 29 8·52	– 0·42	– 49·50	– 49·51	– 4·57
Dec. 5	1623	β Orionis	....	98 21	43·3	51·5	59·9	7·9	9 16·8	5 8 59·88	– 0·46	– 49·56	– 49·51	– 3·57
	1681	β Tauri	....	61 30	25·6	35·0	44·3	53·4	19 3·3	5 18 44·32	– 0·41	– 49·47	– 49·51	– 5·64
	1730	δ Orionis	....	90 23	47·2	55·5	3·9	11·6	26 20·4	5 26 3·72	– 0·44	– 49·48	– 49·51	– 4·12
	1765	ε Orionis	....	91 17	2·5	10·8	19·0	27·0	30 35·6	5 30 18·98	– 0·44	– 49·60	– 49·51	– 4·10
	1883	α Orionis	....	82 37	32·8	41·0	49·3	57·1	49 6·0	5 48 49·24	– 0·42	– 49·45	– 49·51	– 4·38
Dec. 7	949	(c) α Ceti	....	86 25	54·3	2·5	10·8	18·8	56 27·4	2 56 10·76	– 0·43	– 49·71	– 49·79	– 4·41
	962	ι Persei	4·0	40 53	56·0	8·7	21·1	33·3	[illegible] 46·5	2 [illegible] 21·12	– 0·44	....	– 49·79	– 6·45
	980	....	7·0	63 36	6·5	15·8	24·9	33·9	3 43·5	3 3 24·92	– 0·40	....	– 49·79	– 4·75
	986	δ Arietis	....	70 46	35·5	44·4	53·0	1·3	5 10·7	3 4 52·98	– 0·41	– 49·82	– 49·79	– 4·51
	1055	....	8·0	68 25	24·5	33·6	42·5	51·0	18 0·4	3 17 42·40	– 0·40	....	– 49·79	– 4·63
	1166	η Tauri	....	66 17	8·3	17·5	26·4	35·1	40 44·7	3 40 26·40	– 0·41	– 49·82	– 49·79	– 4·78
	1282	....	8·0	41 15	19·0	31·6	44·3	56·3	5 9·5	4 4 44·14	– 0·44	....	– 49·79	– 6·38
	1318	....	6·0	33 49	26·3	41·3	56·0	10·2	12 25·9	4 11 55·94	– 0·47	....	– 49·79	– 7·23
	1351	....	8·0	73 41	25·0	33·6	42·2	50·4	16 59·6	4 16 42·16	– 0·40	....	– 49·79	– 4·59
	1376	ε Tauri	....	71 6	25·1	34·0	42·6	51·0	22 0·3	4 21 42·60	– 0·41	– 49·84	– 49·79	– 4·69
	1420	α Tauri	....	73 45	51·7	0·2	8·9	17·1	29 26·2	4 29 8·82	– 0·40	– 49·78	– 49·79	– 4·61
	1434	....	4·0	77 46	18·0	26·5	35·0	43·0	31 52·[illegible]	4 31 34·90	– 0·42	....	– 49·79	– 4·48
	1459	....	7·0	34 38	37·0	51·6	6·0	20·0	38 35·3	4 38 5·98	– 0·47	....	– 49·79	– 7·16
	1491	....	6·0	61 19	56·6	5·0	13·3	21·3	44 30·0	4 44 13·24	– 0·42	....	– 49·79	– 4·39
	1501	....	7·5	34 23	15·3	30·0	44·6	58·8	47 14·0	4 46 44·54	– 0·45	....	– 49·79	– 7·13
	1520	ι Aurigæ	....	57 2	52·1	2·0	11·9	21·2	49 31·6	4 49 11·76	– 0·40	– 49·82	– 49·79	– 5·31

(a) Very faint. (b) Definition very bad all night.
(c) A marked case of a fictitious change in the clock's rate, produced most probably by temperature swerving the piers of the Transit Instrument.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean H.A. Jan. 1. 1866.
1866.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Dec. 7	1626	…………………………	7·0	49 41	53·6	4·4	15·3	25·8	10 37·0	5 10 15·22	− 0·40	………	− 49·79	− 5·72
	1656	…………………………	6·5	81 42	3·9	12·1	20·4	28·4	15 37·2	5 15 20·40	− 0·42	………	− 49·79	− 4·37
	1683	…………………………	………	55 43	32·0	42·0	52·0	1·7	19 12·2	5 18 51·98	− 0·41	………	− 49·79	− 5·35
	1703	…………………………	7·0	73 40	3·4	12·0	20·7	29·0	21 38·0	5 21 20·62	− 0·40	………	− 49·79	− 4·60
	1730	δ Orionis…………	………	90 23	47·5	55·8	4·0	12·0	26 20·6	5 26 3·98	− 0·44	− 49·71	− 49·79	− 4·15
Dec. 10	1376	ε Tauri…………	………	71 6	24·6	33·5	42·3	50·7	22 0·0	4 21 42·26	− 0·39	− 49·50	− 49·42	− 4·71
	1420	α Tauri…………	………	73 45	31·2	0·0	8·3	16·6	29 25·8	4 29 8·38	− 0·40	− 49·32	− 49·42	− 4·63
	1459	…………………………	7·0	34 38	36·8	51·0	5·6	19·7	38 34·9	4 38 5·60	− 0·45	………	− 49·42	− 7·19
	1491	…………………………	5·5	81 19	56·1	4·5	12·8	21·0	41 29·6	4 44 12·80	− 0·40	………	− 49·42	− 4·41
	1501	…………………………	7·0	34 23	14·9	29·8	44·3	58·2	47 13·8	4 46 44·20	− 0·44	………	− 49·42	− 7·23
	1520	ι Aurigæ…………	………	57 2	52·0	1·7	11·7	21·0	49 31·2	4 49 11·52	− 0·39	− 49·59	− 49·42	− 5·34
	1626	…………………………	7·0	49 41	53·2	4·0	15·0	25·4	10 36·9	5 10 14·90	− 0·39	………	− 49·42	− 5·76
	1656	…………………………	6·5	81 42	3·5	11·8	20·4	28·3	15 37·0	5 15 20·20	− 0·40	………	− 49·42	− 4·40
	1681	β Tauri…………	………	61 30	25·6	35·0	44·4	53·4	19 3·2	5 18 44·30	− 0·39	− 49·40	− 49·42	− 5·11
	1703	…………………………	8·0	73 40	3·3	11·8	20·4	28·9	21 37·8	5 21 20·44	− 0·40	………	− 49·42	− 4·61
	1730	δ Orionis…………	………	90 23	47·1	55·4	3·8	11·5	26 20·1	5 26 3·58	− 0·42	− 49·30	− 49·42	− 4·18
	1765	ε Orionis…………	………	91 17	2·4	10·5	18·9	26·9	30 35·5	5 30 18·81	− 0·42	− 49·42	− 49·42	− 4·16
Dec. 13	1166	η Tauri…………	………	66 17	8·0	17·0	26·0	34·8	40 44·2	3 40 26·00	− 0·38	− 49·44	− 49·47	− 4·79
	1328	…………………………	4·0	74 41	47·1	56·0	4·8	12·9	13 22·0	4 13 4·62	− 0·39	………	− 49·47	− 4·58
	1376	ε Tauri…………	………	71 6	24·9	33·5	42·4	50·5	22 0·0	4 21 42·26	− 0·39	− 49·48	− 49·47	− 4·73
	1420	α Tauri…………	………	73 45	51·4	59·9	8·5	16·9	29 26·0	4 29 8·54	− 0·39	− 49·47	− 49·47	− 4·65
	1434	…………………………	………	77 45	17·6	26·2	34·5	42·6	31 51·4	4 31 34·46	− 0·40	………	− 49·47	− 4·52
	1459	…………………………	………	34 38	36·5	51·0	5·8	19·9	38 35·0	4 38 5·64	− 0·45	………	− 49·47	− 7·22
	1491	…………………………	………	81 19	56·3	4·6	13·0	21·0	44 29·8	4 44 12·94	− 0·39	………	− 49·47	− 4·43
	1501	…………………………	………	34 23	15·0	29·8	44·3	58·4	47 13·9	4 46 44·28	− 0·44	………	− 49·47	− 7·26
	1520	ι Aurigæ…………	………	57 2	51·8	1·7	11·5	21·0	49 31·4	4 49 11·48	− 0·38	− 49·51	− 49·47	− 5·36
	1626	…………………………	………	49 41	53·3	4·4	15·0	25·3	10 36·8	5 10 14·96	− 0·38	………	− 49·47	− 5·80
	1656	…………………………	………	81 42	3·5	12·0	20·3	28·2	15 37·0	5 15 20·20	− 0·40	………	− 49·47	− 4·44
	1683	…………………………	………	55 43	31·9	41·8	51·8	1·4	19 11·9	5 18 51·76	− 0·39	………	− 49·47	− 5·43
	1703	…………………………	………	73 40	3·2	11·8	20·5	28·6	21 37·8	5 21 20·38	− 0·39	………	− 49·47	− 4·68
	1730	δ Orionis…………	………	90 23	47·4	55·4	3·8	11·8	26 20·4	5 26 3·76	− 0·41	− 49·45	− 49·47	− 4·22
	1766	…………………………	………	80 47	10·4	18·8	27·0	35·2	30 44·0	5 30 27·08	− 0·39	………	− 49·47	− 4·46
Dec. 21	1623	β Orionis…………	………	98 21	42·7	50·9	59·1	7·2	9 16·0	5 8 59·18	− 0·41	− 48·78	− 48·73	− 4·09
	1681	β Tauri…………	………	61 30	25·0	34·4	43·9	53·0	19 2·8	5 18 43·82	− 0·37	− 48·83	− 48·73	− 5·22
	1730	δ Orionis…………	………	90 23	46·5	54·9	3·1	11·0	26 19·8	5 26 3·06	− 0·40	− 48·70	− 48·72	− 4·28
	1765	ε Orionis…………	………	91 17	1·8	10·0	18·3	26·2	30 35·0	5 30 18·26	− 0·40	− 48·75	− 48·72	− 4·27
	1883	α Orionis…………	………	82 37	32·0	40·3	48·5	56·4	49 5·2	5 48 48·48	− 0·38	− 48·53	− 48·71	− 4·50
Dec. 22	1681	β Tauri…………	………	61 30	24·6	34·0	43·4	52·4	19 2·2	5 18 43·32	− 0·37	− 48·32	− 48·28	− 5·23
	1730	δ Orionis…………	………	90 23	46·0	54·3	2·6	10·5	26 19·2	5 26 2·52	− 0·40	− 48·15	− 48·27	− 4·29
	1765	ε Orionis…………	………	91 17	1·3	9·5	17·9	25·8	30 34·5	5 30 17·80	− 0·40	− 48·29	− 48·27	− 4·27
	1883	α Orionis…………	………	82 37	31·6	40·0	48·2	56·4	49 5·1	5 48 48·26	− 0·38	− 48·31	− 48·26	− 4·50
Dec. 27	1730	δ Orionis…………	………	90 23	45·4	53·5	1·8	9·8	26 18·2	5 26 1·74	− 0·37	− 47·37	− 47·37	− 4·32
	1765	ε Orionis…………	………	91 17	0·2	8·5	17·0	25·0	30 33·6	5 30 16·86	− 0·37	− 47·34	− 47·37	− 4·31
	1883	α Orionis…………	………	82 37	30·9	39·0	47·4	55·2	49 4·0	5 48 47·30	− 0·36	− 47·32	− 47·37	− 4·55
	1907	…………………………	6·0	77 13	56·4	4·9	13·4	21·6	52 30·5	5 52 13·36	− 0·35	………	− 47·37	− 4·70
	1930	…………………………	8·0	72 10	43·9	52·4	1·1	9·5	56 18·5	5 56 1·08	− 0·34	………	− 47·37	− 4·85

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1866.
1866.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Dec. 27	1958	ι Orionis	....	75 13	31·0	39·1	48·0	56·0	1 5·0	6 0 47·88	− 0·35	−47·50	−47·37	− 4·76
	2002	η Geminorum	....	67 27	22·2	31·0	40·0	48·5	7 58·[illegible]	6 7 39·94	− 0·35	....	−47·36	− 5·02
	2022	....	6·0	80 [illegible]	19·1	27·4	35·8	43·8	10 52·6	6 10 35·74	− 0·35	....	−47·36	− 4·62
	6281	δ Ursæ Minoris S. P.	....	3 24	......	22·0	36·0	56·[illegible]	20 15·5	6 15 37·60	+ 2·57	....	−47·36	+41·55
	2163	γ Geminorum	....	73 29	33·5	42·1	50·8	59·0	31 8·[illegible]	6 30 50·68	− 0·34	−47·34	−47·36	− 4·73
	2194	....	7·0	73 29	13·4	22·0	30·8	39·0	34 48·0	6 34 30·64	− 0·34	....	−47·36	− 4·79
	2292	....	7·0	79 12	9·7	18·0	26·4	34·4	54 43·4	6 54 26·38	− 0·35	....	−47·36	− 4·61
	2306	....	5·0	78 52	48·0	56·6	5·0	13·0	57 21·9	6 57 4·90	− 0·35	....	−47·35	− 4·63
	2329	....	7·5	74 16	8·0	16·5	25·0	33·4	1 42·4	7 1 25·06	− 0·34	....	−47·35	− 4·72
	2363	....	7·0	65 4	50·4	59·5	8·6	17·2	7 26·9	7 7 8·52	− 0·34	....	−47·35	− 4·60
	2379	....	4·0	40 18	49·2	2·0	15·0	27·1	9 40·7	7 9 14·80	− 0·38	....	−47·35	− 6·33
	2410	δ Geminorum	....	67 46	42·0	50·9	59·8	8·1	13 17·6	7 12 59·68	− 0·34	−47·35	−47·35	− 4·85
Dec. 28	1520	ι Aurigæ	....	57 2	49·[illegible]	59·5	9·4	18·9	49 29·0	4 49 9·28	− 0·30	−47·31	−47·38	− 5·44
	1681	β Tauri	....	61 30	23·8	33·0	42·3	51·5	19 1·2	5 18 42·36	− 0·31	−47·38	−47·39	− 5·27
	1730	δ Orionis	....	90 23	45·1	53·5	1·5	9·8	26 18·6	5 26 1·70	− 0·31	−47·39	−47·39	− 4·32
	1766	....	....	80 47	8·3	16·6	25·0	33·[illegible]	30 41·9	5 30 24·96	− 0·30	....	−47·39	− 4·56
	1883	α Orionis	....	82 37	30·9	39·[illegible]	47·4	55·3	49 4·1	5 48 47·34	− 0·30	−47·42	−47·40	− 4·55
	2163	γ Geminorum	....	73 29	33·6	42·2	50·8	59·0	31 8·2	6 30 50·76	− 0·30	−47·45	−47·40	− 4·66

ROYAL OBSERVATORY, EDINBURGH.

Individual Observations of Mean Right Ascensions of Stars observed at the Royal Observatory, Edinburgh, in the Year 1866, reduced to January 1, 1866.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
B.A.C. 4, α Andromedæ.				
Sept. 25	0·73	(1·0)(a)	° ′ 61 39	h. m. s. 0 1 27·89
27	0·74			27·91
Oct. 15	0·79			27·91
19	0·80			28·06
B.A.C. 26, γ Pegasi.				
Sept. 24	0·73	(2·0)	75 33	0 6 20·33
25	0·73			20·25
27	0·74			20·29
Oct. 16	0·79			20·24
19	0·80			20·22
B.A.C. 42.				
Oct. 16	0·79	8·0	86 30	0 9 4·63
B.A.C. 57.				
Oct. 16	0·79	7·0	89 3	0 10 54·77
B.A.C. 112, 12 Ceti.				
Oct. 16	0·79	(6·0)	94 42	0 23 12·02
B.A.C. 133.				
Oct. 16	0·79	8·0	70 18	0 26 39·19
B.A.C. 164, ι Andromedæ.				
Oct. 16	0·79	4·0	61 25	0 31 28·81
B.A.C. 288, ε Piscium.				
Oct. 8	0·77	(4·0)	82 50	0 55 59·40
19	0·80			59·45
Nov. 3	0·84			59·46
B.A.C. 453, η Piscium.				
Oct. 24	0·81	(4·0)	° ′ 75 21	h. m. s. 1 24 18·94
30	0·83			18·95
Nov. 3	0·84			18·95
5	0·84			18·99
13	0·87			19·04
14	0·87			18·94
B.A.C. 518, ν Piscium.				
Oct. 8	0·77	(5·0)	85 12	1 34 27·56
15	0·79			27·56
24	0·81			27·59
30	0·83			27·64
Nov. 3	0·84			27·59
B.A.C. 577, β Arietis.				
Oct. 8	0·77	(3·0)	69 51	1 47 14·49
15	0·79			14·48
16	0·79			14·54
24	0·81			14·52
30	0·83			14·51
Nov. 3	0·84			14·47
13	0·87			14·58
14	0·87			14·58
B.A.C. 648, α Arietis.				
Oct. 8	0·77	(2·0)	67 10	1 59 37·51
15	0·79			37·47
24	0·81			37·41
30	0·83			37·42
Nov. 3	0·84			37·45
14	0·87			37·44
19	0·88			37·52
B.A.C. 694.				
Nov. 14	0·87	7·5	° ′ 26 12	h. m. s. 2 8 30·14
19	0·88	8·0		30·14
B.A.C. 702.				
Nov. 14	0·87	7·5	26 17	2 9 57·64
19	0·88	7·0		57·56
B.A.C. 704, 67 Ceti.				
Oct. 16	0·79	(6·0)	97 2	2 10 17·98
Nov. 13	0·87			17·98
25	0·90			17·96
B.A.C. 725. (b)				
Nov. 14	0·87	8·0	33 14	2 13 31·97
B.A.C. 736.				
Nov. 14	0·87	8·0	80 20	2 17 0·28
19	0·88	7·5		0·18
B.A.C. 760, ξ² Ceti.				
Nov. 5	0·84	(4·0)	82 8	2 21 2·16
8	0·85			2·22
9	0·85			2·24
19	0·88			2·19
25	0·90			2·25
B.A.C. 764.				
Nov. 14	0·87	7·0	81 2	2 22 26·18

(a) Magnitudes in parenthesis are the tabular ones of the British Association Catalogue.
(b) 14 sec. less than the Tab. R. A.; so also in 1868, with 3 observations.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
B.A.C. 776.				
			° ′	h. m. s.
Nov. 14	0·87	6·0	88 20	2 24 34·29
19	0·88	6·5		34·30
B.A.C. 793.				
Nov. 19	0·88	7·0	83 46	2 28 44·23
B.A.C. 822. (a)				
Nov. 19	0·88	(Neb.)	47 52	2 33 37·47
B.A.C. 837, γ Ceti.				
Oct. 30	0·83	(3·0)	87 20	2 36 21·52
Nov. 5	0·84			21·61
8	0·85			21·52
9	0·85			21·56
13	0·87			21·55
14	0·87			21·54
16	0·87			21·59
19	0·88			21·64
25	0·90			21·51
B.A.C. 881, ε Arietis.				
Nov. 14	0·87	6·0	75 28	2 44 5·92
B.A.C. 891.				
Nov. 14	0·87	(8·0)	84 5	2 45 34·44
19	0·88			34·46
B.A.C. 920.				
Nov. 14	0·87	8·0	68 55	2 51 12·53
19	0·88	7·5		12·55
B.A.C. 949, α Ceti.				
Oct. 30	0·83	(2·5)	86 26	2 55 16·58
Nov. 5	0·84			16·57
9	0·85			16·57
13	0·87			16·54
14	0·87			16·61
B.A.C. 949, α Ceti.				
			° ′	h. m. s.
Nov. 16	0·87	(2·5)	86 26	2 55 16·59
19	0·88			16·48
25	0·90			16·58
27	0·90			16·55
29	0·91			16·53
30	0·91			16·50
Dec. 3	0·92			16·56
7	0·93			16·51
B.A.C. 962, ι Persei.				
Nov. 16	0·87	4·0	40 54	2 59 24·93
27	0·90			24·86
Dec. 3	0·92	4·0		24·88
7	0·93	4·0		24·81
B.A.C. 980.				
Nov. 16	0·87	6·0	63 37	3 2 30·04
Dec. 3	0·92	6·0		29·97
7	0·93	7·0		29·97
B.A.C. 986, δ Arietis.				
Nov. 5	0·84	(4·0)	70 47	3 3 58·19
8	0·85			58·29
9	0·85			58·22
16	0·87			58·21
25	0·90			58·29
27	0·90			58·22
30	0·91			58·24
Dec. 3	0·92			58·25
7	0·93			58·27
B.A.C. 1055.				
Nov. 14	0·87	8·0	68 26	3 16 47·55
16	0·87	8·0		47·57
27	0·90	7·5		47·45
30	0·91			47·57
Dec. 7	0·93	8·0		47·58
B.A.C. 1087, f Tauri.				
Nov. 14	0·87	5·0	77 31	3 23 28·73
16	0·87	4·0		28·67
27	0·90	6·0		28·71
30	0·91			28·62
B.A.C. 1101.				
			° ′	h. m. s.
Nov. 14	0·87	8·0	58 46	3 27 18·25
16	0·87	7·0		18·21
27	0·90	8·0		18·20
Dec. 3	0·92	7·0		18·18
B.A.C. 1126, 11 Tauri.				
Nov. 14	0·87	6·5	65 6	3 32 46·47
16	0·87	8·0		46·37
27	0·90			46·53
Dec. 3	0·92			46·35
B.A.C. 1166, η Tauri.				
Nov. 8	0·85	(3·0)	66 19	3 39 31·33
9	0·85			31·41
13	0·87			31·31
14	0·87			31·35
16	0·87			31·32
19	0·88			31·43
27	0·90			31·30
29	0·91			31·41
30	0·91			31·44
Dec. 3	0·92			31·40
7	0·93			31·42
13	0·95			31·36
B.A.C. 1262.				
Nov. 16	0·87	8·0	41 15	4 3 [illegible]
19	0·88			[illegible]
Dec. 7	0·93	8·0		[illegible]
B.A.C. 1309, e² Eridani.				
Nov. 19	0·88	(4·5)	97 51	4 9 6·46
Dec. 3	0·92			6·47
B.A.C. 1318.				
Nov. 16	0·87	6·5	33 49	4 10 55·57
Dec. 7	0·93	6·0		55·43
B.A.C. 1328, γ Tauri.				
Nov. 19	0·88		74 42	4 12 10·29
Dec. 13	0·95	4·0		10·18

(a) 18 secs. less than Tab. R. A.; so also in 1863 from 3 observations.

B.A.C. 1347.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. (° ′)	Mean Right Ascension, January 1, 1866. (h. m. s.)
Nov. 16	0·87	8·0	65 55	4 15 24·84
19	0·89	8·0		24·84
Dec. 3	0·92	8·0		24·81

B.A.C. 1351.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. (° ′)	Mean Right Ascension, January 1, 1866. (h. m. s.)
Dec. 7	0·93	8·0	73 42	4 15 47·38

B.A.C. 1361.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. (° ′)	Mean Right Ascension, January 1, 1866. (h. m. s.)
Nov. 16	0·87	6·0	71 16	4 17 8·72
19	0·89	6·0		8·76
Dec. 3	0·92			8·75

B.A.C. 1376, ι Tauri.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. (° ′)	Mean Right Ascension, January 1, 1866. (h. m. s.)
Nov. 16	0·87	(3·5)	71 7	4 20 47·70
19	0·89			47·73
30	0·91			47·69
Dec. 3	0·92			47·70
7	0·93			47·71
10	0·94			47·74
13	0·95			47·67

B.A.C. 1420, α Tauri.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. (° ′)	Mean Right Ascension, January 1, 1866. (h. m. s.)
Nov. 16	0·87	(1·0)	73 46	4 28 13·97
19	0·89			13·95
29	0·91			14·05
30	0·91			14·06
Dec 3	0·92			14·02
7	0·93			14·02
10	0·94			13·93
13	0·95			14·03

B.A.C. 1434.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. (° ′)	Mean Right Ascension, January 1, 1866. (h. m. s.)
Dec. 7	0·93	4·0	77 46	4 30 40·21
13	0·95			40·07

B.A.C. 1459.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. (° ′)	Mean Right Ascension, January 1, 1866. (h. m. s.)
Dec. 7	0·93	7·0	34 38	4 37 8·56
10	0·94	7·0		8·54
13	0·95			8·50

B.A.C. 1491.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. (° ′)	Mean Right Ascension, January 1, 1866. (h. m. s.)
Dec. 7	0·93	6·0	81 20	4 43 18·65
10	0·94	5·5		18·57
13	0·95			18·65

B.A.C. 1501.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. (° ′)	Mean Right Ascension, January 1, 1866. (h. m. s.)
Dec. 7	0·93	7·5	34 24	4 45 47·11
10	0·94	7·0		47·11
13	0·95			47·11

B.A.C. 1520, ι Aurigæ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. (° ′)	Mean Right Ascension, January 1, 1866. (h. m. s.)
Nov. 27	0·90	(4·0)	57 3	4 48 16·19
29	0·91			16·23
Dec. 7	0·93			16·26
10	0·94			16·37
13	0·95			16·27
28	0·99			16·16

B.A.C. 1623, β Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. (° ′)	Mean Right Ascension, January 1, 1866. (h. m. s.)
Jan. 5	0·01	(1·0)	98 22	5 8 5·91
Dec. 5	0·93			5·95
21	0·97			5·95

B.A.C. 1626.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. (° ′)	Mean Right Ascension, January 1, 1866. (h. m. s.)
Dec. 7	0·93	7·0	49 41	5 9 19·31
10	0·94	7·0		19·33
13	0·95			19·31

B.A.C. 1656.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. (° ′)	Mean Right Ascension, January 1, 1866. (h. m. s.)
Dec. 7	0·93	6·0	81 42	5 14 25·82
10	0·94	6·5		25·98
13	0·95			25·80

B.A.C. 1681, β Tauri.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. (° ′)	Mean Right Ascension, January 1, 1866. (h. m. s.)
Jan. 8	0·02	(2·0)	61 31	5 17 49·41
16	0·04			49·46
Dec. 5	0·93			49·36
10	0·94			49·38
21	0·97			49·50
22	0·97			49·44
28	0·99			49·39

B.A.C. 1683.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. (° ′)	Mean Right Ascension, January 1, 1866. (h. m. s.)
Jan. 5	0·01	6·0	55 44	5 17 56·50
Dec. 7	0·93			56·43
13	0·95			56·47

B.A.C. 1703.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. (° ′)	Mean Right Ascension, January 1, 1866. (h. m. s.)
Dec. 7	0·93	7·0	73 40	5 20 25·83
10	0·94	8·0		26·01
13	0·95			25·84

B.A.C. 1730, δ Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. (° ′)	Mean Right Ascension, January 1, 1866. (h. m. s.)
Jan. 5	0·01	(2·0)	90 24	5 25 9·71
8	0·02			9·60
15	0·04			9·60
Dec. 5	0·93			9·65
7	0·93			9·60
10	0·94			9·56
13	0·95			9·66
21	0·97			9·66
22	0·97			9·56
27	0·99			9·68
28	0·99			9·68

B.A.C. 1765, ι Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. (° ′)	Mean Right Ascension, January 1, 1866. (h. m. s.)
Jan. 5	0·01	(2·5)	91 17	5 29 24·81
16	0·04			24·77
Dec. 5	0·93			24·93
10	0·94			24·84
21	0·97			24·87
22	0·97			24·86
27	0·99			24·81

B.A.C. 1766.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. (° ′)	Mean Right Ascension, January 1, 1866. (h. m. s.)
Dec. 13	0·95	(4·5)	80 47	5 29 32·76
28	0·99			32·69

B.A.C. 1813.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. (° ′)	Mean Right Ascension, January 1, 1866. (h. m. s.)
Jan. 5	0·01	(6·0)	21 34	5 38 30·94

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
			° ′	h. m. s.
B.A.C. 1883, α Orionis.				
Jan. 4	0·01	(1·0)	82 37	5 47 55·09
5	0·01			55·02
8	0·02			55·02
Dec. 5	0·93			55·01
21	0·97			54·89
22	0·97			55·12
27	0·99			55·02
28	0·99			55·09
B.A.C. 1907. (a)				
Dec. 27	0·99	6·0	77 13	5 51 20·94
B.A.C. 1930.				
Dec. 27	0·99	6·0	72 20	5 55 8·52
B.A.C. 1958, ν Orionis.				
Dec. 27	0·99	(4·5)	75 13	5 59 55·40
B.A.C. 2002, η Geminorum.				
Dec. 27	0·99	(4·0)	67 27	6 6 47·21
B.A.C. 2022.				
Dec. 27	0·99	6·0	80 1	6 9 43·41
B.A.C. 2047, μ Geminorum.				
Jan. 4	0·01	(3·0)	67 25	6 14 51·19
B.A.C. 2163, γ Geminorum.				
Jan. 4	0·01	(2·5)	73 29	6 29 58·22
5	0·01			58·34
16	0·04			58·21
22	0·06			58·25
29	0·08			58·25
Feb. 2	0·09			58·26
22	0·14			58·20
Dec. 27	0·99			58·19
28	0·99			58·26
B.A.C. 2184.				
Jan. 29	0·08		73 29	6 33 38·15
Feb. 2	0·09	7·0		38·08
Dec. 27	0·99	7·0		38·15
B.A.C. 2238.				
Feb. 2	0·09	6·0	66 15	6 43 51·90
B.A.C. 2292.				
Jan. 29	0·08	7·0	79 11	6 53 34·03
Feb. 2	0·09	7·0		34·04
Dec. 27	0·99	7·0		34·07
B.A.C. 2306.				
Jan. 29	0·08	6·0	78 51	6 56 12·56
Feb. 2	0·09	6·0		12·52
Dec. 27	0·99	5·0		12·60
B.A.C. 2329.				
Jan. 29	0·08		74 16	7 0 32·65
Feb. 2	0·09	7·5		32·65
Dec. 27	0·99	7·5		32·65
B.A.C. 2363.				
Jan. 27	0·07		65 4	7 6 15·94
Feb. 2	0·09	7·0		15·91
Dec. 27	0·99	7·0		15·84
B.A.C. 2379.				
Feb. 2	0·09	6·0	40 18	7 8 20·78
Dec. 27	0·99	4·0		20·74
B.A.C. 2410, δ Geminorum.				
Jan. 4	0·01	(3·0)	67 46	7 12 7·13
8	0·02			7·15
16	0·04			7·13
18	0·05			7·13
22	0·06			7·09
23	0·06			7·07
29	0·08			7·02
Feb. 2	0·09	(3·0)	67 46	7 12 7·12
10	0·11			7·10
20	0·14			7·13
Dec. 27	0·99			7·11
B.A.C. 2462, β Canis Minoris.				
Jan. 23	0·06	(3·0)	81 27	7 19 52·93
29	0·08			52·66
Feb. 1	0·08			53·00
B.A.C. 2485, α' Geminorum.				
Jan. 5	0·01	(1·5)	57 49	7 26 2·82
16	0·04			2·65
18	0·05			2·63
22	0·06			2·70
23	0·06			2·74
29	0·08			2·66
Feb. 1	0·08			2·79
10	0·11			2·61
20	0·14			2·81
22	0·14			2·61
B.A.C. 2488.				
Feb. 2	0·09	6·0	43 32	7 26 47·03
B.A.C. 2522, α Canis Minoris.				
Jan. 5	0·01	(1·0)	84 26	7 32 17·14
6	0·02			17·35
18	0·03			17·47
22	0·06			17·41
23	0·06			17·41
29	0·08			17·43
Feb. 1	0·08			17·47
2	0·09			17·47
10	0·11			17·17
13	0·12			17·47
20	0·14			17·16
B.A.C. 2555, β Geminorum.				
Jan. 5	0·01	(2·0)	61 39	7 37 6·70
8	0·02			6·95
16	0·04			6·50

(a) 5 secs. less than Tab. R. A.; so also in 1861.

B.A.C. 2555, β Geminorum.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Jan. 18	0·05	(2·0)	61 32	7 37 6·80
22	0·06			6·85
23	0·06			6·76
29	0·08			6·82
Feb. 1	0·08			6·76
2	0·09			6·78
10	0·11			6·78
13	0·12			6·79
20	0·14			6·88
22	0·14			6·74

B.A.C. 2586.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Jan. 23	0·06		61 26	7 41 38·88
29	0·08			38·88
Feb. 1	0·08	7·5		38·89

B.A.C. 2672, 6 Cancri.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Jan. 18	0·05	(5·5)	61 50	7 55 17·02
22	0·06			17·10
23	0·06			17·14
29	0·08			17·06
Feb. 1	0·08			17·12
2	0·09			17·01
13	0·12			17·06
24	0·15			17·02
27	0·16			17·19

B.A.C. 2688.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Jan. 29	0·08	(7·0)	62 5	7 57 24·10
Feb. 1	0·08			24·18
13	0·12			24·14
20	0·14			24·32

B.A.C. 2737.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Jan. 23	0·06	(7·0)	74 59	8 3 27·08
29	0·08			27·06
Feb. 1	0·08			27·05

B.A.C. 2748.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Jan. 23	0·06	(7·0)	75 36	8 4 52·22
29	0·08			52·22
Feb. 1	0·08			52·31

B.A.C. 2761.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Jan. 23	0·06	(7·0)	76 33	8 6 53·95
29	0·08			54·00
Feb. 1	0·08			53·99

B.A.C. 2778, β Cancri.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Jan. 23	0·06	(4·0)	80 24	8 9 14·77
29	0·08			14·76
Feb. 1	0·08			14·84

B.A.C. 2862, η Cancri.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Jan. 23	0·06	(6·0)	69 6	8 24 57·42
Feb. 16	0·13			57·37
21	0·15			57·46

B.A.C. 2867.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Feb. 1	0·08		79 29	8 25 22·23
13	0·12	6·0		22·21
20	0·14			22·32

B.A.C. 2882.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Feb. 1	0·08		29 36	8 28 14·50
2	0·09	7·0		14·32
13	0·12	7·0		14·36

B.A.C. 2937, γ Cancri.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Jan. 29	0·08	(4·5)	68 3	8 35 31·63
Feb. 1	0·08			31·70
2	0·09			31·74

B.A.C. 2971, ι Hydræ.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Jan. 29	0·08	(4·0)	83 6	8 39 40·73
Feb. 1	0·08			40·75
13	0·12			40·69
16	0·13			40·68
20	0·14			40·59
22	0·14			40·67
24	0·15			40·56
27	0·16			40·56

B.A.C. 2988.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Feb. 1	0·08		31 33	8 43 4·61
13	0·12	7·5		4·51
20	0·14			4·55

B.A.C. 3048, ι Ursæ Majoris.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Feb. 1	0·08		41 26	8 50 1·30
13	0·12	3·0		1·29

B.A.C. 3083.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Feb. 1	0·08	(6·5)	38 39	8 55 52·21
20	0·14			52·25

B.A.C. 3103.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Feb. 1	0·08	(7·5)	72 21	8 58 44·81
20	0·14			44·83

B.A.C. 3133.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Feb. 1	0·08	(6·0)	85 35	9 5 12·84
20	0·14			12·84

B.A.C. 3157.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Feb. 1	0·08	7·0	29 39	9 10 12·74
20	0·14			12·71

B.A.C. 3171, 83 Cancri.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Feb. 13	0·12	(6·0)	71 44	9 11 29·99
23	0·15			30·00
24	0·15			29·92
Mar. 13	0·19			29·96

B.A.C. 3312, ο Leonis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Feb. 20	0·14	(4·0)	79 30	9 33 59·84

B.A.C. 3325.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance (° ′)	Mean Right Ascension, January 1, 1866 (h m s)
Feb. 20	0·14	(6·0)	26 8	9 37 18·09

B.A.C. 3331, ε Leonis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance ° ′	Mean Right Ascension, January 1, 1866 h m s
Feb. 1	0·08	(3·0)	65 37	9 38 14·48
2	0·09			14·48
16	0·13			14·40
22	0·14			14·49
23	0·15			14·44
27	0·16			14·51
Mar. 13	0·19			14·50
29	0·24			14·53

B.A.C. 3371, μ Leonis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1866
Feb. 20	0·14	(3·0)	63 22	9 45 8·40
22	0·14			8·34

B.A.C. 3415, π Leonis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1866
Feb. 23	0·15	(4·5)	81 19	9 53 7·84
27	0·16			7·74
Mar. 13	0·19			7·78
29	0·24			7·72

B.A.C. 3418.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1866
Feb. 20	0·14	(6·0)	80 24	9 53 54·72

B.A.C. 3430.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1866
Feb. 20	0·14	(6·0)	81 8	9 56 12·03

B.A.C. 3438.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1866
Feb. 20	0·14	(6·5)	84 21	9 57 47·76

B.A.C. 3459, α Leonis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1866
Feb. 16	0·13	(1·0)	77 23	10 1 14·01
20	0·14			14·03
23	0·15			13·90
27	0·16			13·96
Mar. 13	0·19			13·97
29	0·24			14·02

B.A.C. 3523, γ¹ Leonis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1866
Feb. 23	0·15	(2·0)	69 29	10 12 34·83

B.A.C. 3609, ρ Leonis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1866
Mar. 13	0·19	(4·0)	80 0	10 25 45·20
29	0·24			45·20
April 14	0·28			45·22
May 15	0·37			45·33

B.A.C. 3708, l Leonis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1866
Mar. 14	0·20	(6·0)	78 45	10 42 12·71
20	0·21			12·68
April 13	0·28			12·68

B.A.C. 3788, χ Leonis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1866
Mar. 14	0·20	(4·5)	81 56	10 58 6·14
20	0·21			6·21
April 13	0·28			6·15
14	0·28			6·17
16	0·29			6·22
28	0·32			6·26
May 15	0·37			6·21

B.A.C. 3834, δ Leonis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1866
Mar. 13	0·19	(2·5)	68 45	11 6 58·68
14	0·20			58·73
20	0·21			58·74
29	0·24			58·72
April 13	0·28			58·81
14	0·28			58·70
16	0·29			58·70
28	0·32			58·69
May 15	0·37			58·72

B.A.C. 3946, υ Leonis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1866
Mar. 14	0·20	(4·5)	90 5	11 30 5·28
20	0·21			5·24
April 13	0·28			5·24
14	0·28			5·29
28	0·32			5·26

B.A.C. 3995, β Leonis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1866
Mar. 14	0·20	(2·5)	74 41	11 42 13·35
20	0·21			13·31
April 13	0·28			13·37

B.A.C. 3995, β Leonis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1866
April 14	0·28	(2·5)	74 41	11 42 13·34
16	0·29			13·31
28	0·32			13·44
July 19	0·54			13·39
20	0·55			13·40

B.A.C. 4145, η Virginis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1866
Mar. 20	0·21	(3·5)	89 55	12 13 3·07

B.A.C. 4268, γ¹ Virginis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1866
April 17	0·29	(4·0)	90 43	12 34 53·06

B.A.C. 4401, θ Virginis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1866
April 17	0·29	(4·5)	94 49	13 3 0·52
19	0·30			0·58
20	0·30			0·53
24	0·31			0·75
28	0·32			0·77

B.A.C. 4480, α Virginis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1866
June 8	0·43	(1·0)	100 28	13 18 5·09
July 19	0·54			5·12
20	0·55			5·13

B.A.C. 4532, ζ Virginis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1866
April 13	0·28	(4·0)	89 55	13 27 51·94
17	0·29			51·98
19	0·30			52·07
20	0·30			51·99
24	0·31			52·00
28	0·32			52·02
May 16	0·37			52·02
June 8	0·43			52·00
July 19	0·54			52·04

B.A.C. 4648, η Bootis.

Month and Day	Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1866
April 13	0·28	(3·0)	70 56	13 48 18·25
16	0·29			18·29
17	0·29			18·33
19	0·30			18·37
20	0·30			18·23

B.A.C. 4648, η Bootis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
			° ′	h. m. s.
April 24	0·31	(3·0)	70 56	13 48 18·28
28	0·32			18·22
May 3	0·33			18·22
16	0·37			18·33
28	0·40			18·27
June 26	0·48			18·25

B.A.C. 4672, τ Virginis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
April 17	0·29	(4·5)	87 48	13 54 49·73
19	0·30			49·67
20	0·30			49·65
24	0·31			49·65
May 15	0·37			49·64
16	0·37			49·64

B.A.C. 4729, α Bootis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
April 16	0·29	(1·0)	70 7	14 9 33·03
17	0·29			33·03
19	0·30			33·00
20	0·30			33·07
24	0·31			32·96
May 3	0·33			33·08
15	0·37			32·93
16	0·37			32·99
22	0·39			32·92
June 26	0·48			32·95

B.A.C. 4808, ρ Bootis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
April 17	0·29	(4·0)	59 2	14 26 3·30
20	0·30			3·31
24	0·31			3·34
May 3	0·33			3·26
9	0·35			3·34
15	0·37			3·34
16	0·37			3·40
17	0·37			3·34
21	0·38			3·28
22	0·39			3·33
28	0·40			3·38

B.A.C. 4876, ι Bootis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
April 20	0·30	(3·0)	62 22	14 39 8·10
24	0·31			8·20
May 3	0·33	(3·0)	62 22	14 39 8·13
9	0·35			8·06
15	0·37			8·08
16	0·37			8·06
17	0·37			8·08
21	0·38			8·13
22	0·39			8·09
26	0·40			8·02
28	0·40			8·03
June 8	0·43			8·12
15	0·45			8·09

B.A.C. 4969, ψ Bootis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
May 9	0·35	(5·0)	62 32	14 58 42·36
17	0·37			42·24
21	0·38			42·31
22	0·39			42·32
25	0·39			42·[illegible]
26	0·40			42·34
28	0·40			42·30
June 10	0·44			42·36

B.A.C. 5034, β Libræ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
May 9	0·35	(2·5)	98 53	15 9 47·86
25	0·39			47·77
26	0·40			47·79
29	0·41			47·81
June 10	0·44			47·83

B.A.C. 5143, α Coronæ Borealis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
May 9	0·35	(2·5)	62 50	15 29 0·89
17	0·37			0·84
21	0·38			0·91
[illegible]	0·39			0·97
26	0·40			0·92
28	0·40			1·02
29	0·41			0·95
30	0·41			0·96
June 8	0·43			0·94
10	0·44			0·96
July 13	0·53			0·83

B.A.C. 5196, α Serpentis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
			° ′	h. m. s.
May 9	0·35	(2·5)	83 9	15 37 40·15
17	0·37			40·22
21	0·38			40·11
22	0·39			40·1[illegible]
25	0·39			40·24
26	0·40			40·19
28	0·40			40·03
29	0·41			40·08
30	0·41			40·14
June 8	0·43			40·09
10	0·44			40·13
July [illegible]	0·53			40·10

B.A.C. 5414, δ Ophiuchi.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
May 25	0·39	(3·0)	93 21	16 7 19·44
29	0·41			19·42
30	0·41			19·39
June 8	0·43			19·53

B.A.C. 5604, ζ Herculis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
May 25	0·39	(3·0)	58 9	16 36 14·25
29	0·41			14·33
30	0·41			14·22
June 8	0·43			14·21
19	0·46			14·18
23	0·47			14·24

B.A.C. 5708, κ Ophiuchi.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
May 30	0·41	(4·0)	80 25	16 51 19·55
June 19	0·46			19·48
23	0·47			19·53

B.A.C. 5821, α Herculis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
May 30	0·41	(3·5)	75 27	17 8 32·30
June 8	0·43			32·27
15	0·45			32·24
18	0·46			32·24
19	0·46			32·29
23	0·47			32·34

B.A.C. 5941, α Ophiuchi.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. ° ′	Mean Right Ascension, January 1, 1866. h m s
June 15	0·45	(2·0)	77 20	17 28 42·82
18	0·46			42·89
19	0·46			42·79
23	0·47			42·78
26	0·48			42·89
July 13	0·53			42·85

B.A.C. 6021, μ Herculis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
June 15	0·45	(4·0)	62 12	17 41 13·06
18	0·46			12·96
19	0·46			13·05
26	0·48			12·98
July 2	0·50			12·90

B.A.C. 6355, α Lyræ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
June 26	0·48	(1·0)	51 20	18 32 24·06
July 2	0·50			24·19
3	0·50			24·02
11	0·52			24·11
12	0·53			23·99
13	0·53			24·03
20	0·55			23·99
21	0·55			24·09
Aug. 5	0·59			24·06

B.A.C. 6429, β Lyræ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
June 18	0·46	(3·0)	56 47	18 45 7·97
July 2	0·50			7·96
3	0·50			8·07
11	0·52			7·92
13	0·53			8·04
19	0·54			7·90
20	0·55			7·97
21	0·55			7·97
Aug. 5	0·59			7·94

B.A.C. 6528, ζ Aquilæ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
June 26	0·48	(3·0)	76 20	18 59 15·10
July 2	0·50			14·97
3	0·50			15·00
11	0·52			15·12
12	0·53			15·14

B.A.C. 6528, ζ Aquilæ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. ° ′	Mean Right Ascension, January 1, 1866. h m s
July 13	0·53	(3·0)	76 20	18 59 15·09
19	0·54			15·02
20	0·55			15·03
21	0·55			15·05
Aug. 4	0·59			15·03
5	0·59			15·11

B.A.C. 6595, ω Aquilæ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
July 3	0·50	(5·0)	78 39	19 11 31·59
11	0·52			31·56
13	0·53			31·70
19	0·54			31·55
20	0·55			31·68
Aug. 4	0·59			31·63
5	0·59			31·53

B.A.C. 6646, δ Aquilæ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
July 3	0·50	(3·5)	87 9	19 18 44·43
11	0·52			44·44
12	0·53			44·50
13	0·53			44·46
19	0·54			44·53
20	0·55			44·54
Aug. 4	0·59			44·56
5	0·59			44·44

B.A.C. 6772, γ Aquilæ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
July 12	0·53	(3·0)	79 43	19 39 53·29
19	0·54			53·29
20	0·55			53·27
Aug. 4	0·59			53·34
31	0·66			53·21
Nov. 8	0·85			53·33
Dec. 3	0·92			53·44

B.A.C. 6802, α Aquilæ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
July 19	0·54	(1·5)	81 29	19 44 14·71
20	0·55			14·73
Aug. 4	0·59			14·67
31	0·66			14·68
Nov. 8	0·85			14·69
Dec. 3	0·92			14·61

B.A.C. 6833, β Aquilæ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. ° ′	Mean Right Ascension, January 1, 1866. h m s
July 19	0·54	(3·5)	83 [illegible]	19 48 43·86
20	0·55			43·52
Aug. 4	0·59			43·77
31	0·66			43·61
Nov. 8	0·85			43·76
Dec. 3	0·92			43·90

B.A.C. 7256, 32 Vulpeculæ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
Aug. 30	0·66	(4·5)	62 27	20 48 50·99
Sept. 3	0·67			51·00

B.A.C. 7368, ζ Cygni.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
Aug. 30	0·66	(3·0)	60 19	21 7 14·07
31	0·66			13·99
Sept. 3	0·67			14·06

B.A.C. 7561, ε Pegasi.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
Aug. 29	0·66	(2·5)	80 44	21 37 36·34
Sept. 3	0·67			36·31
10	0·69			36·33

B.A.C. 7627, 16 Pegasi.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
Aug. 29	0·66	(5·5)	64 42	21 46 57·67
30	0·66			57·32
Sept. 3	0·67			57·67
10	0·69			57·49
17	0·71			58·00
22	0·72			57·67

B.A.C. 7688, α Aquarii.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
Aug. 29	0·66	(3·0)	90 58	21 58 53·91
30	0·66			53·88
Sept. 3	0·67			54·02
10	0·69			53·99
17	0·71			53·90
18	0·71			53·97
20	0·72			53·96
22	0·72			53·91

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1866.
B.A.C. 7868, η Aquarii.				
			° ′	h. m. s.
Aug. 29	0·66	(4·0)	90 48	22 28 28·14
Sept. 10	0·69			28·15
17	0·71			28·11
18	0·71			28·17
20	0·72			28·10
21	0·72			28·19
22	0·72			28·17
B.A.C. 7908, ζ Pegasi.				
Aug. 29	0·66	(3·0)	79 52	22 34 46·76
30	0·66			46·83
31	0·66			46·83
Sept. 3	0·67			46·72
10	0·69			46·76
17	0·71			46·74
18	0·71			46·66
20	0·72			46·74
21	0·72			46·69
22	0·72			46·84
25	0·73			46·81
27	0·74			46·76
B.A.C. 8034, α Pegasi.				
			° ′	h. m. s.
Aug. 29	0·66	(2·0)	75 31	22 58 5·26
30	0·66			5·25
31	0·66			5·30
Sept. 3	0·67			5·22
17	0·71			5·28
18	0·71			5·29
20	0·72			5·25
21	0·72			5·26
22	0·72			5·17
24	0·73			5·21
25	0·73			5·15
27	0·74			5·20
Oct. 7	0·76			5·17
B.A.C. 8105, γ Piscium.				
Sept. 18	0·71	(4·5)	87 27	23 10 13·11
20	0·72			13·03
21	0·72			13·06
24	0·73			13·07
25	0·73			13·11
Oct. 7	0·76			13·12
B.A.C. 8169, κ Piscium.				
			° ′	h. m. s.
Sept. 20	0·72	(5·5)	89 29	23 20 3·83
21	0·72			3·76
25	0·73			3·80
Oct. 7	0·76			3·75
15	0·79			3·77
B.A.C. 8233, ι Piscium.				
Sept. 24	0·73	(4·5)	85 6	23 33 3·44
25	0·73			3·49
27	0·74			3·53
Oct. 7	0·76			3·55
15	0·79			3·58
16	0·79			3·49
19	0·80			3·44
B.A.C. 8331, ω Piscium.				
Sept. 24	0·73	(4·5)	83 53	23 52 25·90
25	0·73			25·86

EXPLANATION OF THE EDINBURGH TRANSIT OBSERVATIONS FOR 1866; AND THE METHODS OF THEIR REDUCTION.

Pages 485 to 502 contain the Transit Observations of stars for 1866, similarly with those for 1849, where the methods of reduction are more fully described; the variable data for the present year being as below.

The star observations were taken almost wholly by Mr Alexander Wallace, M.A., the First Assistant Astronomer. They were actually more numerous than here recorded, because, with a view chiefly to economy in printing, all days of observation with less than four standard stars have been struck out; also parts of a day far removed from the chief observing hours of the night; also those periods of the year when either the Instrumental corrections were uncertain, or the Clock going badly. The said observations, however, had been already computed in our MS. books, and have often served useful temporary purposes, as for approximate clock-corrections and instrumental errors.

The Micrometer observations for instrumental corrections have, on the other hand, always been taken by the Astronomer, and he has also decided on the quantities for computation to be adopted for each day of star observation.

Correction of Wires for 1866.—No. 1.

In this year 1866, the system of wires was renewed on July 19; and the new wires (*i.e.* spider-lines) were by no means exactly replaced on the traces of their predecessors. We take therefore first the period of January 1 to July 18, 1866. For that period, from 6 observations of α Ursæ Minoris, the intervals of the wires and their Equatorial distances from the Mean or Middle point were found to be, the star being above the Pole,—

January 1 to July 18, 1866	Wire	I.	+ 16·580 s.	Equatorial
	...	II.	+ 8·364	
	...	III.	− 0·124	
	...	IV.	− 8·297	
	...	V.	− 16·524	

These values, immaterially different from those of 1865, have been employed in the reductions from January 1 to July 18, 1866; using for Polaris (whose Declination varied from 88° 35′ 30″ to 88° 36′ 18″) the following quantities or those adapted to a declination of 88° 35′, with the amount of alteration due to each additional second of Declination added under the term of n'',—

January 1 to July 18, 1866	Wire	I.	+ 11 m. 10·89 s. + n'' × ·133 s.	Declination 88° 35′
	...	II.	+ 5 38·36 + n × ·067	
	...	III.	− 0 5·03	
	...	IV.	− 5 35·64 − n × ·067	
	...	V.	− 11 8·62 − n × ·132	

and for δ Ursæ Minoris (whose Declination varied from 86° 36′ 6″ to 86° 36′ 45″) the following quantities or those adapted to a declination of 86° 36′, with the amount of alteration due to each additional second of Declination added under the term of n'',—

			m.	s.		s.	
January 1 to July 18, 1866	Wire I.	+	4	39·58	+ n ×	·023	Declination 86° 36′
	... II.	+	2	21·02	+ n ×	·012	
	... III.	−	0	2·10			
	... IV.	−	2	19·90	− n ×	·012	
	... V.	−	4	38·63	− n ×	·023	

1866.—No. 2.

But for the period extending from July 19 to December 31, 1866, the intervals of the wires, from 5 observations of α Ursæ Minoris, and their Equatorial distances from the Mean or Middle point were found to be, the star being above the Pole,

		s.	
July 19 to December 31, 1866,	Wire I.	+ 16·516	Equatorial
	... II.	+ 8·206	
	... III.	− 0·676	
	... IV.	− 7·973	
	... V.	− 16·679	

These values, largely different from those of the preceding part of the year for the reasons already given, have been employed in the reductions from July 19 to December 31; using for Polaris (whose Declination varied from 88° 35′ 30″ to 88° 36′ 18″) the following quantities or those adapted to a declination of 88° 35′, with the amount of alteration due to each additional second of Declination added under the term of n'',

			m.	s.		s.	
July 19 to December 31, 1866	Wire I.	+	11	8·30	+ n ×	·133	Declination 88° 35′
	... II.	+	5	31·97	+ n ×	·065	
	... III.	−	0	2·83			
	... IV.	−	5	22·52	− n ×	·065	
	... V.	−	11	14·92	− n ×	·133	

and for δ Ursæ Minoris (whose Declination varied from 86° 36′ 6″ to 86° 36′ 45″) the following quantities or those adapted to a declination of 86° 36′, with the amount of alteration due to each additional second of Declination added under the term of n'',—

			m.	s.		s.	
July 19 to December 31, 1866	Wire I.	+	4	38·50	+ n ×	·023	Declination 86° 36′
	... II.	+	2	18·37	+ n ×	·012	
	... III.	−	0	1·18			
	... IV.	−	2	14·41	− n ×	·012	
	... V.	−	4	41·26	− n ×	·023	

The correction generally for the imperfect transit of a star, whose North Polar Distance is not very small,

$$= \frac{\text{Sum of Equatorial intervals for Wires observed}}{\text{Number of Wires}} \times \text{cosecant of Star's N. P. D.}$$

this quantity being applied to the mean of whatever wires were observed.

With close Polar stars, the *Sine* is used in place of the *Arc*.

The signs and order of the Wires are to be changed when the star is below the Pole.

In the column entitled "Reduction to the Mean of the Wires," either the simple arithmetical mean of the Wires—if 5 were observed—is entered; or, if a less number, the reduced mean according to the method already explained and the quantities above given.

CORRECTIONS FOR INSTRUMENTAL DEVIATIONS.

These deviations are three in number, and are severally termed, Collimation error, Level error, and Azimuth error.

The Collimation error is the deviation of the line joining the optical centre of the object-glass and the Mean of the Wires, from the plane perpendicular to the axis of rotation; and is *mechanically* positive, or is positive as a correction for all objects at all altitudes both above and below the horizon, when the object-glass deviates to the east of the said plane:—0^s·012, the diurnal aberration, is included, for practical convenience, in the sum representing the collimation.

The Level error is the angle of inclination of the axis of rotation to the horizon, measured in a vertical plane; and is *mechanically* positive, as a correction, for all objects above the horizon, negative for those below, when the Western end is higher than the other.

The Azimuthal error is the angle of deviation of the axis of rotation (presumed approximately horizontal) from the East and West line, measured in a horizontal plane; and is *mechanically* positive as a correction for all objects South of the Zenith, or Nadir, and negative for those North of the same, when the Western end of said axis deviates towards the South.

COLLIMATION AND LEVEL ERRORS.

These are determined, as explained in former years, by special observations made from time to time with the collimating eye-piece, and by measuring micrometrically the distance between the Middle wire and its reflected image in reversed positions of the transit-instrument's axis.

For dates between the epochs of observation, the errors have been assumed to vary as the time, except where the readings of the earth-thermometers, as noticed in the Introduction, have indicated a modification thereof to be probably desirable.

AZIMUTHAL ERROR.

Of the three usual methods for determining the azimuthal position of a transit-instrument; viz. by a Polar star combined with an Equatorial star, by two successive transits of a Polar star above and below the Pole, or by three consecutive transits of a Polar star, the first plan has alone been adopted; for although the two latter have the advantage of being independent of the Right Ascension assumed for the stars, yet they can only be employed with safety when the stability of the instrument can be depended on through the twelve or twenty-four hours during which the observations extend.

Now grave doubts had long existed on this head; and, as set forth both in the Introduction to this volume and the Report to the Board of Visitors for 1870, towards the end of the volume, see pp. R 50 to R 57, they have since been proved to be only too well founded. The following therefore is the formula which has always been adopted, enabling, for each transit of a Polar star observed, a comparatively instantaneous determination of the Azimuthal error then to be made:—

$$\text{Azimuthal error} = \frac{\text{R.A. 1st} \ast - \text{R.A. 2d} \ast - (\text{obs. tr. 1st} \ast - \text{obs. tr. 2d} \ast) - \text{clock's loss in the interval}}{\left(\dfrac{\sin \text{Z.D. South}}{\sin \text{N.P.D.}}\ \text{1st} \ast\right) - \left(\dfrac{\sin \text{Z.D. South}}{\sin \text{N.P.D.}}\ \text{2d} \ast\right)}$$

In the course of the year 40 combinations of either α, or δ, Ursæ Minoris and a Clock star were obtained, from which the Azimuth error at these epochs was computed, and for dates between them the error was made to vary nearly as the time, modified in some cases by the temperature and the annual curve shown in Plate III.

TABLE I.

ADOPTED INSTRUMENTAL CORRECTIONS, EXPRESSED IN SECONDS OF TIME FOR CONVENIENCE OF APPLICATION TO TIME OBSERVATIONS.

Date.	Collimation.	Level.	Azimuth.
1866.	s.	s.	s.
Jan. 1	−0·10	+0·03	−0·50
5	−0·10	+0·03	−0·50
8	−0·10	+0·04	−0·49
10	−0·10	+0·04	−0·48
11	−0·10	+0·04	−0·47
14	−0·10	+0·05	−0·46
15	−0·10	+0·05	−0·44
16	−0·10	+0·05	−0·43
18	−0·10	+0·06	−0·44
22	−0·10	+0·06	−0·44
23	−0·10	+0·06	−0·44
29	−0·10	+0·05	−0·44
Feb. 1	−0·10	+0·05	−0·43
2	−0·10	+0·05	−0·42
8	−0·10	+0·04	−0·41
10	−0·10	+0·04	−0·40
12	−0·10	+0·04	−0·37
13	−0·10	+0·03	−0·36
16	−0·10	+0·03	−0·35
17	−0·10	+0·03	−0·33
20	−0·10	+0·02	−0·32
22	−0·10	+0·02	−0·30
23	−0·10	+0·01	−0·35
24	−0·10	+0·01	−0·38
27	−0·10	+0·01	−0·42
Mar. 9	−0·10	−0·01	−0·47
10	−0·10	−0·01	−0·50
13	−0·10	−0·02	−0·53
14	−0·19	−0·02	−0·56
16	−0·10	−0·02	−0·59
20	−0·10	−0·02	−0·62
25	−0·10	−0·03	−0·64
29	−0·10	−0·04	−0·66
30	−0·10	−0·04	−0·69
31	−0·10	−0·04	−0·72
April 13	−0·10	−0·04	−0·75
14	−0·10	−0·04	−0·80
16	−0·10	−0·04	−0·85
17	−0·10	−0·05	−0·73
19	−0·10	−0·06	−0·69
20	−0·10	−0·06	−0·67
23	−0·10	−0·06	−0·67
24	−0·10	−0·06	−0·70

Date.	Collimation.	Level.	Azimuth.
1866.	s.	s.	s.
April 25	−0·10	−0·06	−0·76
28	−0·10	−0·07	−0·83
29	−0·10	−0·07	−0·77
May 3	−0·10	−0·08	−0·72
5	−0·10	−0·08	−0·72
6	−0·10	−0·08	−0·72
9	−0·10	−0·08	−0·73
15	−0·10	−0·09	−0·73
16	−0·10	−0·09	−0·73
17	−0·10	−0·09	−0·73
19	−0·10	−0·10	−0·73
20	−0·10	−0·10	−0·74
21	−0·10	−0·10	−0·74
22	−0·10	−0·10	−0·74
24	−0·10	−0·11	−0·74
25	−0·10	−0·12	−0·74
26	−0·10	−0·12	−0·75
27	−0·10	−0·12	−0·75
28	−0·10	−0·13	−0·75
29	−0·10	−0·13	−0·75
30	−0·10	−0·13	−0·75
June 5	−0·10	−0·15	−0·75
8	−0·10	−0·16	−0·75
10	−0·10	−0·16	−0·76
12	−0·10	−0·17	−0·76
13	−0·10	−0·17	−0·76
15	−0·10	−0·18	−0·76
18	−0·10	−0·19	−0·77
19	−0·10	−0·19	−0·77
22	−0·10	−0·20	−0·75
23	−0·10	−0·20	−0·72
24	−0·10	−0·20	−0·70
26	−0·10	−0·20	−0·69
July 2	−0·10	−0·21	−0·76
3	−0·10	−0·21	−0·73
6	−0·10	−0·21	−0·70
10	−0·10	−0·21	−0·68
11	−0·10	−0·21	−0·66
12	−0·10	−0·22	−0·64
13	−0·10	−0·22	−0·62
(a)	......	......	......
19	−0·28	−0·21	−0·31
20	−0·28	−0·20	−0·28
21	−0·28	−0·20	−0·29

Date.	Collimation.	Level.	Azimuth.
1866.	s.	s.	s.
July 31	−0·28	−0·20	−0·33
Aug. 3	−0·28	−0·20	−0·38
4	−0·28	−0·20	−0·40
5	−0·28	−0·20	−0·43
8	−0·28	−0·20	−0·42
14	−0·28	−0·20	−0·42
22	−0·28	−0·18	−0·42
29	−0·28	−0·17	−0·41
30	−0·28	−0·17	−0·41
31	−0·28	−0·17	−0·40
Sept. 2	−0·28	−0·17	−0·40
3	−0·28	−0·17	−0·40
5	−0·28	−0·16	−0·40
8	−0·28	−0·16	−0·40
10	−0·28	−0·16	−0·39
13	−0·28	−0·15	−0·39
15	−0·28	−0·15	−0·39
17	−0·28	−0·15	−0·38
18	−0·28	−0·15	−0·38
20	−0·28	−0·14	−0·38
21	−0·28	−0·14	−0·37
22	−0·28	−0·14	−0·37
24	−0·28	−0·13	−0·37
25	−0·28	−0·13	−0·38
27	−0·28	−0·12	−0·38
Oct. 6	−0·28	−0·10	−0·35
7	−0·28	−0·10	−0·35
8	−0·28	−0·10	−0·34
15	−0·28	−0·09	−0·35
16	−0·28	−0·08	−0·36
17	−0·28	−0·08	−0·37
19	−0·28	−0·07	−0·38
24	−0·28	−0·07	−0·39
25	−0·28	−0·06	−0·38
28	−0·28	−0·06	−0·38
30	−0·28	−0·05	−0·36
Nov. 3	−0·28	−0·04	−0·38
5	−0·28	−0·04	−0·37
8	−0·28	−0·03	−0·38
9	−0·28	−0·03	−0·35
11	−0·28	−0·02	−0·34

(a) New Wires inserted betwixt July 14 and 19.

Date.	Collimation.	Level.	Azimuth.	Date.	Collimation.	Level.	Azimuth.	Date.	Collimation.	Level.	Azimuth.
1866.	s.	s.	s.	1866.	s.	s.	s.	1866.	s.	s.	s.
Nov. 13	−0·28	−0·02	−0·33	Nov. 30	−0·28	+0·02	−0·24	Dec. 16	−0·28	+0·03	−0·18
14	−0·28	−0·01	−0·32					21	−0·28	+0·04	−0·17
16	−0·28	0·00	−0·31	Dec. 3	−0·28	+0·02	−0·23	22	−0·28	+0·04	−0·17
18	−0·28	0·00	−0·30	4	−0·28	+0·02	−0·21	23	−0·28	+0·04	−0·16
19	−0·28	0·00	−0·29	5	−0·28	+0·02	−0·20	25	−0·28	+0·05	−0·15
23	−0·28	+0·01	−0·28	7	−0·28	+0·02	−0·20	27	−0·28	+0·05	−0·14
25	−0·28	+0·01	−0·26	10	−0·28	+0·03	−0·19	28	−0·28	+0·05	−0·07
27	−0·28	+0·02	−0·25	13	−0·28	+0·03	−0·18	31	−0·28	+0·06	0·00
29	−0·28	+0·02	−0·25								

The correction to the star observations of times of Transit, for each of the above three instrumental deviations successively, is,

$$\text{Collimation correction} \times \frac{1}{\sin \text{Star's North Polar Distance}},$$

the sign being positive for a star above the Pole, and negative when it crosses the Meridian below the Pole.

$$\text{Level correction} \times \frac{\cos \text{Star's Zenith Distance South}}{\sin \text{Star's North Polar Distance}},$$

the sign being positive for a star above the Pole, and negative when it crosses the Meridian below the Pole. And

$$\text{Azimuthal correction} - \frac{\sin \text{Star's Zenith Distance South}}{\sin \text{Star's North Polar Distance}},$$

the sign being positive for a star above the Pole *and* to the South of the Zenith, also for a star below the Pole and North of the Zenith; but negative when above the Pole and to the North of the Zenith.

CORRECTION OF THE CLOCK.

For computing the errors of the Clock and the Azimuthal errors of the Transit Instrument, the following Table of the Mean Right Ascensions of the principal stars for January 1, 1866, has been employed, and was kindly communicated at the time by G. B. Airy, Esq., Astronomer Royal, as being the same employed by him for reducing the Greenwich Observations of 1866.

TABLE II.

MEAN RIGHT ASCENSIONS ADOPTED OF STANDARD STARS

Star's Name.	Assumed Mean Right Ascension, January 1, 1866.	Correction to Nautical Almanac.	Star's Name.	Assumed Mean Right Ascension, January 1, 1866.	Correction to Nautical Almanac.
	h m s	s		h m s	s
α Andromedæ	0 1 27·36	+ 0·07	ν Geminorum	6 6 47·37	....
γ Pegasi	0 6 20·28	+ 0·05	μ Geminorum	6 14 51·22	− 0·01
ι Ceti	0 12 35·93	....	β Canis Majoris	6 16 48·02	....
12 Ceti	0 23 11·99	− 0·04	ν Geminorum	6	....
ε Andromedæ	0 31 28·80	....	γ Geminorum	6 29 58·21	− 0·03
β Ceti	0 36 51·67	+ 0·07	Cephei 51	6 36 42·34	+ 2·73
μ Andromedæ	0 49 19·42	....	Sirius	6 39 ...	....
ε Piscium	0 55 59·45	− 0·02	ν Canis Majoris	6 47 57·85	....
ζ Andromedæ	1 2 14·23	....	ε Canis Majoris	6 53 21·59	− 0·01
Polaris	1 9 57·76	+ 0·17	γ Canis Majoris	6 57 41·77	− 0·03
θ Ceti	1 17 19·51	+ 0·03	51 Geminorum	7 5 40·49	....
η Piscium	1 24 18·97	+ 0·06	δ Geminorum	7 12 7·11	0·00
ν Piscium	1 34 27·55	0·00	β Canis Minoris	7 19 52·95	....
β Arietis	1 47 14·49	+ 0·01	Castor	7 26 2·79	+ 0·01
α Arietis	1 59 37·47	+ 0·02	Procyon	7 32 17·20	+ 0·09
67 Ceti	2 10 18·02	+ 0·04	Pollux	7 37 6·77	+ 0·03
ξ² Ceti	2 21 2·20	− 0·01	ζ Navis	7 43 39·52	....
δ Ceti	2 32 36·99	....	6 Cancri	7 55 17·03	− 0·09
γ² Ceti	2 36 21·55	+ 0·04	15 Argûs	8 1 50·26	0·00
ε Arietis	2 44 5·55	....	β Cancri	8 9 14·81	....
α Ceti	2 55 16·59	+ 0·06	d¹ Cancri	8 15 41·28	....
δ Arietis	3 3 58·24	+ 0·01	η Cancri	8 24 57·36	+ 0·03
τ Arietis	3 13 29·68	....	γ Cancri	8 35 31·65	....
ε Tauri	3 17 36·30	....	ι Hydræ	8 39 40·67	− 0·03
f Tauri	3 23 26·71	....	α Cancri	8 51 9·35	....
ε Eridani	3 26 37·10	....	κ Cancri	9 0 29·23	....
11 Tauri	3 32 16·37	....	83 Cancri	9 11 29·91	+ 0·10
δ Eridani	3 36 49·51	....	α Hydræ	9 21 0·12	+ 0·02
η Tauri	3 39 31·39	+ 0·05	ξ Leonis	9 24 43·18	....
γ Eridani	3 51 46·66	+ 0·04	ε Leonis	9 33 59·78	....
ω¹ Tauri	4 1 21·73	....	ι Leonis	9 38 14·44	+ 0·04
ο¹ Eridani	4 5 19·49	− 0·03	μ Leonis	9 45 8·25	....
γ Tauri	4 12 10·23	....	π Leonis	9 53 7·61	0·00
ε Tauri	4 20 47·66	+ 0·01	Regulus	10 1 13·99	+ 0·02
Aldebaran	4 28 14·03	− 0·01	γ¹ Leonis	10 12 34·86	0·00
μ Eridani	4 38 48·26	....	μ Hydræ	10	....
ι Aurigæ	4 48 16·23	0·00	ρ Leonis	10 25 45·22	0·00
ι Leporis	4 59 47·32	+ 0·05	34 Sextantis	10 35 42·23	....
Rigel	5 8 5·90	+ 0·01	l Leonis	10 42 12·69	+ 0·03
β Tauri	5 17 49·40	+ 0·06	d Leonis	10 53 38·34	....
δ Orionis	5 25 9·68	− 0·04	χ Leonis	10 58 8·19	− 0·02
α Leporis	5 26 49·23	− 0·04	δ Leonis	11 6 58·72	− 0·02
ε Orionis	5 29 24·84	− 0·01	δ Crateris	11 12 38·57	+ 0·05
α Columbæ	5 34 47·86	− 0·15	τ Leonis	11 21 2·71	....
κ Orionis	5 41 24·06	....	υ Leonis	11 30 5·25	− 0·03
α Orionis	5 47 55·07	+ 0·03	β Leonis	11 42 13·37	+ 0·05
1 Geminorum	5 55 58·53	....	π Virginis	11 54 0·35	....
ν Orionis	5 59 55·27	− 0·01	ε Corvi	12 3 14·23	+ 0·03

Star's Name.	Assumed Mean Right Ascension, January 1, 1866.	Correction to Nautical Almanac.	Star's Name.	Assumed Mean Right Ascension, January 1, 1866.	Correction to Nautical Almanac.
	h. m. s.	s.		h. m. s.	s.
η Virginis	12 13 3·03	+0·04	α Lyræ	18 32 24·10	+0·07
δ² Corvi	12 22 56·12	....	2 Aquilæ	18	....
β Corvi	12 27 21·12	+0·14	β Lyræ	18 45 7·98	+0·11
35 Virginis	12 41 2·03	....	ε Aquilæ	18 53 32·42	....
δ Virginis	12 48 51·29	....	ζ Aquilæ	18 59 15·03	+0·13
ε Virginis	12 55 30·37	....	ψ Sagittarii	19 7 19·28	....
θ Virginis	13 3 0·62	+0·03	ω Aquilæ	19 11 31·57	+0·03
Spica	13 18 8·16	+0·02	δ Aquilæ	19 18 44·45	+0·03
ζ Virginis	13 27 52·01	−0·01	α Vulpeculæ	19 23 7·79	....
m Virginis	13 34 34·85	....	μ Aquilæ	19 27 32·58	....
τ Bootis	13 40 53·67	....	h² Sagittarii	19 28 32·95	+0·11
η Bootis	13 48 18·28	+0·04	γ Aquilæ	19 39 53·34	+0·09
τ Virginis	13 54 49·71	+0·05	α Aquilæ	19 44 14·69	+0·05
κ Virginis	14 5 45·06	....	β Aquilæ	19 48 43·83	+0·07
Arcturus	14 9 33·02	+0·06	c Sagittarii	19 54 24·83	....
f Bootis	14 20 13·44	....	λ Ursæ Minoris	19 58 11·84	−0·23
ρ Bootis	14 26 3·30	0·00	θ Aquilæ	20 4 23·37	....
ε Bootis	14 39 8·10	+0·07	α² Capricorni	20 10 37·03	+0·07
α² Libræ	14 43 28·15	+0·04	β Capricorni	20 13 28·77	....
ξ² Libræ	14 49 30·02	....	ρ Capricorni	20 21 12·82	+0·14
ψ Bootis	14 58 42·27	−0·03	ε Delphini	20 26 48·61	....
β Libræ	15 9 47·92	+0·04	α Delphini	20 33 24·85	....
ι¹ Libræ	15 15 33·54	....	ε Aquarii	20 40 25·15	....
ζ¹ Libræ	15 20 42·21	....	32 Vulpeculæ	20 48 50·08	+0·04
α Coronæ	15 29 0·92	+0·08	θ Capricorni	20 58 24·63	....
α Serpentis	15 37 40·14	+0·08	ζ Cygni	21 7 14·03	+0·07
ε Serpentis	15 44 8·27	....	α Equulei	21 9 7·43	....
γ Serpentis	15 50 15·92	....	ι Capricorni	21 14 46·88	....
β¹ Scorpi	15 57 38·93	+0·04	β Aquarii	21 24 30·12	+0·03
δ Ophiuchi	16 7 19·49	+0·05	ξ Aquarii	21 30 36·94	....
γ Herculis	16 16 0·61	....	ε Pegasi	21 37 36·29	+0·03
Antares	16 21 11·70	+0·03	δ Capricorni	21 39 38·44	....
λ Ophiuchi	16 24 9·41	....	16 Pegasi	21 46 57·99	+0·02
ζ Ophiuchi	16 29 46·92	....	α Aquarii	21 58 53·99	+0·04
ζ Herculis	16 36 14·13	+0·02	ι Pegasi	22 0 46·43	....
κ Ophiuchi	16 51 19·56	−0·04	θ Aquarii	22 9 45·62	0·00
ε Herculis	16 55 9·85	....	γ Aquarii	22 14 44·05	....
η Ophiuchi	17 2 41·68	....	π Aquarii	22 23 33·18	....
α Herculis	17 8 32·31	+0·10	η Aquarii	22 28 28·15	+0·01
θ Ophiuchi	17 13 46·92	+0·07	ζ Pegasi	22 34 46·73	+0·08
ν Ophiuchi	17 19 51·99	....	μ Pegasi	22 43 32·26	....
α Ophiuchi	17 28 42·89	+0·06	λ Aquarii	22 45 37·25	....
β Ophiuchi	17 36 51·17	....	Fomalhaut	22 50 14·35	+0·02
μ Herculis	17 41 12·92	+0·07	α Pegasi	22 58 5·23	+0·03
89 Herculis	17 50 0·89	....	γ Piscium	23 10 13·11	+0·01
72 Ophiuchi	18 0 59·80	....	κ Piscium	23 20 3·76	−0·03
μ Sagittarii	18 6 44·91	+0·05	ι Piscium	23 33 3·49	−0·04
η Serpentis	18 14 22·57	....	δ Sculptoris	23 41 56·44	−0·04
δ Ursæ Minoris	18 15 34·11	−0·12	ω Piscium	23 52 26·85	−0·04
λ Sagittarii	18 19 42·05	....	2 Ceti	23 56 52·35	....

The Mean Right Ascensions are converted into Apparent for any day of observation, by the application of the reductions of mean to apparent places taken from the Nautical Almanac. The Correction of the Clock is determined from the observed transits of the stars in the foregoing Table (excepting the

close Polar stars), the corrections of the instrument being previously applied, compared with the Apparent Right Ascensions computed.

The Corrections of the Clock thus determined are contained in the column entitled "Correction of Clock observed."

The sign + prefixed to the Correction of the Clock denotes that the clock is slow; the sign − that it is fast.

On account partly of the variability at times of the Clock-rate, and still more frequently of swerving in the azimuthal position of the Transit Instrument as produced by changes of temperature acting on its supporting stone piers during the observations, the "Adopted Clock Corrections" have been generally obtained by graphical projection, and the stars of each night have been used much more by themselves than with reference to those of preceding and following nights.

At the same time, to afford a tabular view, in the usual manner, of the march of the Clock, its daily errors at 0^h Sidereal Time, as given more or less approximately by the curves, are contained in the following Table.

TABLE III.

CORRECTION FOR TRANSIT CLOCK AT 0^h SIDEREAL TIME.

Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.
1866.	s	1866.	s	1866.	s	1866.	s	1866.	s
Jan. 4	− 37·93	Mar. 29	− 49·96	May 30	− 55·87	Aug. 30	− 54·32	Nov. 3	− 50·85
5	− 37·76	April 13	− 51·92	June 8	− 56·31	31	− 54·36	5	− 50·87
8	− 37·80	14	− 52·17	10	56·11	Sept. 3	− 54·40	8	− 50·87
16	− 38·70	16	− 52·73	15	56·32	10	− 54·85	9	− 50·82
18	− 38·60	17	− 53·05	18	− 57·00	17	− 55·16	13	− 50·88
22	− 38·40	19	− 53·26	19	− 57·00	18	− 55·08	14	− 50·90
23	− 38·15	20	− 53·42	23	− 56·59	20	− 55·19	16	− 50·60
29	− 36·40	24	− 53·20	26	− 56·01	21	− 55·34	19	− 50·50
Feb. 1	− 36·35	28	− 53·68	July 2	− 56·33	22	− 55·53	25	− 50·43
2	− 36·44	May 3	− 54·33	3	− 56·61	24	− 55·82	27	− 50·32
10	− 36·82	9	− 54·97	11	− 56·64	25	− 55·68	29	− 49·86
13	− 37·28	15	− 55·20	12	− 56·50	27	− 55·75	30	− 49·65
16	− 38·25	16	− 55·03	13	− 56·30	Oct. 7	− 53·77	Dec. 3	− 49·43
20	− 38·90	17	− 54·95	19	− 55·87	8	− 53·42	5	− 49·50
22	− 39·33	21	− 54·72	20	− 55·91	15	− 52·57	7	− 49·69
23	− 39·68	22	− 54·70	21	− 55·82	16	− 52·35	10	− 49·45
24	− 39·97	25	− 54·94	Aug. 4	− 55·60	19	− 52·09	13	− 49·47
27	− 40·86	26	− 55·18	5	− 55·64	21	− 51·28	21	− 48·83
Mar. 13	− 45·00	28	− 55·43	29	− 54·30	30	− 50·93	22	− 48·38
14	− 45·22	29	− 55·76					27	− 47·39
20	− 47·58							28	− 47·38

ROYAL OBSERVATORY, EDINBURGH.

OBSERVATIONS

MADE WITH

THE MURAL CIRCLE,

AND

CALCULATION

OF

APPARENT NORTH POLAR DISTANCES.

1866.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Corr. to Mean N. Polar Dist. Jan. 1 1866.
1866.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Jan. 5	......	Nadir	......	5 25 0	254 0	1 53·2	62·6	0·500	29·59	42·0	38·0	....	......	......	....	......
	......	Nadir	......	....	254 0	1 64·2	73·2	0·500	......	......	......	....	......	......	....	......
	2022	....	......	6 10 22	119 55	4 13·8	15·4	0·550	29·59	......	38·0	....	......	6	+45 57 15·0	- 10·9
	2101	....	......	6 22 55	107 20	1 2·4	3·3	0·624	29·57	......	38·0	....	......	7	+33 19 4·7	- 10·4
	2184	....	......	6 34 18	113 25	2 37·8	38·2	0·500	29·57	......	38·0	....	......	8	+39 25 37·0	- 11·1
	2292	....	......	6 54 13	119 5	5 1·7	3·1	0·500	29·57	......	38·0	....	......	7	+45 8 1·7	- 11·5
	2334	....	......	....	79 55	2 40·1	41·3	0·500	29·57	......	38·0	....	......	6	+ 5 55 38·2	- 11·4
	2463	....	......	7 20 59	102 5	4 41·1	42·3	0·800	29·58	......	38·0	....	......	8	+28 7 49·0	- 13·[illegible]
	2488	....	......	7 27 26	83 30	1 8·9	11·1	0·500	29·58	......	38·0	....	......	......	+ 9 29 7·3	- 13·4
	......	Nadir	......	7 40 0	254 0	1 51·8	61·6	0·500	29·58	42·0	38·0	....	......	......	....	......
	......	Nadir	......	....	254 0	1 64·3	73·7	0·500	......	......	......	....	......	......	....	......
Jan. 9	......	Nadir	......	4 54 0	254 0	1 53·1	62·6	0·500	28·86	49·0	39·0	....	......	......	....	......
	......	Nadir	......	....	254 0	1 64·7	74·1	0·500	......	......	......	....	......	......	....	......
Jan. 10	1626	....	......	5 9 59	89 40	0 12·1	15·0	0·500	28·96	......	29·0	....	......	6	+15 38 11·0	- [illegible]
	1703	....	......	5 21 6	113 35	4 13·0	13·0	0·500	28·96	......	29·0	....	......	6	+39 37 12·1	- [illegible]
	1826	....	......	5 40 9	120 30	[illegible] 17·8	21·2	0·500	28·96	......	29·0	....	......	5	+46 28 17·6	- 10·4
	2046	....	......	6 15 48	73 35	3 24·3	23·9	0·590	28·96	......	28·9	....	......	7	− 0 23 36·4	- 6·4
	2184	....	......	6 34 18	113 25	2 36·[illegible]	38·4	0·500	28·96	......	28·5	....	......	6	+39 25 36·4	- 11·1
	2238	....	......	6 44 32	106 10	3 32·5	32·5	0·500	28·96	......	28·2	....	......	8	+32 11 31·2	- 11·2
	2306	....	......	6 56 53	118 45	4 52·9	53·0	0·500	28·96	......	28·1	....	......	8	+44 47 52·1	- 12·1
	2363	....	......	7 6 55	105 0	2 48·9	47·3	0·466	28·96	......	28·0	....	......	7	+31 0 46·3	- 12·0
	2488	....	......	7 27 27	83 30	1 1·7	2·3	0·741	28·96	......	28·0	1, W.	0	7	+ 9 29 5·9	- 12·3
	2586	....	......	7 42 19	101 25	2 14·7	14·3	0·500	28·96	......	28·1	....	......	6	+27 25 12·6	- 13·1
	......	Nadir	......	7 57 0	254 0	1 52·0	60·8	0·500	28·96	32·0	28·1	....	......	......	....	......
	......	Nadir	......	....	254 0	1 64·8	73·6	0·500	......	......	......	....	......	......	....	......
Jan. 12	......	Nadir	......	4 30 0	254 0	1 54·4	63·1	0·500	29·36	35·0	31·8	....	......	......	....	......
	......	Nadir	......	....	254 0	1 65·0	74·0	0·500	......	......	......	....	......	......	....	......
	1491	....	5·0	4 43 58	121 15	3 25·7	27·6	0·535	29·36	......	31·8	10, W.	0	7	+47 16 26·3	- [illegible]
Jan. 18	......	Nadir	......	5 57 0	254 0	1 50·7	61·7	0·500	29·06	47·0	46·0	....	......	......	....	......
	......	Nadir	......	....	254 0	1 61·8	71·8	0·500	......	......	......	....	......	......	....	......
	2463	....	7·0	7 21 0	102 5	4 50·4	51·6	0·500	29·06	......	46·0	....	......	6	+28 7 51·2	- [illegible]
	2522	α Canis Minoris	1·0	7 32 57	124 20	4 29·7	32·3	0·500	29·06	......	46·0	....	......	7	+50 22 31·1	- [illegible]
	2586	....	......	7 42 19	101 25	2 12·7	11·7	0·600	29·06	......	46·1	....	......	8	+27 25 14·3	- [illegible]
	2683	....	......	7 57 40	110 45	0 49·6	50·0	0·500	29·06	......	46·2	....	......	7	+36 43 49·2	- [illegible]
Jan. 19	......	Nadir	......	5 9 0	254 0	1 52·4	60·8	0·500	28·98	43·9	41·0	....	......	......	....	......
	......	Nadir	......	....	254 0	1 63·9	72·4	0·500	......	......	......	....	......	......	....	......
	1683	....	......	5 18 35	95 40	2 54·2	57·2	0·460	28·98	......	41·0	10, W.	0	7	+21 40 53·6	- [illegible]
	1730	δ Orionis	......	5 25 50	130 20	2 14·5	17·4	0·500	28·98	......	41·0	....	......	8	+56 20 15·6	- [illegible]
	2022	....	......	6 10 24	119 55	4 19·0	21·2	0·488	28·98	......	41·0	....	......	7	+45 57 19·7	- 11·[illegible]
	......	Nadir	......	7 0 0	254 0	1 52·7	61·1	0·500	28·97	44·0	41·3	....	......	......	....	......
	......	Nadir	......	....	254 0	1 64·0	72·2	0·500	......	......	......	....	......	......	....	......
Jan. 22	......	Nadir	......	6 6 0	254 0	1 53·7	61·1	0·500	29·35	43·6	42·0	....	......	......	....	......
	......	Nadir	......	....	254 0	1 64·1	71·9	0·500	......	......	......	....	......	......	....	......
	2184	....	7·0	6 34 17	113 25	2 39·4	41·2	0·500	29·35	......	42·0	5, W.	0	7	+39 25 46·0	- [illegible]

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1866.
1866.				h m s	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Jan. 22	2292	......	......	6 54 14	119 10	0 2.2	4.2	0.500	29.35	......	42.0	......	......	6	+45 8 1.9	−13.0
	2363	......	......	7 6 55	105 0	2 49.0	48.7	0.500	29.35	......	42.0	......	......	7	+31 0 48.2	−11.7
	2463	......	......	7 21 0	102 5	4 52.8	53.8	0.380	29.35	......	42.0	......	......	5	+28 7 49.8	−12.0
	2522	α Canis Minoris	2.0	7 32 56	124 20	4 31.9	33.5	0.500	29.35	......	42.0	......	......	10	+50 [illegible] 32.4	−14.0
	2586	......	......	7 42 19	101 25	2 9.7	10.3	0.664	29.35	......	42.0	......	......	8	+27 25 13.4	−12.8
	2683	......	......	7 57 39	110 45	0 50.7	51.5	0.461	29.40	......	42.0	......	......	7	+36 43 49.1	−13.8
	2867	......	......	8 26 1	119 25	2 36.0	37.2	0.500	29.40	......	42.0	......	......	......	+45 25 36.0	−14.2
	......	Nadir ‖	......	8 40 0	254 0	1 54.1	61.0	0.500	29.40	43.0	42.0	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 63.1	72.3	0.500	......	......	......	......	......	......	......	......
Jan. 23	......	Nadir ‖	......	5 41 0	254 0	1 50.6	61.4	0.500	30.14	43.0	40.0	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 63.6	72.8	0.500	......	......	......	......	......	......	......	......
	1930	......	......	5 55 48	112 15	4 0.2	3.0	0.500	30.14	......	40.0	......	......	5	+38 17 1.5	−10.1
	2046	......	......	6 15 46	73 35	3 19.7	21.6	0.660	30.14	......	40.0	2, W.	1	6	−0 23 37.2	−4.1
	2184	......	......	6 34 18	113 25	2 39.7	40.9	0.450	30.14	......	40.1	......	......	7	+39 25 38.6	−11.7
	2238	......	......	6 44 32	106 10	3 31.3	32.0	0.580	30.14	......	40.0	......	......	8	+[illegible] 11 33.7	−11.0
	2292	......	......	6 54 14	119 10	0 0.2	2.8	0.500	30.14	......	40.0	......	......	7	+45 8 0.2	−13.0
	2334	......	......	7 1 26	79 55	2 38.4	40.4	0.500	30.14	......	40.0	......	......	6	+5 55 37.6	−8.4
	2410	δ Geminorum	......	7 12 47	107 40	5 21.0	23.7	0.622	30.14	......	40.0	......	......	7	+33 43 25.9	−12.3
	2488	......	......	7 27 27	83 30	1 5.4	6.3	0.600	30.14	......	40.0	......	......	8	+9 29 6.5	−10.4
	2522	α Canis Minoris	......	7 32 57	124 20	4 33.9	36.4	0.500	30.14	......	40.3	......	......	7	+50 22 34.9	−14.1
	2586	......	......	7 42 19	101 25	2 12.2	13.4	0.500	30.14	......	40.4	......	......	6	+27 25 11.7	−12.8
	2683	......	......	7 57 41	110 45	0 43.6	44.6	0.780	30.14	......	40.4	......	......	7	+36 43 50.8	−13.8
	2737	......	......	8 4 6	114 55	2 20.9	22.6	0.574	30.14	......	40.9	......	......	8	+40 55 23.4	−14.0
	2867	......	......	8 26 1	119 25	2 31.0	36.1	0.540	30.14	......	41.0	......	......	7	+45 25 35.5	−14.3
	......	Nadir ‖	......	8 38 0	254 0	1 53.3	60.9	0.500	30.14	41.7	41.0	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 65.0	72.0	0.500	......	......	......	......	......	......	......	......
Jan. 29	......	Nadir ‖	......	......	254 0	1 50.9	60.7	0.500	29.41	42.0	42.2	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 62.3	73.5	0.500	......	......	......	......	......	......	......	......
	2334	......	......	7 3 20	79 55	4 9.7	10.1	0.500	29.40	......	42.0	8, W.	1	7	+5 57 8.7	−7.4
	2522	α Canis Minoris	1.0	7 32 55	124 20	4 33.3	33.3	0.500	29.40	......	42.0	......	......	7	+50 22 33.2	−14.6
	2586	......	7.0	7 42 17	101 25	2 13.9	14.0	0.500	29.40	......	42.0	......	......	6	+27 25 13.1	−12.5
	2683	......	......	7 57 39	110 45	0 50.4	49.0	0.500	29.40	......	42.0	......	......	8	+36 43 48.9	−13.8
	2761	......	......	8 7 30	116 30	1 40.6	41.4	0.500	29.40	......	42.0	......	......	7	+42 29 40.5	−14.4
	......	Nadir ‖	......	8 26 0	254 0	1 52.8	61.6	0.500	29.40	42.0	42.0	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 64.7	72.5	0.500	......	......	......	......	......	......	......	......
Jan. 31	......	Nadir ‖	......	6 22 0	254 0	1 51.0	61.8	0.500	28.89	43.0	45.3	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 63.5	72.0	0.500	......	......	......	......	......	......	......	......
	2971	(a) ι Hydræ	......	8 40 18	123 0	4 3.0	6.0	0.500	28.89	......	44.3	......	......	5	+49 2 4.5	−14.9
Feb. 1	......	Nadir ‖	......	7 22 0	254 0	1 51.2	60.0	0.500	28.79	44.3	44.0	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 63.4	72.4	0.500	......	......	......	......	......	......	......	......
	2683	(b)	......	7 57 38	110 45	0 47.8	48.9	0.574	28.79	......	44.0	......	......	6	+36 43 50.1	−13.8
	2748	......	......	8 5 30	115 30	4 43.0	43.8	0.500	28.79	......	44.0	......	......	7	+41 32 44.2	−14.4
	2867	......	......	8 26 0	119 25	2 36.7	38.7	0.500	28.79	......	43.9	......	......	7	+45 25 37.6	−14.9
	2971	ι Hydræ	3.5	8 40 19	123 0	4 2.2	4.6	0.500	28.79	......	44.1	......	......	8	+49 2 3.7	−15.0
	3053	......	......	8 51 6	120 0	4 29.9	33.1	0.563	28.79	......	44.3	......	......	8	+46 2 33.8	−15.0
	3091	......	......	8 57 39	79 50	0 57.8	59.9	0.500	28.79	......	44.1	12, W.	0	6	+5 48 57.2	−13.8
	3133	......	......	9 5 51	125 30	3 35.7	37.7	0.500	28.79	......	44.1	......	......	7	+51 31 36.8	−14.9

(a) Cloudy. (b) Barometer reading at the above five observations originally entered 29·79 instead of 28·79.

Date.	Star or other Object Observed: No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.
1866.				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°			
Feb. 1	3157	......	......	9 10 50	69 35	4 7·2	7·8	0·500	29·79	......	44·1	......	......	6
	......	Nadir ‖	......	9 19 [illegible]	254 0	1 52·0	61·4	0·500	29·87	44·8	44·2	......	......	......
	......	Nadir ‖	......	......	254 0	1 60·8	69·8	0·500	......	......	......	......	......	......
Feb. 2	......	Nadir ‖	......	5 52 0	254 0	1 51·0	59·8	0·500	29·29	43·0	36·9	......	......	......
	......	Nadir ‖	......	......	254 0	1 61·0	71·0	0·500	......	......	......	......	......	......
	2022	......	......	6 10 22	119 55	4 15·0	16·4	0·650	29·29	......	39·0	8. W.	0	7
	2101	......	......	6 22 51	107 20	1 4·6	6·6	0·500	29·29	......	39·0	......	......	7
	2184 (a)	......	......	6 31 15	113 25	2 37·7	38·4	0·520	29·29	......	39·0	......	......	9
	2238	......	......	6 44 30	106 10	3 33·6	32·8	0·500	29·29	......	39·0	......	......	9
	2292	......	......	6 51 12	119 10	0 1·7	3·3	0·500	29·29	......	39·4	......	......	9
	2323 (b)	......	......	7 0 58	114 10	4 13·2	15·4	0·500	29·29	......	39·9	......	......	6
	2379	......	......	7 8 54	80 15	2 25·6	26·0	0·580	29·29	......	39·9	......	......	8
	2463	......	......	7 20 58	102 5	4 47·0	48·0	0·528	29·29	......	39·9	......	......	10
	2488	......	......	7 27 25	83 30	1 2·6	5·2	0·500	29·30	......	39·0	......	......	9
	2522	α Canis Minoris	......	7 32 55	124 20	4 26·6	29·4	0·690	29·30	......	39·0	......	......	7
	2586	......	......	7 42 17	101 25	2 8·6	9·1	0·650	29·30	......	39·6	......	......	8
	2683	......	......	7 57 38	110 45	0 47·7	48·6	0·600	29·30	......	39·7	......	......	8
	2748	......	......	8 5 30	115 30	4 42·0	43·6	0·500	29·30	......	39·7	......	......	7
	2867	......	......	8 26 0	119 25	2 35·7	38·0	0·500	29·30	......	39·8	15	......	7
	2971	ι Hydræ	......	8 40 19	123 0	4 1·8	5·4	0·500	29·30	......	40·0	......	......	8
	3013	......	......	8 45 57	121 5	2 56·8	60·4	0·500	29·30	......	40·0	......	......	7
	3083	......	......	8 56 30	78 35	3 14·0	14·2	0·500	29·30	......	40·0	......	......	5
	3133	......	......	9 5 50	125 30	3 34·0	35·0	0·500	29·30	......	40·0	......	......	6
	......	Nadir ‖	......	9 18 0	254 0	1 52·7	61·3	0·500	29·30	40·3	40·0	......	......	......
	......	Nadir ‖	......	......	254 0	1 61·0	73·2	0·500	......	......	......	......	......	......
Feb. 8	......	Nadir ‖		6 23 0	254 0	1 52·4	60·9	0·500	29·49	40·6	37·0	......	......	......
	......	Nadir ‖		......	254 0	1 64·6	74·0	0·500	......	......	......	......	......	......
	2184	......	......	6 34 16	113 25	2 39·4	39·0	0·500	29·49	......	37·0	......	......	6
	2238	......	......	6 44 30	106 10	3 33·7	32·3	0·500	29·49	......	37·0	7. W.	0	7
	2292	......	......	6 51 12	119 10	0 0·7	2·8	0·500	29·49	......	37·0	......	......	9
	2410	δ Geminorum	......	7 12 45	107 45	[illegible] 22·9	23·9	0·500	29·49	......	37·3	......	......	8
	2463	......	......	7 20 58	102 5	4 45·6	46·0	0·577	29·49	......	37·5	......	......	6
	2488	......	......	7 27 26	83 30	1 0·7	0·9	0·632	29·49	......	37·6	......	......	7
	2522	α Canis Minoris	......	7 32 56	124 20	4 33·1	35·9	0·500	29·49	......	37·6	......	......	7
	2586	......	......	7 42 17	101 25	2 9·7	10·2	0·607	29·49	......	37·7	......	......	8
	2683	......	......	7 57 38	110 45	0 48·4	48·4	0·540	29·49	......	37·7	......	......	7
	2748	......	......	8 5 32	115 30	4 42·2	44·2	0·500	29·49	......	37·7	......	......	6
	......	Nadir ‖	......	9 39 0	254 0	1 52·4	61·7	0·500	29·49	38·8	38·0	......	......	......
	......	Nadir ‖	......	......	254 0	1 64·5	72·6	0·500	......	......	......	......	......	......
Feb. 9	......	Nadir ‖	......	6 40 0	254 0	1 53·7	62·3	0·500	29·15	40·4	36·2	......	......	......
	......	Nadir ‖	......	......	254 0	1 64·2	73·1	0·500	......	......	......	......	......	......
	2363	......	......	7 6 54	105 0	2 49·0	47·4	0·500	29·15	......	36·9	......	......	7
	2410	δ Geminorum	......	7 12 46	107 45	0 21·7	22·4	0·500	29·15	......	36·9	......	......	8
	2458	......	......	7 27 26	83 30	1 2·4	3·4	0·500	29·15	......	36·8	......	......	5
	2566	......	......	7 42 17	101 25	2 13·0	15·8	0·403	29·15	......	36·8	......	......	6
	2683	......	......	7 57 39	110 45	0 49·7	50·2	0·500	29·15	......	37·0	......	......	7
	2761	......	......	8 7 32	116 30	1 41·3	42·9	0·500	29·15	......	37·0	......	......	6
	3242	θ Ursæ Majoris	......	9 21 32	77 40	2 24·2	25·1	0·580	29·15	......	37·0	......	......	7

(a) ...tical deflation. (b) ab *a a observed.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1866.
1866.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Feb. 9	3331	(a) ι Leonis	......	......	105 30	5 36·8	37·0	0·500	29·15	......	37·0	......	......	3	+ 31 33 36·5	− 15·4
	......	Nadir ‖	......	9 55 0	254 0	1 51·9	60·4	0·500	29·15	40·4	37·0	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 64·8	73·4	0·500	......	......	......	......	......	......	......	......
Feb. 13	......	Nadir ‖	......	7 8 0	254 0	1 52·7	63·1	0·500	29·30	38·0	31·0	6, N.W.	0	......	......	......
	......	Nadir ‖	......	......	254 0	1 63·8	73·4	0·500	......	......	......	......	......	......	......	......
	2488	......	......	7 27 29	83 30	0 59·3	58·7	0·669	29·30	......	31·0	......	......	8	+ 9 29 0·9	− 7·2
	2586	......	......	7 42 19	101 25	2 13·2	12·8	0·480	29·30	......	31·0	......	......	7	+ 27 25 10·6	− 11·5
	2683	......	......	7 57 40	110 45	0 47·2	47·2	0·587	29·30	......	31·0	......	......	8	+ 36 43 48·0	− 13·7
	2748	......	......	8 5 32	115 30	4 45·0	45·1	0·480	29·30	......	31·0	......	......	7	+ 41 32 43·8	− 14·6
	2867	......	......	8 26 1	119 25	2 36·2	36·1	0·547	29·30	......	31·0	......	......	7	+ 45 25 36·2	− 15·4
	3053	......	......	8 51 7	120 0	4 30·4	31·2	0·583	29·28	......	31·0	......	......	6	+ 46 2 32·2	− 15·6
	3242	(a) θ Ursæ Majoris	......	......	77 40	2 26·9	26·7	0·500	29·28	......	31·0	......	......	4	+ 3 40 24·0	− 12·8
	......	Nadir ‖	......	9 43 0	254 0	1 55·0	63·2	0·500	29·28	32·0	31·0	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 64·4	72·0	0·500	......	......	......	......	......	......	......	......
Feb. 16	......	Nadir ‖	......	7 3 0	254 0	1 52·5	60·6	0·500	29·45	38·0	35·0	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 64·6	74·2	0·500	......	......	......	......	......	......	......	......
	2410	δ Geminorum	......	7 12 48	107 45	0 22·8	22·4	0·540	29·45	......	35·0	1, N.E.	0	7	+ 33 43 22·0	− 11·7
	2463	......	......	......	102 5	4 48·9	49·9	0·500	29·45	......	35·0	......	......	8	+ 28 7 48·5	− 10·7
	2488	......	......	7 27 27	83 30	0 57·6	58·8	0·708	29·45	......	35·0	......	......	9	+ 9 29 1·3	− 6·8
	2522	α Canis Minoris	......	7 32 57	124 20	4 30·9	33·3	0·500	29·45	......	35·0	......	......	10	+ 50 22 31·1	− 15·9
	2586	......	......	7 42 18	101 25	2 8·0	6·2	0·624	29·45	......	35·0	7, N.N.E.	1	7	+ 27 25 9·8	− 11·3
	2737	......	......	8 4 6	114 55	2 24·2	24·0	0·500	29·45	......	34·7	......	......	6	+ 40 55 23·1	− 14·5
	2867	......	......	8 26 2	119 25	2 34·5	36·1	0·573	29·45	......	34·0	......	......	7	+ 45 25 36·1	− 15·5
	2971	ι Hydræ	......	8 40 21	123 0	4 1·3	3·3	0·500	29·45	......	33·9	......	......	8	+ 49 2 1·3	− 16·0
	3242	θ Ursæ Majoris	......	9 24 33	77 40	2 22·6	22·4	0·600	29·49	......	33·0	......	......	7	+ 3 40 22·6	− 12·2
	3331	ι Leonis	......	9 38 55	105 30	5 37·0	37·6	0·616	29·49	......	32·8	......	......	6	+ 31 33 39·8	− 15·1
	......	Nadir ‖	......	10 7 0	254 0	1 52·8	60·8	0·500	29·49	37·0	32·5	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 64·4	74·2	0·500	......	......	......	......	......	......	......	......
Feb. 22	......	Nadir ‖	......	7 26 0	254 0	1 52·7	62·0	0·500	29·50	40·6	39·8	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 65·4	74·6	0·500	......	......	......	......	......	......	......	......
	2586	......	......	7 42 20	101 25	2 12·8	12·4	0·500	29·50	......	39·8	5, W.	4	7	+ 27 25 10·4	− 10·9
	2737	......	......	8 4 7	114 55	2 22·8	23·8	0·598	29·50	......	39·8	......	......	7	+ 40 55 24·5	− 14·5
	2867	......	......	8 26 3	119 25	2 35·4	37·0	0·550	29·50	......	40·5	......	......	8	+ 45 25 35·9	− 15·6
	2971	ι Hydræ	......	8 40 22	123 0	4 3·0	6·2	0·500	29·50	......	40·5	......	......	6	+ 49 2 3·1	− 16·3
	3336	......	......	9 39 37	122 35	4 3·6	6·3	0·500	29·50	......	40·5	......	......	6	+ 48 37 3·5	− 16·1
	......	Nadir ‖	......	9 47 0	254 0	1 53·0	62·0	0·500	29·50	40·5	40·5	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 64·9	74·9	0·500	......	......	......	......	......	......	......	......
Feb. 27	......	Nadir ‖	......	7 42 0	254 0	1 52·8	62·4	0·500	29·45	38·0	31·6	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 65·0	74·0	0·500	......	......	......	......	......	......	......	......
	3013	......	......	8 46 3	124 5	2 57·8	60·4	0·500	29·45	......	30·0	1, N.	2	7	+ 50 5 57·3	− 16·6
	3242	θ Ursæ Majoris	......	9 24 34	77 40	2 20·3	21·6	0·500	29·45	......	30·0	......	......	6	+ 3 40 17·9	− 9·9
	3331	ι Leonis	......	9 38 57	105 30	5 36·3	36·5	0·660	29·45	......	30·0	......	......	6	+ 31 33 39·9	− 14·4
	3375	......	......	9 46 20	91 20	2 27·0	28·6	0·500	29·45	......	30·0	......	......	7	+ 20 20 25·6	− 13·1
	3431	......	......	9 57 10	96 50	3 11·1	14·7	0·500	29·45	......	30·0	......	......	8	+ 22 51 11·0	− 13·8
	3529	......	......	10 14 13	122 50	2 16·8	18·4	0·584	29·45	......	30·0	......	......	5	+ 48 50 18·1	− 15·9
	3592	......	......	10 23 32	127 45	2 28·0	29·2	0·580	29·45	......	30·0	......	......	6	+ 53 45 26·8	− 15·9
	3662	......	......	10 35 19	118 30	2 23·3	24·1	0·500	29·45	......	30·0	......	......	6	+ 44 30 22·1	− 15·5

(a) Not well seen.

Date.	Star or other Object Observed. No. in British Assn. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance Secti[on]
1866.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″
Feb. 28	......	Nadir	......	7 49 0	254 0	1 52·6	60·2	0·500	29·20	35·6	25·7	......	......	......	......
	......	Nadir	......	......	254 0	1 65·7	74·2	0·500	......	......	......	......	......	......	......
	2761	......	......	8 7 37	116 30	1 36·8	37·2	0·652	29·20	......	25·7	6, N.	5	7	+42 29 39
	......	Nadir	......	9 0 0	254 0	1 52·9	60·5	0·500	29·20	......	25·5	......	......	......	......
	......	Nadir	......	......	254 0	1 65·3	74·7	0·500	......	......	......	......	......	......	......
Mar. 13	......	Nadir	......	9 58 0	254 0	1 51·9	60·5	0·500	29·37	38·0	32·0	......	......	......	......
	......	Nadir	......	......	254 0	1 66·0	73·8	0·500	......	......	......	......	......	......	......
	3484	......	......	10 7 15	97 50	3 52·2	52·4	0·500	29·37	......	32·0	2, N.	0	5	+23 51 56
	3592	......	......	10 23 37	127 45	2 30·2	32·8	0·500	29·37	......	32·0	......	......	6	+53 45 29
	3662	......	......	10 35 24	118 30	2 22·8	23·8	0·500	29·37	......	32·0	......	......	7	+44 30 21
	3726	......	......	......	128 10	4 11·9	14·3	0·500	29·37	......	32·0	......	......	7	+54 12 11
	3834	δ Leonis	......	11 7 46	108 40	3 28·7	29·4	0·500	29·37	......	32·0	......	......	8	+34 41 27
	3996	......	......	11 43 1	124 0	2 24·8	27·0	0·500	29·37	......	32·0	......	......	......	+50 0 24
	......	Nadir	......	12 2 0	254 0	1 53·0	60·6	0·500	29·37	33·7	32·0	......	......	......	......
	......	Nadir	......	......	254 0	1 64·9	75·3	0·500	......	......	......	......	......	......	......
Mar. 19	......	Nadir	......	9 51 0	254 0	1 53·5	62·1	0·500	29·22	40·8	36·2	......	......	......	......
	......	Nadir	......	......	254 0	1 64·2	73·2	0·500	......	......	......	......	......	......	......
Mar. 20	......	Nadir	......	11 0 0	254 0	1 52·9	61·9	0·500	29·38	40·5	35·7	......	......	......	......
	......	Nadir	......	......	254 0	1 64·7	74·0	0·500	......	......	......	......	......	......	......
	3834	δ Leonis	......	11 7 48	108 40	3 25·0	26·8	0·628	29·38	......	35·6	......	......	6	+34 41 25
	3996	......	......	11 43 5	124 0	2 24·8	27·4	0·500	29·38	......	35·6	......	......	7	+50 0 24
	4153	......	......	12 14 25	102 35	2 1·2	2·2	0·500	29·38	......	35·6	......	......	8	+28 35 0
	......	Nadir	......	12 50 0	254 0	1 54·0	60·9	0·500	29·38	37·7	35·5	......	......	......	......
	......	Nadir	......	......	254 0	1 63·8	72·9	0·500	......	......	......	......	......	......	......
Mar. 21	......	Nadir	......	10 58 0	254 0	1 54·2	63·0	0·500	29·46	38·9	33·0	......	......	......	......
	......	Nadir	......	......	254 0	1 63·4	71·0	0·500	......	......	......	......	......	......	......
	3834	δ Leonis	......	11 7 49	108 40	3 30·7	30·9	0·500	29·46	......	33·0	0	5	6	+34 41 30
Mar. 22	......	Nadir	......	10 23 0	254 0	1 51·8	59·6	0·500	29·48	37·9	32·9	......	......	......	......
	......	Nadir	......	......	254 0	1 64·8	72·8	0·500	......	......	......	......	......	......	......
April 5	......	Nadir	......	11 6 0	254 0	1 62·1	60·0	0·500	30·05	44·0	45·1	......	......	......	......
	......	Nadir	......	......	254 0	1 65·0	73·0	0·500	......	......	......	......	......	......	......
April 13	......	Nadir	......	10 54 0	254 0	1 53·1	61·1	0·500	29·30	48·0	48·0	......	......	......	......
	......	Nadir	......	......	254 0	1 64·5	74·1	0·500	......	......	......	......	......	......	......
	3834	δ Leonis	......	11 7 52	108 40	3 25·1	27·1	0·498	29·30	......	48·0	10, S.	0	7	+34 41 25
	3996	......	......	11 43 8	124 0	2 22·4	29·4	0·624	29·30	......	47·9	......	......	7	+50 0 27
	4153	......	6·0	12 14 29	102 35	1 57·3	60·1	0·500	29·30	......	47·9	......	......	8	+28 34 57
	4205	(a)	......	12 22 50	102 55	5 47·0	49·1	0·737	29·30	......	47·9	......	......	6	+28 56 51
	4364	(b)	......	12 55 56	107 55	4 19·8	25·0	0·500	29·30	......	47·9	......	......	7	+33 57 21
	4575	......	......	13 38 19	106 35	1 16·2	19·1	0·500	29·30	......	47·6	......	......	7	+32 34 16
	4627	......	......	13 46 3	94 30	2 54·2	57·0	0·500	29·30	......	47·6	......	......	8	+20 30 53
	......	Nadir	......	13 56 0	254 0	1 52·9	61·7	0·500	29·30	......	47·5	......	......	......	......
	......	Nadir	......	......	254 0	1 64·9	73·6	0·500	......	......	......	......	......	......	......

(a) Wind increasing. (b) Drops of rain.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer. Fahr.	Exterior Thermometer. Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1866.
1866.				h. m. s.	° ′	r. d.	d.	revols.	inches.	°	°				° ′ ″	″
April 16	......	Nadir ‖¦	......	11 42 0	254 0	1 54·4	64·0	0·500	29·06	48·1	47·0	......	......	......	......	......
	......	Nadir ¦‖	......	......	254 0	1 61·8	72·9	0·500	......	......	......	......	......	......	......	......
	4421	β Comæ	......	13 6 32	101 20	5 27·7	30·6	0·661	29·06	......	46·8	......	......	7	+27 23 32·6	− 8·4
April 20	......	Nadir ‖¦	......	12 7 0	254 0	1 51·9	61·1	0·500	29·54	47·0	44·8	......	......	......	......	......
	......	Nadir ¦‖	......	......	254 0	1 65·9	75·0	0·500	......	......	......	......	......	......	......	......
	4205	......	......	12 22 51	102 55	5 47·0	49·4	0·626	29·54	......	44·8	......	......	7	+28 58 50·6	− 8·3
	4244	......	......	12 29 33	92 45	4 18·4	21·3	0·500	29·54	......	44·8	......	......	7	+18 47 18·0	− 6·3
	4364	......	......	12 55 57	107 55	4 20·2	21·8	0·520	29·54	......	44·0	......	......	8	+33 57 20·4	− 8·8
	4421	β Comæ	......	13 6 32	101 20	5 29·9	33·6	0·500	29·54	......	44·0	......	......	9	+27 23 30·5	− 7·7
	4457	......	......	13 13 49	94 5	4 12·0	16·0	0·460	29·54	......	44·0	......	......	7	+20 7 11·7	− 6·6
	4503	......	......	13 23 22	125 20	4 23·7	27·9	0·500	29·54	......	44·0	......	......	6	+51 22 24·5	−10·1
	4550	......	......	......	76 35	2 2·2	5·4	0·628	29·54	......	43·2	......	......	4	+ 2 35 4·1	− 4·4
	4610	......	......	13 43 30	98 5	2 38·1	43·2	0·500	29·54	......	43·0	......	......	6	+24 5 36·6	− 7·1
	......	Nadir ‖¦	......	13 51 0	254 0	1 52·3	62·0	0·500	29·54	......	43·0	......	......	......	......	......
	......	Nadir ¦‖	......	......	254 0	1 64·8	75·2	0·500	......	......	......	......	......	......	......	......
April 23	......	Nadir ‖¦	......	12 0 0	254 0	1 53·8	61·2	0·500	30·27	47·3	41·4	......	......	......	......	......
	......	Nadir ¦‖	......	......	254 0	1 64·8	73·2	0·500	......	......	......	......	......	......	......	......
	4153	......	......	12 14 30	102 35	1 52·8	54·9	0·600	30·27	......	41·4	1, N.E.	0	7	+28 34 54·9	− 7·8
	4231	......	......	12 27 46	104 45	2 38·8	41·6	0·480	30·27	......	41·3	......	......	......	+30 45 38·2	− 8·1
	4364	......	......	12 55 56	107 55	4 14·2	16·8	0·777	30·27	......	41·3	......	......	......	+33 57 22·3	− 8·3
	......	Nadir ‖¦	......	13 3 0	254 0	1 53·5	62·0	0·500	30·27	44·8	41·2	......	......	......	......	......
	......	Nadir ¦‖	......	......	254 0	1 63·9	73·7	0·500	......	......	......	......	......	......	......	......
May 4	......	Nadir ‖¦	......	12 16 0	254 0	1 50·3	60·3	0·500	29·47	46·0	43·3	......	......	......	......	......
	......	Nadir ¦‖	......	......	254 0	1 62·4	72·3	0·500	......	......	......	......	......	......	......	......
	4364	......	7·0	......	107 55	4 22·5	25·2	0·500	29·47	......	43·1	7, S.	1	7	+33 57 24·1	− 6·6
	4552	......	......	13 32 27	92 55	5 27·0	31·0	0·500	29·47	......	44·0	......	......	6	+18 58 28·6	− 3·3
	......	Nadir ‖¦	......	13 41 0	254 0	1 51·0	61·1	0·500	29·47	46·0	44·0	......	......	......	......	......
	......	Nadir ¦‖	......	......	254 0	1 61·9	72·7	0·500	......	......	......	......	......	......	......	......
May 9	......	Nadir ‖¦	......	14 16 0	254 0	1 52·6	61·4	0·500	29·33	49·7	46·5	......	......	......	......	......
	......	Nadir ¦‖	......	......	254 0	1 62·1	72·0	0·500	......	......	......	......	......	......	......	......
	4863	......	......	14 38 11	92 35	4 20·7	24·0	0·500	29·33	......	46·0	15, W.	0	7	+18 37 21·8	− 1·9
	4965	......	......	14 59 18	84 45	3 58·7	62·2	0·650	29·33	......	46·0	......	......	8	+10 47 3·4	− 1·1
	5000	......	......	15 6 9	96 20	3 43·8	47·4	0·500	29·33	......	45·6	......	......	7	+22 21 45·0	− 2·2
	5071	......	......	15 17 4	77 30	2 45·4	49·8	0·640	29·33	......	45·4	......	......	7	+ 3 30 49·9	− 0·7
	......	Nadir ‖¦	......	15 51 0	254 0	1 52·1	62·0	0·500	29·33	48·2	45·1	......	......	......	......	......
	......	Nadir ¦‖	......	......	254 0	1 63·0	71·8	0·500	......	......	......	......	......	......	......	......
May 10	......	Nadir ‖¦	......	12 45 0	254 0	1 50·6	59·9	0·500	29·50	51·1	47·4	......	......	......	......	......
	......	Nadir ¦‖	......	......	254 0	1 64·8	74·0	0·500	......	......	......	......	......	......	......	......
	4421	β Comæ	......	13 6 34	101 20	5 25·9	28·7	0·500	29·50	......	47·0	3, W.	0	6	+27 23 27·0	− 4·0
	4457	......	......	13 13 51	94 5	4 4·9	8·3	0·500	29·50	......	47·0	......	......	7	+20 7 6·0	− 2·3
	4503	......	......	13 23 23	125 20	4 19·9	23·7	0·500	29·50	......	47·0	......	......	8	+51 22 21·5	− 8·5
	4550	......	......	13 32 12	76 35	1 52·8	56·4	0·639	29·50	......	47·0	......	......	6	+ 2 34 56·6	+ 1·1
	4575	......	......	13 38 21	106 35	1 13·7	17·5	0·500	29·50	......	47·0	......	......	7	+32 34 15·3	− 4·4
	4621	(a)	......	......	110 35	5 54·1	57·0	0·500	29·50	......	47·0	......	......	4	+36 38 55·8	− 5·0
	......	Nadir ‖¦	......	13 55 0	254 0	1 51·0	60·2	0·500	29·50	......	47·0	......	......	......	......	......
	......	Nadir ¦‖	......	......	254 0	1 65·1	73·6	0·500	......	......	......	......	......	......	......	......

(a) Very faint.

Date.	Star or other Object Observed. No. in British Assoc. Cat.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer. Fahr.	Exterior Thermometer. Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Bess. N. Polar Dist. Jan. 1, 1866.
1866.				h m s	° ′	° ′ ″	″	revs.	inches.	°	°				° ′ ″	″
May 15	......	Nadir ‖	......	12 56 0	254 0	1 52·2	61·4	0·500	30·16	48·8	43·0	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 62·4	71·6	0·500	......	......	......	......	......	......	......	......
	4462	......	......	13 14 45	124 25	1 20·8	24·8	0·694	30·16	......	42·6	2. N.E.	0	7	+50 24 27·6	− 8·
	4503	......	......	13 23 22	125 20	4 15·3	18·7	0·604	30·16	......	42·4	......	......	8	+51 22 19·6	− 4·1
	4526	(a)	......	......	104 55	1 10·9	12·3	0·500	30·16	......	42·4	......	......	3	+30 54 11·2	− 1·4
	4627	......	......	13 46 6	94 30	2 43·0	45·2	0·638	30·16	......	41·0	......	......	6	+20 30 47·1	− 1·0
	4652	......	......	13 51 10	97 15	2 41·4	45·2	0·500	30·16	......	40·9	......	......	6	+23 15 42·6	− 1·5
	4678	......	......	13 57 33	97 35	5 31·0	33·3	0·500	30·16	......	40·8	......	......	7	+23 38 31·6	− 1·5
	4723	......	7·0	14 8 54	100 10	4 54·1	57·0	0·500	30·16	......	40·1	......	......	8	+26 12 55·3	− 1·5
	4756	......	......	14 14 46	77 15	5 11·8	15·4	0·500	30·16	......	40·0	......	......	7	+ 3 18 12·1	+ 1·3
	4797	......	......	14 23 40	93 10	1 11·5	13·3	0·500	30·16	......	40·0	......	......	6	+19 9 11·4	− 1·5
	4820	......	......	14 29 25	96 50	1 30·0	33·1	0·658	30·16	......	39·7	......	......	7	+22 49 35·2	− 1·4
	4863	......	......	14 38 11	92 35	4 15·5	18·2	0·620	30·16	......	39·6	......	......	6	+18 37 19·4	− 0·4
	4934	......	......	14 51 52	88 15	3 24·9	28·3	0·584	30·16	......	39·5	......	......	5	+14 16 27·3	+ 0·1
	4965	......	......	14 59 18	84 45	3 58·0	62·0	0·558	30·16	......	39·5	......	......	7	+10 47 0·5	+ 0·4
	5000	......	......	15 6 10	96 20	3 38·7	43·3	0·500	30·16	......	39·5	......	......	8	+22 21 40·3	− 0·7
	5071	......	......	15 17 5	77 30	2 44·4	48·0	0·540	30·16	......	39·5	......	......	6	+ 3 30 45·6	+ 1·1
	......	Nadir ‖	......	15 50 0	254 0	1 51·9	61·5	0·500	30·16	......	39·5	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 63·0	70·9	0·500	......	......	......	......	......	......	......	......
May 17	......	Nadir ‖	......	13 42 0	254 0	1 53·1	62·2	0·500	29·90	51·7	51·1	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 63·9	73·8	0·500	......	......	......	......	......	......	......	......
	4652	......	......	13 51 10	97 15	2 45·0	47·4	0·500	29·90	......	51·1	1, S.W.	0	6	+23 15 44·9	− 1·1
	4678	......	......	13 57 32	97 35	5 27·9	30·9	0·650	29·90	......	51·0	......	......	7	+23 38 32·5	− [illegible]
	4797	......	......	14 23 39	93 10	1 12·4	16·7	0·500	29·90	......	51·0	......	......	7	+19 9 13·0	[illegible]
	4863	......	......	14 38 10	92 35	4 19·7	23·3	0·500	29·90	......	50·3	......	......	8	+18 37 20·2	+ [illegible]
	4934	......	......	14 51 53	88 13	3 26·1	31·7	0·500	29·90	......	50·0	......	......	6	+14 16 27·2	+ [illegible]
	4965	......	......	14 59 18	84 45	3 58·0	62·9	0·577	29·90	......	49·9	......	......	7	+10 47 0·8	+ [illegible]
	5071	......	......	15 17 5	77 30	2 41·1	45·8	0·620	29·90	......	49·6	......	......	8	+ 3 30 44·4	+ [illegible]
	......	Nadir ‖	......	15 27 0	254 0	1 52·7	62·0	0·500	29·90	50·0	49·5	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 64·1	74·0	0·500	......	......	......	......	......	......	......	......
May 18	......	Nadir ‖	......	13 28 0	254 0	1 53·0	63·2	0·500	29·86	53·0	54·3	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 62·7	73·0	0·500	......	......	......	......	......	......	......	......
	4559	......	......	13 33 54	118 30	2 48·0	52·6	0·500	29·86	......	54·3	......	......	7	+44 30 49·4	− 5·
	4606	......	7·0	13 43 12	97 50	4 43·2	47·7	0·625	29·86	......	54·3	......	......	6	+23 52 45·0	− [illegible]
	4652	......	......	13 51 9	97 15	2 39·9	45·1	0·581	29·86	......	54·3	......	......	7	+23 15 43·6	− [illegible]
	4678	......	......	13 57 33	97 35	5 27·9	32·3	0·616	29·86	......	54·3	......	......	6	+23 38 32·4	− [illegible]
	......	Nadir ‖	......	14 12 0	254 0	1 52·6	62·7	0·500	......	53·8	......	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 63·1	73·5	0·500	......	......	......	......	......	......	......	......
May 21	......	Nadir ‖	......	13 16 0	254 0	1 51·4	60·4	0·500	30·25	53·3	50·1	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 62·4	71·8	0·500	......	......	......	......	......	......	......	......
	4555	......	......	13 32 11	76 40	1 52·7	58·2	0·658	30·25	......	50·0	2, E.	0	6	+ 2 39 53·0	+ 1·
	4575	......	......	13 38 21	106 35	1 17·7	20·7	0·312	30·25	......	49·6	......	......	7	+32 34 13·3	− [illegible]
	4626	......	......	13 46 9	94 35	4 10·8	14·9	0·483	30·25	......	49·3	......	......	6	+20 37 11·3	+ 0·
	4797	......	......	14 23 39	93 10	1 7·8	11·6	0·510	30·25	......	48·0	......	......	7	+19 9 9·2	+ 0·
	4863	......	......	14 38 9	92 35	4 17·2	21·2	0·500	30·25	......	47·9	......	......	8	+18 37 18·6	+ 1·
	4934	......	......	14 51 52	88 15	3 24·0	27·8	0·587	30·25	......	47·8	......	......	7	+14 16 27·3	+ 1·
	4965	......	......	14 59 17	84 45	3 59·3	62·4	0·500	30·48	......	47·2	......	......	6	+10 46 59·7	+ [illegible]
	5071	......	......	15 17 4	77 30	2 42·9	46·5	0·500	30·48	......	47·0	......	......	5	+ 3 30 43·1	+ [illegible]
	......	Nadir ‖	......	15 27 0	254 0	1 52·0	61·2	0·500	30·48	48·6	46·9	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 62·0	70·8	0·500	......	......	......	......	......	......	......	......

(a) Rather late at instrument.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1866.
1866.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
May 22	...	Nadir	...	13 53 0	254 0	1 57·7	67·0	0·251	30·12	57·0	52·0	...	...	...	...	...
	...	Nadir	...	...	254 0	1 68·4	77·6	0·251	...	...	...	...	...	...	...	...
	4723	...	...	14 8 54	100 10	4 53·9	59·0	0·500	30·12	...	51·8	...	...	7	+26 12 56·2	− 0·3
	4797	...	...	...	93 10	1 6·6	10·8	0·572	30·10	...	51·0	...	...	6	+19 9 9·8	+ 1·2
	4863	...	...	14 38 10	92 35	4 17·8	21·7	0·500	30·10	...	50·8	...	...	7	+18 37 19·2	+ 1·4
	4934	...	...	14 51 51	88 15	3 23·4	28·8	0·533	30·10	...	50·7	...	...	8	+14 16 26·0	+ 2·1
	4965	...	...	14 59 18	84 45	3 56·8	62·0	0·603	30·10	...	50·6	...	...	6	+10 47 1·3	+ 2·5
	5000	...	...	15 6 9	96 20	3 40·0	45·0	0·500	30·10	...	50·6	...	...	7	+22 21 41·9	+ 1·1
	5071	...	...	15 17 3	77 30	2 41·0	45·0	0·557	30·10	...	50·6	...	...	8	+ 3 30 42·9	+ 3·2
	5284	γ Serpentis	...	15 51 12	113 50	2 28·8	33·3	0·500	30·10	...	50·5	...	...	7	+39 50 31·1	+ 0·3
	...	Nadir	...	15 57 0	254 0	1 53·1	61·9	0·500	30·10	54·3	50·4	...	...	...	...	...
	...	Nadir	...	...	254 0	1 62·5	71·0	0·500	...	...	...	...	...	...	...	...
May 25	...	Nadir	...	14 57 0	254 0	1 51·8	61·6	0·500	29·65	53·4	48·4	...	...	...	...	...
	...	Nadir	...	...	254 0	1 63·9	73·8	0·500	...	...	...	...	...	...	...	...
	5071	...	6·0	15 18 35	77 30	2 43·7	47·7	0·500	29·65	...	48·4	...	...	6	+ 3 30 43·3	+ 4·1
	5284	γ Serpentis	...	15 51 13	113 50	2 29·2	31·2	0·500	29·65	...	48·3	...	...	5	+39 50 29·6	+ 0·9
	5415	...	...	16 7 20	71 40	2 8·2	11·4	0·500	29·65	...	47·5	...	...	7	− 2 19 53·0	+ 3·8
	5452	...	...	16 15 12	108 30	1 14·5	18·3	0·500	29·65	...	47·4	...	...	8	+34 29 15·6	+ 1·8
	5527	...	...	16 25 42	109 10	2 10·6	13·4	0·500	29·65	...	47·2	...	...	6	+35 10 11·3	+ 1·9
	5597	...	...	16 36 23	104 50	1 38·9	41·7	0·407	29·65	...	47·1	...	...	7	+30 49 36·7	+ 2·2
May 28	...	Nadir	...	15 39 0	254 0	1 52·8	64·0	0·500	...	51·1	...	...	...	...	...	...
	...	Nadir	...	...	254 0	1 62·0	74·1	0·500	...	...	...	...	...	...	...	...
	5504	...	...	16 22 57	114 15	4 24·6	29·2	0·500	29·44	...	41·1	...	...	6	+42 17 26·4	+ 2·3
	5597	...	...	16 36 24	104 50	1 35·3	36·5	0·500	29·44	...	41·0	...	...	7	+30 49 34·7	+ 2·9
	5716	...	...	16 53 30	114 15	4 9·7	10·5	0·500	29·44	...	41·0	...	...	5	+40 17 9·5	+ 3·2
	...	Nadir	...	16 59 0	254 0	1 52·9	61·9	0·500	29·44	50·0	40·9	...	...	...	...	...
	...	Nadir	...	...	254 0	1 64·3	74·1	0·500	...	...	...	...	...	...	...	...
May 30	...	Nadir	...	14 15 0	254 0	1 51·3	62·1	0·500	29·65	51·1	49·0	...	...	...	...	...
	...	Nadir	...	...	254 0	1 63·0	74·2	0·500	...	...	...	...	...	...	...	...
	4820	...	...	14 29 27	96 50	1 28·1	31·4	0·614	29·65	...	49·0	2, S.E.	1	6	+22 49 31·5	+ 2·4
	4863	...	...	14 38 11	92 35	4 14·2	18·4	0·580	29·65	...	48·3	...	...	7	+18 37 17·2	+ 3·3
	4934	...	...	14 51 55	88 15	3 23·3	27·0	0·500	29·65	...	48·1	...	...	7	+14 16 23·5	+ 4·1
	4965	...	...	14 59 19	84 45	3 50·4	54·0	0·750	29·65	...	47·2	...	...	8	+10 46 57·3	+ 4·7
	5071	...	...	15 47 6	77 30	2 40·0	44·2	0·500	29·65	...	46·8	...	...	7	+ 3 30 39·8	+ 5·6
	5284	γ Serpentis	...	15 50 13	113 50	2 27·3	30·1	0·548	29·65	...	45·3	...	...	8	+39 50 29·4	+ 1·8
	5415	(a) ...	...	16 7 2	71 40	2 3·6	4·8	0·500	29·65	...	45·0	...	...	4	− 2 19 58·6	+ 5·4
	...	Nadir	...	16 56 0	254 0	1 51·7	63·3	0·500	29·65	48·2	44·9	...	...	...	...	...
	...	Nadir	...	...	254 0	1 62·8	74·0	0·500	...	...	...	...	...	...	...	...
June 5	...	Nadir	...	15 45 0	254 0	1 51·8	63·1	0·500	29·67	53·8	54·0	...	...	...	...	...
	...	Nadir	...	...	254 0	1 61·8	71·4	0·500	...	...	...	...	...	...	...	...
	5415	...	...	16 7 22	71 40	2 4·3	7·1	0·500	29·67	...	54·0	...	...	6	− 2 19 57·0	+ 7·3
	5452	...	...	16 15 14	108 30	1 6·3	10·4	0·556	29·67	...	53·2	1, S.	0	7	+34 29 9·3	+ 4·2
	5527	...	...	16 25 42	109 10	2 8·6	10·8	0·500	29·67	...	53·0	...	...	6	+35 10 9·2	+ 4·4
	5597	...	...	16 36 25	104 50	1 33·7	36·0	0·500	29·67	...	53·0	...	...	7	+30 49 34·0	+ 4·8
	...	Nadir	...	16 49 0	254 0	1 52·2	63·5	0·500	29·67	53·5	53·0	...	...	...	...	...
	...	Nadir	...	...	254 0	1 62·0	71·8	0·500	...	...	...	...	...	...	...	...

(a) Somewhat obscured at time of transit.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist. Jan. 1, 1866.
1866.				h. m. s.	° ′	r ″	″	revols.	inches.	°	°				° ′ ″	″
June 8	......	Nadir	......	15 50 0	254 0	1 52·0	62·0	0·500	30·01	58·3	57·2	......	......	......	......	......
	......	Nadir	......	....	254 0	1 60·5	69·9	0·500	......	......	......	......	......	......	......	......
	5452	......	......	16 15 13	108 30	1 7·9	11·3	0·500	30·01	......	57·0	2, S.W.	0	6	+34 29 9·5	+ 46
	5527	......	......	16 25 41	109 10	2 10·3	13·4	0·426	30·01	......	57·0	......	......	7	+35 10 9·7	+ 50
	5615	......	......	16 39 15	93 10	3 12·0	16·2	0·464	30·01	......	57·0	......	......	7	+19 11 12·4	+ 64
	5686	......	......	16 48 20	114 20	0 34·0	37·0	0·590	30·01	......	57·0	......	......	8	+40 18 37·9	+ 53
	5732	......	......	16 56 26	114 45	4 34·8	38·4	0·500	30·01	......	56·4	......	......	7	+40 47 37·0	+ 55
	5821	α Herculis	......	17 9 30	115 25	0 43·9	47·1	0·500	30·01	......	56·2	......	......	9	+41 23 45·4	+ 54
	5894	......	......	17 20 10	122 15	0 46·0	50·5	0·500	30·01	......	56·0	......	......	8	+48 13 47·7	+ 61
	......	Nadir	......	17 38 0	254 0	1 51·0	61·2	0·500	30·01	57·0	56·0	......	......	......	......	......
	......	Nadir	......	....	254 0	1 61·9	72·3	0·500	......	......	......	......	......	......	......	......
June 12	......	Nadir	......	14 55 0	254 0	1 51·6	63·2	0·500	29·40	56·4	53·0	......	......	......	......	......
	......	Nadir	......	....	254 0	1 62·8	75·2	0·500	......	......	......	......	......	......	......	......
	5071	......	......	15 17 5	77 30	2 38·2	41·2	0·500	29·39	......	53·0	0	3	7	+ 3 30 37·6	+ 91
	5284	γ Serpentis	......	15 51 13	113 50	2 29·5	32·0	0·440	29·39	......	52·9	......	......	6	+39 50 28·7	+ 48
	......	Nadir	......	17 10 0	254 0	1 52·0	62·7	0·500	29·39	54·1	52·8	......	......	......	......	......
	......	Nadir	......	....	254 0	1 63·1	75·0	0·500	......	......	......	......	......	......	......	......
June 13	......	Nadir	......	15 32 0	254 0	1 51·7	61·3	0·500	29·55	57·4	53·0	......	......	......	......	......
	......	Nadir	......	....	254 0	1 61·0	71·8	0·500	......	......	......	......	......	......	......	......
	5284	γ Serpentis	......	15 51 13	113 50	2 30·8	33·2	0·500	29·55	......	52·4	4, S.	0	6	+39 50 32·3	+ 44
	5415	......	......	16 7 22	71 40	1 58·7	61·0	0·596	29·55	......	52·4	......	......	7	− 2 19 59·5	+ 93
	5452	......	......	16 15 14	108 30	1 2·8	7·2	0·720	29·55	......	52·0	......	......	8	+34 29 11·1	+ 59
	5507	......	......	....	114 10	4 26·0	30·6	0·500	29·55	......	52·0	......	......	7	+40 12 28·9	+ 53
	5597	......	......	16 36 26	104 50	1 34·6	37·8	0·500	29·55	......	51·1	......	......	6	+30 49 36·1	+ 67
	5686	......	......	16 48 15	114 20	0 33·7	38·0	0·500	29·55	......	51·0	......	......	7	+40 18 35·9	+ 63
	5776	......	......	17 2 13	80 55	4 40·8	45·0	0·580	29·55	......	51·0	......	......	8	+ 5 57 44·2	+ 94
	5821	α Herculis	......	17 9 30	115 25	0 42·4	48·2	0·500	29·55	......	51·0	......	......	7	+41 23 45·4	[illegible]
June 15	......	Nadir	......	16 24 0	254 0	1 50·3	60·3	0·500	29·50	55·8	49·0	......	......	......	......	......
	......	Nadir	......	....	254 0	1 62·0	72·1	0·500	......	......	......	......	......	......	......	......
	5615	......	......	16 39 15	93 10	3 6·7	10·9	0·500	29·50	......	48·9	7, W.	0	6	+19 11 8·6	+ 83
	5686	......	......	16 48 14	114 20	0 34·4	36·6	0·500	29·50	......	48·9	......	......	7	+40 18 35·0	+ 64
	5732	......	......	16 56 26	114 45	4 34·5	37·3	0·500	29·50	......	48·9	......	......	6	+40 47 36·3	+ 64
	5776	......	......	17 2 13	80 55	4 41·7	45·4	0·500	29·50	......	48·9	......	......	8	+ 6 57 43·4	+ 94
	5821	α Herculis	3·0	17 9 30	115 25	0 36·7	41·0	0·740	29·50	......	48·5	......	......	8	+41 23 45·8	+ 73
	5863	ω Herculis	......	17 16 36	97 20	0 17·3	20·3	0·500	29·50	......	48·3	......	......	7	+23 18 18·4	+ 58
	5917	......	......	17 24 54	69 45	4 35·8	38·2	0·622	29·48	......	48·3	......	......	7	− 4 12 21·0	+ 94
	......	Nadir	......	17 41 0	254 0	1 51·0	61·1	0·500	29·48	50·1	48·1	......	......	......	......	......
	......	Nadir	......	....	254 0	1 62·2	73·0	0·500	......	......	......	......	......	......	......	......
June 18	......	Nadir	......	15 55 0	254 0	1 50·0	60·2	0·500	29·22	52·0	48·0	......	......	......	......	......
	......	Nadir	......	....	254 0	1 61·0	70·2	0·500	......	......	......	......	......	......	......	......
	5452	......	......	16 15 14	108 30	1 7·4	10·4	0·500	29·22	......	48·0	1, E.	0	7	+34 29 9·6	+ 66
	5493	......	......	16 21 4	127 15	3 44·7	50·4	0·600	29·22	......	48·0	......	......	7	+63 16 50·9	+ 45
	5597	......	......	16 36 25	104 50	1 26·0	28·4	0·660	29·22	......	47·0	......	......	8	+30 49 32·7	+ 73
	5634	......	......	16 42 47	118 35	1 2·7	6·9	0·500	29·22	......	47·0	......	......	7	+44 34 5·3	+ 66
	5716	......	......	16 53 32	114 15	4 0·0	4·6	0·618	29·22	......	47·0	......	......	8	+40 17 6·6	+ 74
	5821	α Herculis	3·0	17 9 30	115 25	0 30·6	41·4	0·590	29·22	......	46·4	......	......	7	+41 23 42·2	+ 74
	5863	ω Herculis	......	17 16 37	97 20	0 17·1	21·5	0·500	29·22	......	46·3	......	......	9	+23 18 19·2	+ 90

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Rel. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1866.
1866.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
June 18	6035	......	......	17 44 47	120 0	4 39·9	44·0	0·564	29·22	......	46·2	......	......	7	+46 2 44·7	+ 8·8
	6137	......	......	16 1 35	127 25	4 47·9	53·9	0·560	29·22	......	46·0	......	......	9	+53 27 53·3	+ 9·4
	......	Nadir	......	18 18 0	254 0	1 50·0	61·6	0·500	29·22	49·8	46·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 60·9	71·3	0·500	......	......	......	......	......	......	......	......
June 26	......	Nadir	......	17 6 0	254 0	1 50·0	60·1	0·500	29·83	66·0	66·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 60·9	73·1	0·500	......	......	......	......	......	......	......	......
	5894	......	......	......	122 15	0 44·8	48·1	0·500	29·83	......	68·0	......	......	5	+48 13 46·7	+ 9·1
	6035	......	......	17 44 47	120 0	4 40·8	45·0	0·500	29·83	......	68·0	......	......	5	+46 2 43·6	+10·2
	6213	......	......	18 13 38	122 45	0 38·7	43·9	0·420	29·83	......	67·0	......	......	6	+48 43 39·4	+11·1
	......	Nadir	......	18 51 0	254 0	1 50·7	61·0	0·500	29·83	67·0	66·8	......	......	......	......	......
	......	Nadir	......	......	254 0	1 62·1	72·1	0·500	......	......	......	......	......	......	......	......
Aug. 27	......	Nadir	......	19 53 0	254 0	1 50·1	57·9	0·500	29·40	59·9	55·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 63·0	72·8	0·500	......	......	......	......	......	......	......	......
	6966	......	5·0	20 10 35	104 45	2 21·5	25·1	0·500	29·40	......	55·0	3, S.W.	1	6	+30 45 23·9	+25·8
	7086	......	......	20 27 4	74 20	1 43·0	48·5	0·600	29·40	......	54·9	......	......	7	+ 0 19 47·1	+26·6
	7161	......	......	20 35 50	84 45	2 6·2	10·6	0·500	29·40	......	54·9	......	......	6	+10 45 8·0	+26·4
	7336	61[1] Cygni	......	21 1 51	91 50	3 3·3	7·4	0·500	29·40	......	54·9	......	......	6	+17 51 5·5	+27·6
	......	Nadir	......	2 7 0	254 0	1 50·9	60·0	0·500	29·40	55·1	54·9	......	......	......	......	......
	......	Nadir	......	......	254 0	1 61·7	71·1	0·500	......	......	......	......	......	......	......	......
Sept. 24	......	Nadir	......	21 33 0	254 0	1 51·0	61·1	0·500	29·46	52·3	48·7	......	......	......	......	......
	......	Nadir	......	......	254 0	1 63·0	73·4	0·500	......	......	......	......	......	......	......	......
	7708	......	......	22 2 0	68 20	1 12·2	16·0	0·680	29·46	......	48·6	3, S.	0	7	− 5 40 43·2	+29·9
	7779	......	......	22 11 24	57 20	0 16·7	20·5	0·387	29·46	......	48·7	......	......	6	−16 41 47·7	+28·5
	7908	ζ Pegasi	......	22 35 [illegible]	119 50	0 0·0	5·0	0·538	29·46	......	48·6	......	......	8	+45 18 3·1	+26·4
	8024	......	......	22 56 49	73 35	0 47·0	51·0	0·584	29·46	......	48·6	......	......	9	− 0 26 10·7	+26·2
	8091	......	......	23 9 24	102 35	2 56·5	59·3	0·500	29·46	......	48·5	......	......	7	+28 35 57·8	+26·0
	18	......	......	0 4 32	71 0	3 28·3	31·1	0·500	29·46	......	48·5	......	......	7	− 2 58 32·2	+19·4
Sept. 27	......	Nadir	......	21 50 0	254 0	1 49·9	60·0	0·500	29·63	53·9	52·4	......	......	......	......	......
	......	Nadir	......	......	254 0	1 65·0	74·4	0·500	......	......	......	......	......	......	......	......
	7708	......	......	22 1 59	68 20	1 18·0	21·0	0·500	29·63	......	52·4	3, S.W.	1	7	− 5 40 43·4	+30·7
	8083	......	......	23 6 50	73 35	1 8·0	9·8	0·500	29·63	......	51·7	......	......	6	− 0 25 53·7	+26·2
	8137	......	......	23 15 23	68 40	4 55·0	57·4	0·422	29·63	......	51·6	......	......	7	− 5 17 8·4	+25·1
	8204	......	......	23 27 47	58 40	3 34·8	38·3	0·500	29·63	......	51·6	......	......	8	−15 18 26·6	+23·0
	18	......	......	0 4 31	71 0	3 22·8	23·9	0·750	29·63	......	51·6	......	......	7	− 2 58 32·2	+20·4
Oct. 15	......	Nadir	......	22 48 0	254 0	1 52·0	62·8	0·500	29·86	48·8	43·7	......	......	......	......	......
	......	Nadir	......	......	254 0	1 66·7	76·9	0·500	......	......	......	......	......	......	......	......
	8135	(a)	......	23 15 19	86 35	0 38·0	38·7	0·500	29·86	......	43·5	5, W.	0	6	+12 33 35·1	+30·2
	218	α Cassiopeæ	......	0 41 57	72 50	2 52·9	55·3	0·400	29·87	......	44·0	......	......	7	− 1 9 12·5	+21·9
	259	......	......	0 50 14	92 10	2 26·0	28·6	0·500	29·87	......	44·0	......	......	8	+18 10 24·6	+21·8
	299	......	......	0 58 3	101 0	2 2·1	3·5	0·450	29·87	......	44·0	......	......	7	+26 59 58·9	+21·2
	360	α Ursæ Minoris	......	1 11 23	41 20	4 9·4	9·5	0·582	29·87	......	44·0	......	......	6	−32 37 53·0	+14·5
	514	......	......	1 35 0	100 35	1 29·9	30·9	0·558	29·87	......	44·0	......	......	7	+26 34 29·1	+17·6
	547	......	......	1 41 53	82 45	[illegible] 21·1	21·9	0·548	29·87	......	43·4	......	......	7	+ 8 43 19·2	+15·3
	645	......	......	2 0 2	104 45	2 10·2	11·8	0·500	29·87	......	43·4	......	......	6	+30 45 8·9	+15·3
	......	Nadir	......	2 5 0	254 0	1 52·0	62·2	0·500	29·87	45·9	43·4	......	......	......	......	......
	......	Nadir	......	......	254 0	1 65·8	75·7	0·500	......	......	......	......	......	......	......	......

(a) Sky getting cloudy.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Micrometer A.	Micrometer B.	[illegible]	Barometer.	Interior Thermometer. Fahr.	Exterior Thermometer. Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10	Est. Value of Obs. Max. = 10	Apparent Zenith Distance South.	Corr. to Year [illegible]
1866.				h. m. s.	° ′	′									° ′ ″	″
Oct. 16	......	Nadir	......	22 52 0	254 0	1 51·1	61·5	0·500	29·81	48·6	45·0	....	......	......	....	...
	......	Nadir	......	....	254 0	1 65·2	71·8	0·500	......	......	......	....	......	......	....	...
	8135	....	6·0	23 15 18	86 35	0 35·0	35·5	0·667	29·81	......	45·0	2, E.	......	7	+12 33 36·2	+10·4
	8247	....	......	23 36 40	112 0	2 12·0	14·0	0·500	29·91	......	44·0	....	......	7	+39 0 40·6	+56·3
	8350	85 Pegasi	......	23 56 5	103 35	1 1·4	2·9	0·570	29·91	......	44·0	....	......	7	+29 34 1·4	+56·4
	26	γ Pegasi	......	0 7 16	115 30	1 48·4	52·0	0·500	29·91	......	44·0	....	......	6	+41 29 47·9	+21·6
	83	....	......	0 18 48	77 40	0 40·0	43·0	0·557	29·91	......	43·8	....	......	8	+ 3 38 36·9	+21·4
	149	....	......	0 29 54	117 25	4 35·5	37·0	0·500	29·91	......	43·7	....	......	6	+43 27 34·3	+23·1
	182	(a)	7·0	0 35 46	71 55	3 0·0	1·2	0·500	29·91	......	43·6	....	......	6	− 2 4 3·6	+52·4
	562	....	......	1 45 14	79 10	0 20·7	23·0	0·620	29·91	......	44·0	....	......	5	+ 5 8 21·0	+14·6
	......	Nadir	......	2 10 0	254 0	1 53·8	64·7	0·500	29·91	46·9	44·0	....	......	......	....	...
	......	Nadir	......	....	254 0	1 63·5	75·3	0·500	......	......	......	....	......	......	....	...
Oct. 19	......	Nadir	......	23 23 0	254 0	1 51·4	61·9	0·500	29·70	58·3	57·0	....	......	......	....	...
	......	Nadir	......	....	254 0	1 64·6	74·4	0·500	......	......	......	....	......	......	....	—
	8247	....	......	23 36 39	112 0	2 45·0	46·6	0·459	29·70	......	57·0	10, S.	1	6	+38 0 43·0	[illegible]
	8272	....	......	[illegible] 42 17	122 25	2 49·0	51·6	0·500	29·70	......	57·0	....	......	6	+48 25 48·2	[illegible]
	8315	....	......	23 49 41	122 25	4 10·7	15·6	0·550	29·70	......	57·0	....	......	8	+48 27 12·6	[illegible]
	8350	85 Pegasi	......	23 56 6	103 35	1 3·0	4·9	0·500	29·70	......	56·8	....	......	7	+29 34 1·7	[illegible]
	......	Nadir	......	1 7 0	254 0	1 53·0	62·2	0·500	29·70	57·7	56·8	....	......	......	....	...
	......	Nadir	......	....	254 0	1 65·0	73·9	0·500	......	......	......	....	......	......		...
Oct. 30	......	Nadir	......	0 5 0	254 0	1 53·0	62·0	0·500	29·64	48·0	42·2	....	......	......	....	...
	......	Nadir	......	....	254 0	1 64·0	74·2	0·500	......	......	......	....	......	......	....	...
	98	....	......	0 21 27	114 40	1 9·2	11·6	0·542	29·64	......	42·2	3, W.	0	6	+40 39 9·3	[illegible]
	177	....	......	0 35 10	121 20	0 38·6	41·2	0·440	29·64	......	42·0	....	......	7	+47 18 36·4	[illegible]
	259	....	......	0 50 14	92 10	2 22·7	24·9	0·500	29·64	......	41·8	....	......	8	+18 10 21·3	[illegible]
	299	....	......	0 58 3	101 0	1 56·5	58·6	0·500	29·64	......	41·8	....	......	8	+26 59 55·4	[illegible]
	455	....	6·0	1 25 44	113 40	2 32·0	32·8	0·410	29·64	......	41·8	....	......	7	+39 40 28·3	[illegible]
	516	....	......	1 35 14	95 20	4 38·2	40·1	0·500	29·64	......	41·8	....	......	7	+21 22 37·2	[illegible]
	562	....	......	1 45 13	79 10	0 16·6	19·2	0·658	29·64	......	41·8	....	......	9	+ 5 8 16·7	[illegible]
	645	....	......	2 0 1	104 45	2 10·9	12·9	0·464	29·64	......	41·8	....	......	6	+30 45 9·4	[illegible]
	793	....	......	2 29 39	123 40	3 18·0	19·8	0·500	29·64	......	41·8	....	......	4	+49 41 16·9	[illegible]
	834	....	......	2 36 50	104 50	4 31·9	31·9	0·750	29·64	......	41·8	....	......	7	+30 52 37·8	[illegible]
	891	....	8·0	2 46 28	124 0	2 37·6	42·2	0·500	29·66	......	41·4	....	......	6	+50 0 37·8	[illegible]
	920	....	......	2 52 7	108 50	3 46·3	47·0	0·500	29·67	......	41·3	....	......	7	+34 51 49·1	[illegible]
	962	ι Persei	......	3 0 20	80 50	3 14·7	16·1	0·500	29·67	......	41·2	....	......	7	+ 6 51 12·4	[illegible]
	......	Nadir	......	3 7 0	254 0	1 52·7	61·9	0·500	29·67	42·1	41·2	....	......	......	....	—
	......	Nadir	......	....	254 0	1 65·2	75·0	0·500	......	......	......	....	......	......	....	—
Nov. 1	......	Nadir	......	0 31 0	254 0	1 52·9	62·3	0·500	29·47	50·1	48·4	....	......	......	....	...
	......	Nadir	......	....	254 0	1 64·8	74·6	0·500	......	......	......	....	......	......	....	...
Nov. 5	......	Nadir	......	0 25 0	254 0	1 51·2	61·2	0·500	29·40	48·0	46·0	....	......	......	....	...
	......	Nadir	......	....	254 0	1 64·0	74·9	0·500	......	......	......	....	......	......	....	—
	197	....	......	0 37 54	82 50	1 2·9	5·0	0·522	29·40	......	46·0	18, W.	0	7	+ 8 49 2·1	[illegible]
	263	....	6·0	0 50 56	103 40	1 59·8	62·0	0·526	29·40	......	46·0	....	......	7	+29 40 0·1	[illegible]
	314	μ Cassiopeæ	......	1 0 18	75 40	3 15·0	16·8	0·500	29·40	......	46·0	....	......	8	+ 1 41 13·2	[illegible]
	455	....	7·0	1 25 44	113 40	2 29·7	31·4	0·500	29·40	......	46·0	....	......	7	+39 40 29·7	[illegible]
	547	....	......	1 41 51	[illegible] 45	0 18·3	18·7	0·500	29·40	......	46·0	....	......	6	+ 8 43 15·8	[illegible]
	728	....	......	2 16 58	119 40	4 42·8	45·5	0·500	29·40	......	46·0	....	......	5	+45 42 43·4	[illegible]

(a) Sky overcast.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1. 1866.
1866.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Nov. 5	776	(a)	......	2 25 28	128 15	2 33 3	36·5	0·455	29·40	......	46·0	......	......	4	+ 54 15 32·1	+ 14·0
	920	......	......	2 52 7	108 50	3 46 6	45·8	0·500	29·40	......	46·0	......	......	6	+ 34 51 45·4	+ 11·8
	962	ι Persei	......	3 0 19	80 50	3 9·8	12·3	0·668	29·40	......	46 0	......	......	7	+ 6 51 13·3	+ 9·5
	1055	......	......	3 17 42	108 20	4 55·6	56·4	0·270	29·40	......	46 0	......	......	7	+ 34 22 48·9	+ 9·0
	......	Nadir	......	3 27 0	254 0	1 51·3	61·3	0·500	29·40	46 9	46·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 62·4	72·8	0·500	......	......	......	......	......	......	......	......
Nov. 8	......	Nadir	......	0 25 0	254 0	1 52·2	61·0	0·500	29·11	45·8	40·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·0	73·8	0·500	......	......	......	......	......	......	......	......
	197	......	......	0 37 54	82 50	1 8·9	8·8	0·319	29·11	......	40·0	20, W.	2	7	+ 8 49 0·8	+ 28 0
	259	......	......	0 50 14	92 10	2 21·6	23·8	0·500	29·11	......	40·0	......	......	8	+ 18 10 20·5	+ 26·0
	299	......	......	0 58 3	101 0	1 59·3	59·9	0·483	29·11	......	40·0	......	......	7	+ 26 59 57·1	+ 24·2
	514	......	......	1 34 59	100 35	1 25·8	26·8	0·621	29 11	......	40·0	......	......	6	+ 20 34 27 5	+ 20·7
	547	......	......	1 41 52	82 45	0 16·3	17·3	0·500	29·11	......	40·0	......	......	8	+ 8 43 13·7	+ 20·8
	647	......	......	2 0 8	104 50	4 42·2	42·1	0·500	29 11	......	40·0	......	......	7	+ 30 52 41·0	+ 17·7
	718	(b)	......	2 13 25	73 20	1 35 0	36·9	0·500	29 08	......	40·0	......	......	9	− 0 40 27·6	+ 16·6
	764	......	......	2 23 21	121 0	0 9·7	11·7	0·615	29·08	......	40·0	......	......	7	+ 46 58 11·8	+ 14·4
	834	......	......	2 37 0	104 50	4 39 4	38·5	0 500	29 08	......	40·0	......	......	6	+ 30 52 37·8	+ 13·7
	920	......	......	2 52 7	108 50	3 48 0	48·0	0·500	29·08	......	40·0	......	......	7	+ 34 51 46·8	+ 12·0
	962	ι Persei	......	3 0 18	80 50	3 13·4	15·4	0·500	29·08	......	40·0	......	......	5	+ 6 51 11·7	+ 10·1
	......	Nadir	......	3 40 0	254 0	1 51 0	62·8	0·500	29 08	40·7	40·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 66·0	75·2	0·500	......	......	......	......	......	......	......	......
Nov. 9	......	Nadir	......	0 48 0	254 0	1 53·0	61·2	0·500	29·75	45·0	41·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·8	74·0	0·500	......	......	......	......	......	......	......	......
	360	α Ursæ Minoris	......	1 11 29	41 20	4 5·4	7·6	0·213	29·75	......	41·0	......	......	6	− 32 38 5·3	+ 23·9
	588	......	......	1 50 43	66 0	1 14·0	14·2	0·500	29·75	......	40·0	......	......	6	− 8 0 49·5	+ 19·9
	645	......	......	2 0 2	104 45	2 9 8	10·8	0·500	29·75	......	39·4	......	......	5	+ 30 45 9·1	+ 17·8
	694	......	......	2 9 27	66 10	1 11·8	13·0	0·500	29·75	......	39·3	......	......	8	− 7 50 51·2	+ 17·2
	728	......	......	2 16 55	119 40	4 42·8	44·0	0·480	29 75	......	39 6	......	......	7	+ 45 42 42·0	+ 15·2
	776	......	......	2 25 28	128 15	2 31·0	33·4	0·500	29·75	......	39·7	......	......	7	+ 54 15 30·7	+ 13·7
	834	......	......	2 36 59	104 50	4 37·5	36·7	0·500	29·75	......	39·8	......	......	6	+ 30 52 36·2	+ 13·8
	962	ι Persei	......	3 0 20	80 50	3 11·3	13·2	0·530	29·75	......	39·6	......	......	8	+ 6 51 10·7	+ 10·3
	1055	......	......	3 17 42	108 20	4 48·0	49·5	0·500	29·75	......	39·7	......	......	7	+ 34 22 48·3	+ 9·2
	1101	......	......	3 28 13	98 45	0 2·9	5·3	0·500	29·75	......	39·2	......	......	7	+ 24 43 2·2	+ 7·5
	1166	η Tauri	......	3 40 26	106 15	2 26·9	27·9	0·500	29·75	......	39·0	......	......	......	+ 32 15 26·2	+ 6·3
	......	Nadir	......	3 51 0	254 0	1 52·7	61·9	0·500	29·75	42·0	39 0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·6	74 2	0·500	......	......	......	......	......	......	......	......
Nov. 13	......	Nadir	......	1 6 0	254 0	1 52·9	61·4	0·500	29·09	44·0	39·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·1	72·6	0·500	......	......	......	......	......	......	......	......
	403	......	7·0	1 18 3	87 50	0 36·9	36·5	0 564	29·09	......	39·0	10, W.	0	7	− 16 11 25·8	+ 25·7
	455	......	......	1 25 45	113 40	2 31·1	31·3	0·500	29·09	......	39·0	......	......	8	+ 39 40 30·3	+ 20·3
	516	......	......	1 35 13	95 20	4 38·4	38·2	0·500	29·09	......	38·8	......	......	6	+ 21 22 37·0	+ 21·7
	547	......	......	1 41 52	82 45	0 14·4	15·0	0·550	29·09	......	38·8	......	......	7	+ 8 43 13·4	+ 21·6
	588	......	......	1 50 44	66 0	1 10·0	9·8	0·657	29·09	......	38·8	......	......	8	− 8 0 49·4	+ 21·0
	626	......	......	1 57 43	47 0	3 58·7	58·8	0·578	29·09	......	38 8	......	......	9	− 26 58 3·0	+ 19·4
	694	......	......	2 9 28	66 10	1 13·8	13·2	0·400	29·08	......	38·6	......	......	7	− 7 50 52·0	+ 18·3
	793	......	......	2 29 38	123 40	3 17·3	19·1	0·533	29·08	......	38·6	......	......	6	+ 49 41 17·8	+ 13·5
	834	......	......	2 36 59	104 50	4 35·8	34·0	0·629	29·08	......	38·6	......	......	9	+ 30 52 37·5	+ 14·1
	891	......	......	......	124 0	2 37·6	40·1	0·500	29·08	......	38·0	......	......	5	+ 50 0 37·4	+ 12·0

(a) Sky getting overcast. (b) Wind increasing.

Date.	Star or other Object Observed: No. in British Asso. Catalogue.	Star or other Object Observed: Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist. Jan. 1 1866.
1866.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Nov. 13	949	(a) α Ceti		2 56 11	126 20	4 12·9	13·9	0·580	29·08		38·0			10	+52 22 14·5	+10·8
	980			3 3 24	103 35	0 53 7	52·9	0·368	29·08		38 0			7	+29 33 48·0	+11·0
	1055			3 17 42	108 20	4 52·5	53·0	0·455	29·08		37·9			7	+34 22 50·8	+ 9·3
		Nadir ‖|		3 21 0	254 0	1 53·3	61·7	0·500								
		Nadir |‖			254 0	1 63·5	73·0	0·500								
Nov. 14		Nadir ‖|		1 53 0	254 0	1 53·0	62·1	0·500	29·71	42 0	37·0					
		Nadir |‖			254 0	1 65·9	74·3	0·500								
	702			2 10 55	66 15	1 20·4	21 8	0·500	29·71		37 0	2, N.W.	0	5	− 7 45 42·5	+16·4
	764		7·0	2 23 20	121 0	0 12·9	15·4	0·454	29 71		37·0			6	+46 58 11·3	+14·3
	834			2 37 0	104 50	4 38·1	37·1	0·500	29 71		37·0			8	+30 52 36·7	+14·1
	891		8·0	2 46 29	124 0	2 37 4	39·2	0·522	29·71		37·0			6	+50 0 37·5	+12·0
	920			2 52 7	108 50	3 48·4	47·0	0·431	29·71		37·0			7	+34 51 45·0	+12·8
	962	ι Persei		3 0 21	80 50	3 19·7	20·1	0·237	29·71		37 0			6	+ 6 51 10·3	+11·4
	1055			3 17 42	108 20	4 48·1	48·7	0·500	29 70		37·2			7	+34 22 47·7	+ 9·4
	1101			3 28 13	98 45	0 4·0	4·2	0·500	29·70		37·2			8	+21 43 2·2	+ 8·0
	1166	η Tauri		3 40 25	106 15	2 26 1	26·3	0·500	29·70		37·2			7	+32 15 25·0	+ 5·4
		Nadir ‖|		3 54 0	254 0	1 53·3	61·7	0·500	29 70	39·0	37·2					
		Nadir |‖			254 0	1 63·9	72·9	0·500								
Nov. 16		Nadir ‖|		1 35 0	254 0	1 53·1	61·6	0·500	29 52	41·1	34·0					
		Nadir |‖			254 0	1 64·0	72·8	0·500								
	588			1 50 44	66 0	1 12·5	12·9	0·500	29·54		33·5	2, N.	0	6	− 8 0 50·9	+21·5
	634			2 9 26	66 10	1 8·0	9·4	0·504	29·54		33·3			8	− 7 50 51·8	+19·1
	725			2 14 28	73 10	2 47·2	48·0	0·500	29·54		33·3			7	− 0 49 15·4	−15·4
	764			2 23 20	121 0	0 5·8	9 1	0·600	29·54		33·0			7	+46 58 8·6	−11·5
	834			2 36 59	104 50	4 33·2	34·3	0·534	29·54		33·0			8	+30 52 33·8	+14·3
	891				124 0	2 36·0	39·4	0·500	29 54		33·0			7	+50 0 36·3	+11·5
	920			2 52 7	108 50	3 41·3	42·0	0·546	29·54		33·0			6	+34 51 42·1	+12·3
	962	ι Persei		3 0 20	80 50	3 11·6	14·2	0·444	29 54		32·2			8	+ 6 51 9·3	+11·6
	1101			3 28 14	98 40	4 59·0	61·9	0 500	29·61		32·0			7	+21 42 59·1	+ 8·4
	1166	η Tauri		3 40 26	106 15	2 24·1	24·9	0·500	29·61		31·9			8	+32 15 23·3	+ 6·6
	1282			4 4 43	81 10	4 28·0	29·4	0·500	29·61		31·8			7	+ 7 12 26·6	+ 2·1
		Nadir ‖|		4 11 0	254 0	1 53·7	60·5	0·500	29·61	36·4	31·8					
		Nadir |‖			254 0	1 64·6	71·6	0·500								
Nov. 19		Nadir ‖|		2 17 0	254 0	1 54·0	62·8	0 500	29·77	37·3	33 0					
		Nadir |‖			254 0	1 67·0	76·4	0·500								
	793			2 29 38	123 40	3 7·7	9·1	0·780	29·77		32·6	9, N.	0	5	+49 41 12·6	+13·1
	834			2 36 50	101 50	4 40·7	39·9	0 256	29·77		32·5			7	+30 52 31·3	+14·4
	891		6 0		124 0	2 34·7	36·6	0·500	29·77		32·4			7	+50 0 32·8	+11·7
	962	ι Persei		3 0 20	80 50	3 10 0	11·2	0·500	29·77		32·3			8	+ 6 51 6·9	+12·4
	1055			3 17 42	108 20	4 49·4	50·2	0·390	29·77		32·0			7	+34 22 44·6	+ 3·6
	1282			4 4 44	81 10	4 29·8	31·4	0·500	29·77		32·0			6	+ 7 12 27·1	+ 1·8
	1318			4 11 55	73 45	3 38·2	38·0	0·500	29·77		32·0			5	− 0 13 26·0	+ 1·2
		Nadir ‖|		4 22 0	254 0	1 54 8	64·0	0 500	29·77	34·9	32·0					
		Nadir |‖			254 0	1 66·6	74·8	0·500								
Nov. 25		Nadir ‖|		1 40 0	254 0	1 52·5	60·4	0·500	29·38	41·1	38·4					
		Nadir |‖			254 0	1 64·9	72·3	0·500								
	645			2 0 2	104 45	2 11·4	11·6	0·417	29·38		38·3	5, W.	0	6	+30 45 5·0	+15·7

(a) At 2h 53m a very bright meteor descended from near the Zenith in a N.W. direction, at an angle of 75° to the Horizon.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1866.
1866.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Nov. 23	718	......	......	2 13 24	73 20	1 34·6	34·9	0·423	29·38	......	38·2	......	......	7	− 0 40 30·5	+ 20·2
	776	......	6·0	2 25 28	128 15	2 31·3	32·4	0·500	29·39	......	38·1	......	......	8	+ 54 15 30·3	+ 12·7
	834	......	......	2 37 0	104 50	4 36·5	36·0	0·500	29·38	......	38·6	......	......	7	+ 30 52 35·3	+ 14·7
	920	(a)	......	2 52 6	108 50	3 42·2	43·2	0·600	29·38	......	38·8	......	......	6	+ 34 51 44·7	+ 12·6
	......	Nadir ‖ |	......	3 58 0	254 0	1 53·0	61·1	0·500	29·38	41·3	40·2	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 63·7	72·9	0·500	......	......	......	......	......	......	......	......
Nov. 27	......	Nadir ‖ |	......	1 52 0	254 0	1 51·9	61·4	0·500	29·81	43·8	43·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 65·7	74·2	0·500	......	......	......	......	......	......	......	......
	694	......	......	2 9 26	66 10	1 5·8	6·8	0·500	29·81	......	43·0	2, W.	0	7	− 7 50 57·7	+ 22·0
	764	......	......	2 23 20	121 0	0 8·5	11·8	0·593	29·81	......	43·0	......	......	8	+ 46 58 10·7	+ 13·8
	793	......	......	2 29 38	123 40	3 17·9	20·6	0·457	29·81	......	43·0	......	......	7	+ 49 41 16·3	+ 12·5
	834	......	......	2 36 59	104 50	4 37·9	37·7	0·480	29·81	......	43·0	......	......	7	+ 30 52 36·0	+ 14·9
	891	......	......	2 46 28	124 0	2 38·3	41·1	0·526	29·81	......	42·9	......	......	6	+ 50 0 38·6	+ 11·2
	920	......	......	2 52 6	108 50	3 46·4	45·4	0·473	29·81	......	42·9	......	......	10	+ 34 51 44·0	+ 12·7
	962	ι Persei	......	3 0 20	80 50	3 11·0	13·3	0·500	29·82	......	42·9	......	......	9	+ 6 51 9·5	+ 14·0
	1055	......	......	......	108 20	4 46·1	47·1	0·500	29·82	......	42·9	......	......	5	+ 34 22 45·5	+ 9·8
	1101	......	......	3 28 12	98 45	0 1·8	3·6	0·448	29·82	......	42·9	......	......	7	+ 24 42 58·9	+ 9·2
	1166	(a) η Tauri	......	3 40 26	106 15	2 24·2	25·0	0·500	29·82	......	42·9	......	......	8	+ 32 15 23·0	+ 7·1
	......	Nadir ‖ |	......	4 15 0	254 0	1 53·7	62·4	0·500	29·82	43·7	42·9	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 65·2	73·8	0·500	......	......	......	......	......	......	......	......
Nov. 28	......	Nadir ‖ |	......	3 8 0	254 0	1 53·7	61·3	0·500	29·88	44·5	43·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 65·0	73·4	0·500	......	......	......	......	......	......	......	......
	1101	......	......	......	98 45	0 3·7	6·2	0·500	29·88	......	43·0	4, W.	6	4	+ 24 43 2·7	+ 9·2
	1434	......	......	4 31 34	117 40	4 6·2	7·8	0·500	29·88	......	43·0	......	......	6	+ 43 42 5·7	+ 1·1
	1459	......	......	......	74 35	2 54·9	55·4	0·500	29·88	......	43·0	......	......	4	+ 0 35 52·1	− 1·0
	......	Nadir ‖ |	......	5 0 0	254 0	1 54·0	61·6	0·500	29·88	......	43·1	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 64·6	73·6	0·500	......	......	......	......	......	......	......	......
Nov. 30	......	Nadir ‖ |	......	2 0 0	254 0	1 52·8	61·2	0·500	29·70	42·0	35·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 65·4	74·4	0·500	......	......	......	......	......	......	......	......
	776	......	......	......	128 15	2 30·1	31·4	0·500	29·70	......	34·4	5, E.	0	4	+ 54 15 28·9	+ 12·1
	834	......	......	2 36 58	104 50	4 33·5	34·3	0·500	29·70	......	34·0	......	......	6	+ 30 52 32·6	+ 15·0
	962	ι Persei	......	3 0 17	80 50	3 5·1	7·1	0·571	29·70	......	34·0	......	......	8	+ 6 51 5·3	+ 14·5
	1055	......	......	3 17 11	108 20	4 15·0	45·0	0·500	29·70	......	33·9	......	......	7	+ 34 22 43·9	+ 9·9
	1101	......	......	3 28 11	98 40	4 57·7	58·9	0·500	29·70	......	33·9	......	......	6	+ 24 42 56·8	+ 9·7
	1166	η Tauri	......	3 40 24	106 15	2 24·4	23·8	0·500	29·70	......	33·9	......	......	6	+ 32 15 22·5	+ 7·2
	1318	(b)	......	4 11 53	73 45	3 31·7	31·8	0·621	29·70	......	33·8	......	......	4	− 0 13 28·0	+ 3·6
	......	Nadir ‖ |	......	4 30 0	254 0	1 53·3	61·0	0·500	29·77	36·7	33·8	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 65·1	74·0	0·500	......	......	......	......	......	......	......	......
Dec. 3	......	Nadir ‖ |	......	2 37 0	254 0	1 53·0	61·2	0·500	29·09	42·4	43·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 64·8	73·1	0·500	......	......	......	......	......	......	......	......
	1055	......	......	3 17 40	108 20	4 50·4	50·0	0·500	29·09	......	42·4	......	......	7	+ 34 22 49·4	+ 9·9
	1101	......	......	3 28 12	98 40	4 56·5	59·2	0·585	29·09	......	42·2	......	......	8	+ 24 42 58·9	+ 9·6
	1282	......	6·0	4 4 42	81 10	4 32·4	32·8	0·354	29·08	......	42·4	......	......	8	+ 7 12 26·3	+ 5·3
	1318	......	......	4 11 53	73 45	3 30·7	31·0	0·660	29·08	......	42·3	......	......	7	− 0 13 27·7	+ 4·3
	1434	......	......	4 31 33	117 40	4 7·5	8·3	0·540	29·08	......	42·2	......	......	8	+ 43 42 8·0	+ 0·9
	1463	......	8·0	......	106 35	1 6·7	7·0	0·500	29·08	......	42·0	5, W.	0	7	+ 32 34 5·1	+ 0·2
	1626	......	......	5 10 12	89 35	5 12·0	14·0	0·540	29·08	......	42·0	......	......	8	+ 15 38 12·5	− 4·4
	......	Nadir ‖ |	......	5 19 0	254 0	1 55·0	62·3	0·500	29·08	42·4	42·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 63·7	71·3	0·500	......	......	......	......	......	......	......	......

(a) Sky getting overcast. (b) Bad definition.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. (Max. = 10.)	Est. Value of Obs. (Max. = 10.)	Apparent Zenith Distance South	Cor. to Mean N. Polar Dist., Jan. 1, 1866
1866.				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
Dec. 5	......	Nadir ‖|	......	3 4 0	254 0	1 52.1	61.8	0.500	29.38	43.0	41.0	......	......		......	......
	......	Nadir |‖	......	......	254 0	1 66.0	73.6	0.500	......	......	......	......	......	......	......	......
	1055	......	......	......	108 20	4 50.0	49.0	0.500	29.38	......	41.0	......	......	6	+34 22 48.7	+10.0
	1101	......	......	3 27 56	98 45	0 4.8	5.2	0.500	29.38	......	41.0	......	......	7	+24 43 2.7	+ 9.8
	1166	η Tauri	......	3 40 25	106 15	2 26.3	25.4	0.500	29.38	......	41.0	......	......	6	+32 15 24.3	+ 7.3
	1626	......	......	5 10 12	89 40	0 17.7	18.6	0.380	29.38	......	41.0	......	......	7	+15 38 12.3	− 4.2
	1683	......	......	5 18 51	95 40	3 0.0	0.0	0.300	29.38	......	41.0	......	......	8	+21 40 52.6	− 5.2
	......	Nadir ‖|	......	5 29 0	254 0	1 51.9	62.4	0.500	29.38	41.0	41.0	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 66.8	74.0	0.500	......	......	......	......	......			
Dec. 7	......	Nadir ‖|	......	2 27 0	254 0	1 54.8	62.6	0.500	29.35	40.8	36.8	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 64.6	71.2	0.500	......	......	......	......	......	......	......	......
	920	......	......	2 52 6	108 50	3 44.0	42.4	0.504	29.35	......	36.8	5, NW.	0	7	+34 51 42.8	+12.0
	1055	......	......	3 17 11	108 20	4 44.8	45.4	0.613	29.35	......	36.7	......	......	6	+34 22 47.9	+10.0
	1101	......	......	3 28 11	98 40	4 56.0	57.1	0.633	29.35	......	36.6	......	......	7	+24 42 59.6	+ 9.9
	1166	η Tauri	......	3 40 25	106 15	2 24.4	23.7	0.477	29.35	......	36.6	......	......	9	+32 15 22.3	+ 7.4
	1282	......	......	4 4 42	81 10	4 25.9	25.7	0.530	29.35	......	36.5	......	......	8	+ 7 12 24.9	+ 6.0
	1318	......	......	4 11 54	73 45	3 31.7	32.5	0.609	29.40	......	36.5	......	......	7	− 0 13 27.3	+ 5.1
	1361	......	......	4 18 2	111 10	4 45.4	45.0	0.500	29.45	......	36.5	......	......	7	+37 12 45.0	+ 2.8
	1434	......	......	4 31 34	117 40	4 4.8	5.8	0.500	29.45	......	36.5	......	......	5	+43 42 4.8	+ 0.7
	1459	......	......	4 38 4	74 35	2 53.7	53.7	0.500	29.45	......	36.5	......	......	8	+ 0 35 51.2	+ 0.9
	1626	......	......	5 10 13	89 40	0 8.7	10.3	0.641	29.45	......	36.0	......	......	9	+15 38 11.3	− 3.9
	1683	......	......	5 18 41	95 40	2 52.4	52.6	0.500	29.50	......	36.0	......	......	6	+21 40 51.1	− 5.0
	......	Nadir ‖|	......	5 36 0	254 0	1 53.7	62.4	0.500	29.50	38.0	36.0	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 63.4	71.1	0.500	......	......	......	......	......	......	......	......
Dec. 10	......	Nadir ‖|	......	3 34 0	254 0	1 53.7	61.8	0.500	29.95	42.3	38.0	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 63.9	72.0	0.500	......	......	......	......	......	......	......	......
	1282	......	......	4 4 41	81 10	4 27.4	28.1	0.457	29.95	......	38.0	......	......	7	+ 7 12 25.4	+ 6.6
	1351	......	......	4 16 41	113 35	4 42.7	44.3	0.500	29.95	......	38.0	......	......	6	+39 37 43.9	+ 2.5
	1434	......	......	4 31 33	117 40	4 3.0	4.1	0.500	29.95	......	38.0	......	......	7	+43 42 3.6	+ 0.5
	1491	......	......	4 44 11	121 15	3 17.8	20.4	0.500	29.95	......	38.0	......	......	8	+47 10 18.8	− 1.1
	1626	......	......	5 10 13	89 35	5 13.0	13.4	0.500	29.95	......	37.2	......	......	7	+15 38 12.6	− 3.6
	1683	......	6.0	5 18 49	95 40	2 53.2	54.3	0.516	29.95	......	37.0	......	......	6	+21 40 53.3	− 4.8
	1730	δ Orionis	......	5 26 3	130 20	2 3.0	6.0	0.500	29.96	......	37.0	......	......	7	+56 20 3.6	− 5.3
	1772	......	......	5 31 40	100 50	0 54.8	56.1	0.647	29.96	......	37.0	......	......	8	+26 48 58.4	− 6.4
	......	Nadir ‖|	......	5 51 0	254 0	1 54.0	62.0	0.500	29.96	......	37.0	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 62.7	72.2	0.500	......	......	......	......	......	......	......	......
Dec. 13	......	Nadir ‖|	......	2 58 0	254 0	1 52.0	58.6	0.500	29.88	41.7	40.6	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 64.0	71.8	0.500	......	......	......	......	......	......	......	......
	1055	......	......	3 17 40	108 20	4 52.0	51.4	0.424	29.88	......	41.0	7, W.	0	7	+34 22 49.8	+10.1
	1101	......	......	3 28 12	98 45	0 1.4	2.7	0.500	29.87	......	41.0	......	......	7	+24 43 0.7	+10.4
	1166	η Tauri	3.0	3 40 25	106 15	2 24.1	23.4	0.500	29.87	......	41.0	......	......	8	+32 15 23.3	+ 7.5
	1282	......	......	4 4 42	81 10	4 28.6	28.9	0.455	29.87	......	41.1	......	......	7	+ 7 12 26.3	+ 7.1
	1318	......	......	4 11 54	73 45	3 32.8	32.4	0.500	29.87	......	41.1	......	......	6	− 0 13 29.3	+ 6.4
	1361	......	5.8	4 18 3	111 10	4 48.2	48.4	0.500	29.87	......	41.1	......	......	6	+37 12 48.6	+ 2.5
	1463	......	......	4 38 31	106 35	1 4.8	5.0	0.579	29.87	......	41.1	......	......	9	+32 34 6.3	+ 0.4
	1501	......	......	4 46 42	74 20	3 6.8	7.3	0.590	29.87	......	41.1	......	......	8	+ 0 21 7.5	+ 0.7
	1626	......	......	5 10 13	89 35	5 9.7	10.3	0.582	29.86	......	41.2	......	......	10	+15 38 11.7	− 3.3
	1683	......	......	5 18 51	95 40	2 51.2	52.4	0.600	29.86	......	41.2	......	......	7	+21 40 55.3	− 4.6

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Date.	Star or other Object Observed. No. in British Assn. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist. Jan. 1, 1866.
1866.				h. m. s.	° ′	° ′	″	revols.	inches.	°	°				° ′ ″	″
Dec. 13	1730	δ Orionis	......	5 26 3	130 20	2 6·9	10·3	0·500	29·86	......	41·2	......	......	10	+ 56 20 7·8	− 5·7
	1772	......	......	5 31 41	100 50	0 57·9	59·2	0·500	29·86	......	41·2	......	......	9	+ 26 48 57·5	− 6·3
	......	Nadir ‖|	......	5 49 0	254 0	1 53·7	60·9	0·500	29·86	42·1	41·3	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 63·7	71·8	0·500	......		......	......	......	......	......	......
Dec. 27	......	Nadir ‖|	......	4 26 0	254 0	1 52·2	61·2	0·500	29·38	41·8	44·2	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 61·0	72·0	0·500	......	......	......	......	......	......	......	......
	1491	......	......	4 41 9	121 15	3 23·3	25·9	0·500	29·38	......	44·1	......	......	6	+ 47 16 24·3	− 2·3
	1626	......	......	5 10 10	89 40	0 7·1	8·5	0·542	29·38	......	44·2	10, S.W.	0	7	+ 15 38 7·4	− 1·6
	1683	......	......	5 18 48	95 40	2 51·5	53·0	0·528	29·38	......	44·1	......	......	8	+ 21 40 52·1	− 3·5
	1826	......	......	5 40 21	120 25	5 19·0	21·3	0·500	29·38	......	44·1	......	......	7	+ 46 28 20·3	− 7·9
	1853	α Orionis	......	5 48 45	122 35	0 39·4	41·0	0·568	29·38	......	44·1	......	......	6	+ 48 33 41·1	− 9·2
	1932	......	......	5 56 16	91 20	4 40·0	41·3	0·566	29·38	......	44·1	......	......	7	+ 17 22 41·7	− 8·5
	2022	......	......	6 10 33	119 55	4 20·6	22·8	0·350	29·38	......	44·1	......	......	6	+ 45 57 17·5	− 11·2
	2184	......	......	6 34 29	113 25	2 37·4	39·6	0·594	29·38	......	44·1	......	......	7	+ 39 25 40·9	− 13·6
	......	Nadir ‖|	......	6 51 0	254 0	1 52·6	62·6	0·500	29·38	41·3	44·1	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 63·0	71·6	0·500	......	......	......	......	......	......	......	......
Dec. 28	......	Nadir ‖|	......	4 42 0	254 0	1 51·9	62·9	0·500	29·31	47·0	49·0	......	......	......	......	......
	......	Nadir |‖	......	......	251 0	1 63·3	71·5	0·500	......	......	......	......	......	......	......	......
	1703	......	......	5 21 18	113 35	4 11·9	14·3	0·500	29·34	......	49·0	15, W.	2	6	+ 39 37 13·3	− 5·5
	1766	......	......	5 30 23	120 45	0 39·2	41·1	0·500	29·34	......	49·0	......	......	7	+ 46 43 39·3	− 7·2
	1826	......	......	5 40 22	120 30	0 18·8	23·8	0·500	29·34	......	49·0	......	......	8	+ 46 28 20·4	− 8·3
	1893	......	......	5 49 58	120 25	4 20·9	23·7	0·500	29·34	......	49·0	......	......	6	+ 46 27 22·3	− 9·2
	......	Nadir ‖|	......	5 56 0	251 0	1 52·7	63·1	0·500	29·34	48·7	49·1	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 62·8	70·9	0·500	......	......	......	......	......	......	......	......

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1866.
B.A.C. 1318.				
Nov. 19	0·88	(6·0)	h. m. 4 11	° ′ ″ 33 40 11·8
30	0·91			12·2
Dec. 3	0·92			13·2
7	0·93			14·4
13	0·95			13·7
B.A.C. 1351.				
Dec. 10	0·94	(6·5)	4 16	73 41 12·6
B.A.C. 1361.				
Dec. 7	0·93	(6·0)	4 17	71 16 9·1
13	0·95			12·8
B.A.C. 1434.				
Nov. 28	0·91	(5·0)	4 31	77 45 39·8
Dec. 3	0·92			40·5
7	0·93			38·5
10	0·94			37·9
B.A.C. 1459.				
Nov. 28	0·91	(6·5)	4 37	34 38 28·5
Dec. 7	0·93			29·5
B.A.C. 1463.				
Dec. 3	0·92	8·0	4 37	66 37 18·8
13	0·95			21·2
B.A.C. 1491.				
Jan. 12	0·03	(5·0)	4 43	81 19 56·3
Dec. 10	0·94			59·0
27	0·99			61·3
B.A.C. 1501.				
Dec. 13	0·95	(6·0)	4 46	34 23 45·4
B.A.C. 1626.				
Jan. 10	0·02	(7·5)	5 9	49 40 60·5
Dec. 3	0·92			61·0
5	0·93			61·2
B.A.C. 1626.				
Dec. 7	0·93	(7·5)	h. m. 5 9	° ′ ″ 49 40 60·7
10	0·94			62·5
13	0·95			61·7
27	0·99			58·8
B.A.C. 1683.				
Jan. 19	0·05	(6·0)	5 18	55 43 48·4
Dec. 5	0·93			47·3
7	0·93			46·4
10	0·94			49·1
13	0·95			51·0
27	0·99			48·4
B.A.C. 1703.				
Jan. 10	0·02	(7·0)	5 20	73 40 28·8
Dec. 28	0·99			31·8
B.A.C. 1730, δ Orionis.				
Jan. 19	0·05	(2·0)	5 25	90 24 5·0
Dec. 10	0·94			4·7
13	0·95			7·4
B.A.C. 1766.				
Dec. 28	0·99	(4·5)	5 29	80 47 9·5
B.A.C. 1772.				
Dec. 10	0·94	(6·0)	5 31	60 51 59·0
13	0·95			57·9
B.A.C. 1826.				
Jan. 10	0·02	(6·0)	5 39	80 31 45·7
Dec. 27	0·99			49·9
28	0·99			48·9
B.A.C. 1883, ε Orionis.				
Dec. 27	0·99	(1·0)	5 48	82 37 14·0
B.A.C. 1893.				
Dec. 28	0·99	(7·0)	5 49	80 30 49·9
B.A.C. 1930.				
Jan. 23	0·06	(6·5)	h. m. 5 55	° ′ ″ 72 20 15·4
B.A.C. 1932.				
Dec. 27	0·99	(7·5)	5 55	51 25 28·1
B.A.C. 2022.				
Jan. 5	0·01	(6·0)	6 10	80 0 41·8
19	0·05			43·9
Feb. 2	0·09			44·1
Dec. 27	0·99			42·8
B.A.C. 2046.				
Jan. 10	0·02	(7·0)	6 15	33 38 53·4
23	0·06			55·1
B.A.C. 2101.				
Jan. 5	0·01	(7·5)	6 22	67 22 9·8
Feb. 2	0·09			9·7
B.A.C. 2184.				
Jan. 5	0·01	(7·0)	6 34	73 28 51·1
10	0·02			50·3
22	0·06			52·7
23	0·06			52·8
Feb. 2	0·09			51·0
8	0·10			51·9
Dec. 27	0·99			51·6
B.A.C. 2238.				
Jan. 10	0·02	(6·0)	6 44	66 14 33·9
23	0·06			37·1
Feb. 2	0·09			35·8
8	0·10			36·7
B.A.C. 2292.				
Jan. 5	0·01	(6·0)	6 54	79 11 25·8
22	0·06			23·9
23	0·06			24·0
Feb. 2	0·09			23·1
8	0·10			22·5

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1866.
B.A.C. 2306.				
			h. m.	° ′ ″
Jan. 10	0·02	(6·0)	6 56	78 51 15·1
B.A.C. 2329.				
Feb. 2	0·09	(7·0)	7 0	74 15 27·7
B.A.C. 2334.				
Jan. 29	0·08	(6·0)	7 2	39 59 44·1
B.A.C. 2363.				
Jan. 10	0·02	(7·5)	7 6	65 3 46·4
22	0·06			48·1
Feb. 9	0·11			47·9
B.A.C. 2379.				
Feb. 2	0·09	(5·0)	7 8	40 17 57·1
B.A.C. 2410, δ Geminorum.				
Jan. 23	0·06	(3·0)	7 12	67 46 30·3
Feb. 8	0·10			26·0
9	0·11			24·1
16	0·13			26·5
B.A.C. 2463.				
Jan. 5	0·01	(7·0)	7 20	62 10 44·8
18	0·05			46·2
22	0·06			45·6
Feb. 2	0·09			44·7
8	0·10			44·5
16	0·13			46·2
B.A.C. 2488.				
Jan. 5	0·01	(6·0)	7 27	43 31 40·9
10	0·02			40·2
23	0·06			42·9
Feb. 2	0·09			39·6
8	0·10			40·8
9	0·11			39·1
13	0·12			40·4
16	0·13			41·2

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1866.
B.A.C. 2522, α Canis Minoris.				
			h. m.	° ′ ″
Jan. 18	0·05	(1·0)	7 32	84 26 3·0
22	0·06			5·1
23	0·06			9·7
29	0·08			5·4
Feb. 2	0·09			5·3
8	0·10			6·3
16	0·13			3·2
B.A.C. 2586.				
Jan. 10	0·02	(7·0)	7 42	61 28 6·8
18	0·05			7·5
22	0·06			7·5
23	0·06			6·7
29	0·08			7·5
Feb. 2	0·09			7·0
8	0·10			7·0
9	0·11			4·4
13	0·12			6·6
16	0·13			5·9
22	0·14			6·7
B.A.C. 2683.				
Jan. 18	0·05	(6·0)	7 57	70 46 54·7
22	0·06			55·4
23	0·06			56·3
29	0·08			55·2
Feb. 1	0·08			55·3
2	0·09			56·6
8	0·10			55·1
9	0·11			55·1
13	0·12			55·3
B.A.C. 2737.				
Jan. 23	0·06	(7·0)	8 3	74 58 37·9
Feb. 16	0·13			36·6
22	0·14			37·5
B.A.C. 2748.				
Feb. 1	0·08	(7·0)	8 5	75 35 56·8
2	0·09			57·1
8	0·10			57·4
13	0·12			58·5

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1866.
B.A.C. 2761.				
			h. m.	° ′ ″
Jan. 29	0·08	(7·0)	8 7	76 32 56·1
Feb. 9	0·11			56·4
28	0·16			56·2
B.A.C. 2867.				
Jan. 22	0·06	(6·5)	8 25	79 28 57·5
23	0·06			58·5
Feb. 1	0·08			57·1
2	0·09			57·3
13	0·12			57·7
16	0·13			57·4
22	0·14			56·4
B.A.C. 2971, ι Hydræ.				
Jan. 31	0·08	(4·0)	8 40	83 5 31·7
Feb. 1	0·08			30·6
2	0·09			32·0
16	0·13			30·2
22	0·14			30·8
B.A.C. 3013.				
Feb. 2	0·09	(6·0)	8 45	84 9 29·1
27	0·16			28·7
B.A.C. 3053.				
Feb. 1	0·08	(6·0)	8 50	80 5 54·2
13	0·12			54·7
B.A.C. 3083.				
Feb. 2	0·09	(6·5)	8 56	38 38 40·5
B.A.C. 3091.				
Feb. 1	0·08	(7·0)	8 57	39 51 26·0
B.A.C. 3133.				
Feb. 1	0·08	(6·0)	9 5	85 35 9·8
2	0·09			8·9

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1866.
B.A.C. 3157.				
Feb. 1	0·08	(7·0)	9h 10m	29° 39′ 24″·6
B.A.C. 3242, θ Ursæ Majoris.				
Feb. 9	0·09	(3·0)	9 24	37 42 51·2
13	0·12			51·8
16	0·13			51·0
27	0·16			48·6
B.A.C. 3331, ε Leonis.				
Feb. 9	0·09	(3·0)	9 38	66 36 33·6
16	0·13			38·0
27	0·16			38·9
B.A.C. 3336.				
Feb. 22	0·14	(5·5)	9 39	82 40 30·5
B.A.C. 3375.				
Feb. 27	0·16	(6·5)	9 46	54 23 11·4
B.A.C. 3431.				
Feb. 27	0·16	(7·0)	9 56	56 53 59·1
B.A.C. 3484.				
Mar. 13	0·19	≈	10 7	57 54 41·4
B.A.C. 3529.				
Feb. 27	0·16	(6·0)	10 14	82 53 47·1
B.A.C. 3592.				
Feb. 27	0·16	(6·0)	10 23	87 49 10·9
Mar. 13	0·19			10·5
B.A.C. 3662.				
Feb. 27	0·16	(7·5)	10h 35m	78° 33′ 42″·0
Mar. 13	0·19			41·5
B.A.C. 3726.				
Mar. 13	0·19	(6·0)	10 46	88 15 54·4
B.A.C. 3834, δ Leonis.				
Mar. 13	0·19	(2·5)	11 7	68 44 31·4
20	0·21			29·5
21	0·22			34·3
April 13	0·28			30·3
B.A.C. 3996.				
Mar. 13	0·19	(6·0)	11 42	84 3 57·0
20	0·21			56·8
April 13	0·28			58·7
B.A.C. 4153.				
Mar. 20	0·21	(6·0)	12 14	62 37 55·7
April 13	0·28			55·7
23	0·31			56·5
B.A.C. 4206.				
April 13	0·28	(6·0)	12 22	63 1 52·6
20	0·30			51·2
B.A.C. 4231.				
April 23	0·31	(7·0)	12 27	64 48 42·5
B.A.C. 4244. (a)				
April 20	0·30	(Neb.)	12 28	52 50 8·2
B.A.C. 4364.				
April 13	0·28	(6·0)	12 55	68 0 27·0
20	0·30			27·5
23	0·31			31·1
May 4	0·34			33·4
B.A.C. 4421, β Comæ.				
April 16	0·29	(4·5)	13h 5m	61° 26′ 30″·4
20	0·30			29·7
May 10	0·35			29·7
B.A.C. 4457.				
April 20	0·30	(6·5)	13 13	54 10 3·2
May 10	0·35			1·6
B.A.C. 4462.				
May 15	0·37	(7·0)	13 13	84 28 8·0
B.A.C. 4503.				
April 20	0·30	(7·0)	13 23	85 26 3·8
May 10	0·35			1·8
15	0·37			2·7
B.A.C. 4526.				
May 15	0·37	(6·5)	13 26	64 57 20·2
B.A.C. 4550.				
April 20	0·30	(7·5)	13 31	36 37 39·1
May 10	0·35			37·1
B.A.C. 4552.				
May 4	0·34	(5·0)	13 31	53 1 22·0
B.A.C. 4555.				
May 21	0·38	(7·5)	13 32	36 42 41·3
B.A.C. 4559.				
May 18	0·38	(6·0)	13 33	78 34 17·1
B.A.C. 4575.				
April 13	0·28	(6·0)	13 37	66 37 20·2
May 10	0·35			24·5
21	0·38			25·7

(a) Reputed a nebula in British Association Catalogue, and nearly 2′ in error.

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B.A.C. 4606.				
May 18	0·38	(7·0)	h. m. 13 42	° ′ ″ 57 55 49·2
B.A.C. 4610.				
April 20	0·30	(6·0)	13 42	58 8 34·3
B.A.C. 4621.				
May 10	0·35	(6·0)	13 43	70 42 10·5
B.A.C. 4627.				
April 13	0·28	(7·0)	13 45	54 33 43·7
May 15	0·37			45·3
B.A.C. 4628.				
May 21	0·38	(6·0)	13 45	54 40 10·9
B.A.C. 4652.				
May 15	0·37	(7·0)	13 50	57 18 43·6
17	0·37			45·5
18	0·38			44·2
B.A.C. 4676.				
May 15	0·37	(7·0)	13 57	57 41 33·3
17	0·37			33·6
18	0·38			33·5
B.A.C. 4723.				
May 15	0·37	(7·0)	14 6	60 15 59·7
22	0·39			61·4
B.A.C. 4756.				
May 15	0·37	(6·0)	14 14	37 20 54·2
B.A.C. 4797.				
May 15	0·37	(6·0)	14 23	53 12 8·5
17	0·37			9·9
21	0·38			7·3
22	0·39			8·1
B.A.C. 4820.				
May 15	0·37	(6·0)	h. m. 14 28	° ′ ″ 56 52 36·2
30	0·41			35·0
B.A.C. 4863.				
May 9	0·35	(6·0)	14 37	52 40 16·1
15	0·37			16·0
17	0·37			16·7
21	0·38			16·4
22	0·39			17·1
30	0·41			16·8
B.A.C. 4934.				
May 15	0·37	(6·5)	14 51	48 19 20·0
17	0·37			19·5
21	0·38			20·9
22	0·39			19·7
30	0·41			19·1
B.A.C. 4965.				
May 9	0·35	(5·5)	14 58	44 49 50·0
15	0·37			49·3
17	0·37			49·8
21	0·38			50·0
22	0·39			51·7
30	0·41			49·8
B.A.C. 5000.				
May 9	0·35	(6·5)	15 5	56 24 43·3
15	0·37			41·0
22	0·39			43·8
B.A.C. 5071. (a)				
May 9	0·35	(6·0)	15 16	37 33 29·5
15	0·37			27·2
17	0·37			26·5
21	0·38			26·5
22	0·39			26·5
25	0·39			27·7
30	0·41			25·8
June 12	0·44			27·0
B.A.C. 5284, γ Serpentis.				
May 22	0·39	(3·0)	h. m. 15 50	° ′ ″ 73 53 56·9
25	0·39			55·5
30	0·41			56·5
June 12	0·44			57·0
13	0·45			61·2
B.A.C. 5415. (b)				
May 25	0·39	(6·0)	16 7	31 42 45·2
30	0·41			41·2
June 5	0·42			44·8
13	0·45			44·7
B.A.C. 5452.				
May 25	0·39	(6·0)	16 14	68 32 34·0
June 5	0·42			29·6
8	0·43			30·6
13	0·45			33·1
18	0·46			32·4
B.A.C. 5493.				
June 18	0·46	(6·0)	16 20	87 20 48·5
B.A.C. 5507.				
June 13	0·45	(7·0)	16 22	74 15 59·5
B.A.C. 5527.				
May 25	0·39	(5·5)	16 25	69 13 30·8
June 5	0·42			30·7
8	0·43			32·0
B.A.C. 5597.				
May 25	0·39	(6·0)	16 35	64 52 50·3
28	0·40			49·2
June 5	0·42			49·8
13	0·45			53·8
18	0·46			51·5
B.A.C. 5615.				
June 8	0·43	(6·0)	16 38	53 14 15·6
15	0·45			13·7

(a) Differs from Tab. N. P. D. by 2″.

(b) Differs from Tab. N. P. D. by 7″.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1866.
			h. m.	° ′ ″
B.A.C. 5634.				
June 18	0·46	(7·0)	16 42	78 37 44·9
B.A.C. 5686.				
June 8	0·43	(8·0)	16 47	74 22 8·8
13	0·45			7·6
15	0·45			8·0
B.A.C. 5716.				
May 28	0·40	(6·5)	16 52	74 20 38·9
June 18	0·46			39·4
B.A.C. 5732.				
June 8	0·43	(6·0)	16 55	74 51 9·1
15	0·45			10·1
B.A.C. 5776.				
June 13	0·45	(6·0)	17 1	40 0 35·4
15	0·45			35·8
B.A.C. 5821, α Herculis.				
June 8	0·43	(3·5)	17 9	75 27 18·8
13	0·45			19·6
15	0·45			20·5
18	0·46			17·3
B.A.C. 5863, ω Herculis.				
June 13	0·45	(6·0)	17 16	57 21 28·2
18	0·46			29·6
B.A.C. 5894.				
June 8	0·43	(6·0)	17 20	82 17 35·0
26	0·48			35·1
B.A.C. 5917.				
June 13	0·45	(6·0)	17 24	29 50 20·5

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1866.
			h. m.	° ′ ″
B.A.C. 6035.				
June 18	0·46	(6·5)	17 44	80 6 29·6
26	0·48			28·7
B.A.C. 6137.				
June 18	0·46	(7·5)	18 0	87 31 56·6
B.A.C. 6213. (a)				
June 26	0·48	(6·0)	18 13	82 47 31·0
B.A.C. 6966.				
Aug. 27	0·65	5·0	20 9	64 49 0·1
B.A.C. 7086.				
Aug. 27	0·65	(6·0)	20 26	34 22 50·8
B.A.C. 7161.				
Aug. 27	0·65	(7·0)	20 35	44 48 21·9
B.A.C. 7336, 61¹ Cygni.				
Aug. 27	0·65	(5·5)	21 1	51 54 28·1
B.A.C. 7703.				
Sept. 24	0·73	(5·5)	22 1	28 22 17·8
27	0·74			18·4
B.A.C. 7779 (b)				
Sept. 24	0·73	(7·5)	22 10	17 21 0·4
B.A.C. 7908, ζ Pegasi.				
Sept. 24	0·73	(3·0)	22 34	79 52 5·3

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1866.
			h. m.	° ′ ″
B.A.C. 8024.				
Sept. 24	0·73	(6·5)	22 56	33 36 51·9
B.A.C. 8091.				
Sept. 24	0·73	(7·0)	23 8	62 39 31·9
B.A.C. 8135.				
Oct. 15	0·79	(6·0)	23 14	46 36 55·2
16	0·79			56·4
B.A.C. 8137				
Sept. 27	0·74	(7·0)	23 14	28 45 48·2
B.A.C. 8204.				
Sept. 27	0·74	(7·0)	23 27	18 44 17·5
B.A.C. 8247.				
Oct. 16	0·79	(7·5)	23 36	72 4 30·3
19	0·80			31·3
B.A.C. 8272.				
Oct. 19	0·80	(7·0)	23 41	82 29 54·2
B.A.C. 8315.				
Oct. 19	0·80	(7·0)	23 49	82 31 18·5
B.A.C. 8350, 85 Pegasi.				
Oct. 16	0·79	(6·0)	23 55	63 37 38·0
19	0·80			37·6

(a) Tab. N. P. D. is 1′ in error. (b) Tab. N. P. D. nearly 30″ in error.

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EXPLANATIONS OF THE MURAL CIRCLE OBSERVATIONS IN 1866.

The observations with the Mural Circle in 1866 were taken by Mr Peter Williamson, Second Assistant Astronomer, under the supervision of the Astronomer.

The subjects observed were chiefly stars remarkable for proper motion. They are designated as far as possible by the number in the British Association Catalogue in col. 2, and by proper name or description in col. 3, assisted if necessary by notes at the foot of the page, as well as by approximate estimate of the magnitude in col. 4, and time of transit past centre of field (by an uncorrected sidereal journeyman clock, but showing fairly differences from star to star) in col. 5.

In Polar distance the star was always carefully bisected when crossing the centre of the field, either at the precise instant if its motion was steady, or in its mean path through several seconds if unsteady or undulatory, as was too often the case. Such bisection being performed by bringing the stellar image between two parallel lines about 7 seconds of space apart: the lines being illuminated in a dark field.

The same general principles of observation as in former years have been kept up with improved details described in 1860. The completion of every observation therefore in Polar distance still depends largely on the Telescope micrometer, whose numbers are a necessary addition to the readings both of the Pointer on the Limb of the Circle and of the two horizontal Microscopes A, B; all which numerical particulars are given in columns 6, 7, 8, and 9.

In columns 10 and 12, the readings of the Barometer and exterior thermometer are noted for refraction purposes: the interior thermometer being assumed to be practically the same as the exterior, for all star-observations when a thorough draught was kept up through the observing room, as was always the case during star observations. During observations for the Nadir-point, on the contrary, all shutters and windows were closed to prevent disturbance to the mercury, and then a sensible difference between the thermometers usually occurred, and is shown by the figures in the narrow column 11, compared with those in column 12.

Columns 13, 14, and 15 contain various points connected with the meteorologic and other circumstances of the observations, as they appeared to the observer at the time; and column 16 contains the reduction of the angular observations in columns 6 to 9, to the stage of "Apparent Zenith Distance South."

To this end, the readings of the Microscopes have been corrected for the error of their runs, as ascertained over 5′ spaces on the limb of the Circle, with the telescope directed first to the Zenith and then to the Nadir: also for the difference between the mean of two and the mean of six Microscopes as ascertained by examination in 1855 (see p. 76, vol. xii.); also for the Telescope micrometer readings converted into arc on the estimate of one revolution being equal to 27·704″, as ascertained by observations in the Mercury trough with the collimating eye-piece, combined with readings of all the six circumferential Microscopes. The Circle positions are then converted into Apparent Zenith Distances, by the application of a reading for the Zenith point derived from observation of the Nadir, as shown by making the bisecting wire cover its illuminated image in the Mercury trough, an observation made generally both at the beginning and conclusion of every series of star measures. The chief data of these several corrections are contained in the following Tables I., II., and III.

TABLE I.

CORRECTION FOR RUNS OF MICROSCOPES IN 1866.

Date.	Thermometer.		Runs Correction observed.				Adopted Runs Correction.	For Period.
	Interior.	Exterior.	Nadir.	Zenith.	Means of Obs.	Collected Means.		
1866.	°F.	°F.	″	″	″	″	″	1866.
Jan. 31	44·2	44·3	+1·0 +0·3	+1·9 +2·5	+1·4 +1·4	+1·4	+1·0 +1·4	Jan. 5 to Jan. 12. Jan. 18 to Feb. 9.
Feb. 27	38·0	31·8	+1·1	+1·2	+1·2	+1·2	+1·2	Feb. 13 to April 23.
May 4	46·0	44·0	+1·3	−0·1	+0·6	+0·6	+0·6	May 4 to June 29.
June 29	60·0	56·0	0·0 +1·2	+0·7 +0·2	+0·4 +0·7	+0·6	+0·6	
							+0·7	Aug. 22 to Sept. 27.
Nov. 8	40·7	40·0	+1·0	+0·6	+0·8	+0·8	+0·8	Oct. 15 to Nov. 30.
Dec. 18	45·1	43·2	+1·7 −0·2	+1·5 +1·5	+1·6 +0·6	+1·1	+1·1	Dec. 3 to Dec. 28.

TABLE II.

CORRECTION TO REDUCE THE MEAN OF THE TWO HORIZONTAL, TO THE MEAN OF THE WHOLE SIX, MICROSCOPES FOR THE YEAR 1866.

Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.
0° & 180°	+1.0	30° & 210°	+0.2	60° & 240°	+0.5	90° & 270°	+2.4	120° & 300°	+3.1	150° & 330°	+2.4
1 181	+0.9	31 211	+0.2	61 241	+0.6	91 271	+2.4	121 301	+3.1	151 331	+2.4
2 182	+0.8	32 212	+0.1	62 242	+0.7	92 272	+2.5	122 302	+3.0	152 332	+2.3
3 183	+0.8	33 213	+0.1	63 243	+0.7	93 273	+2.5	123 303	+3.0	153 333	+2.3
4 184	+0.7	34 214	0.0	64 244	+0.8	94 274	+2.6	124 304	+2.9	154 334	+2.2
5 185	+0.6	35 215	0.0	65 245	+0.9	95 275	+2.6	125 305	+2.9	155 335	+2.2
6 186	+0.6	36 216	0.0	66 246	+0.9	96 276	+2.6	126 306	+2.9	156 336	+2.1
7 187	+0.6	37 217	+0.1	67 247	+1.0	97 277	+2.7	127 307	+2.9	157 337	+2.1
8 188	+0.5	38 218	+0.1	68 248	+1.0	98 278	+2.7	128 308	+2.8	158 338	+2.0
9 189	+0.5	39 219	+0.2	69 249	+1.1	99 279	+2.8	129 309	+2.8	159 339	+2.0
10 190	+0.5	40 220	+0.2	70 250	+1.1	100 280	+2.8	130 310	+2.8	160 340	+1.9
11 191	+0.4	41 221	+0.2	71 251	+1.2	101 281	+2.9	131 311	+2.8	161 341	+1.9
12 192	+0.4	42 222	+0.2	72 252	+1.2	102 282	+2.9	132 312	+2.8	162 342	+1.9
13 193	+0.3	43 223	+0.1	73 253	+1.3	103 283	+3.0	133 313	+2.7	163 343	+1.8
14 194	+0.3	44 224	+0.1	74 254	+1.3	104 284	+3.0	134 314	+2.7	164 344	+1.8
15 195	+0.2	45 225	+0.1	75 255	+1.4	105 285	+3.1	135 315	+2.7	165 345	+1.8
16 196	+0.2	46 226	+0.2	76 256	+1.5	106 286	+3.1	136 316	+2.7	166 346	+1.7
17 197	+0.2	47 227	+0.2	77 257	+1.6	107 287	+3.2	137 317	+2.7	167 347	+1.6
18 198	+0.2	48 228	+0.3	78 258	+1.7	108 288	+3.2	138 318	+2.8	168 348	+1.6
19 199	+0.2	49 229	+0.3	79 259	+1.8	109 289	+3.3	139 319	+2.8	169 349	+1.5
20 200	+0.2	50 230	+0.4	80 260	+1.9	110 290	+3.3	140 320	+2.8	170 350	+1.4
21 201	+0.2	51 231	+0.4	81 261	+1.9	111 291	+3.3	141 321	+2.8	171 351	+1.4
22 202	+0.2	52 232	+0.3	82 262	+2.0	112 292	+3.3	142 322	+2.8	172 352	+1.3
23 203	+0.2	53 233	+0.3	83 263	+2.0	113 293	+3.4	143 323	+2.7	173 353	+1.3
24 204	+0.2	54 234	+0.2	84 264	+2.1	114 294	+3.4	144 324	+2.7	174 354	+1.2
25 205	+0.2	55 235	+0.2	85 265	+2.1	115 295	+3.4	145 325	+2.7	175 355	+1.2
26 206	+0.2	56 236	+0.3	86 266	+2.2	116 296	+3.3	146 326	+2.6	176 356	+1.2
27 207	+0.2	57 237	+0.3	87 267	+2.2	117 297	+3.3	147 327	+2.6	177 357	+1.1
28 208	+0.2	58 238	+0.4	88 268	+2.3	118 298	+3.2	148 328	+2.5	178 358	+1.1
29 209	+0.2	59 239	+0.4	89 269	+2.3	119 299	+3.2	149 329	+2.5	179 359	+1.0

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TABLE III.

NADIR AND ZENITH POINTS ON MURAL CIRCLE IN 1866.

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1866.				
Jan. 5	42°·0	254° 2′ 19″·0 18·6	74° 2′ 18″·8	18″·8
9	40·0	19·4	19·4	19·0
10	32·0	18·5	18·5	19·0
12	35·0	19·8	19·8	19·2
18	47·0	17·4	17·4	18·0
19	44·0	18·2 18·4	18·3	18·3
22	43·3	18·6 18·5	18·6	18·4
23	42·4	18·0 18·6	18·3	18·4
29	42·0	17·7 18·8	18·2	16·2
31	43·0	18·0	18·0	18·0
Feb. 1	44·6	17·6 16·8	17·2	17·7
2	41·6	18·0 18·6	18·3	18·2
8	39·7	18·8 18·6	18·7	18·6
9	40·4	19·2 18·5	18·8	18·8
13	35·0	19·0 19·4	19·2	19·0
16	37·5	18·8 18·8	18·8	19·9
22	40·6	19·5 19·5	19·5	19·4
1866.				
Feb. 27	38°·0	254° 2′ 19″·4	74° 2′ 19″·4	19″·3
28	35·6	19·0 19·2	19·1	19·2
Mar. 13	35·8	18·8 19·2	19·0	19·1
19	40·9	19·0	19·0	19·0
20	39·1	19·2 18·7	19·0	19·0
21	38·9	18·7	18·7	18·7
22	37·9	18·0	18·0	18·5
April 5	44·0	18·3	18·3	18·5
13	48·0	19·0 19·0	19·0	19·0
16	48·1	19·1	19·1	19·0
20	47·0	19·2 19·4	19·3	19·2
23	46·0	19·0 19·1	19·0	19·0
May 4	45·0	16·8 17·2	17·0	17·4
9	49·0	17·5 17·7	17·6	17·5
10	51·1	17·8 18·0	17·9	17·6
15	48·6	17·4 17·4	17·4	17·6
17	50·8	18·7 18·7	18·7	18·2

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Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1866.				
May 18	53·4	254 2 18·4 18·4	74 2 18·4	18·1
21	51·0	17·0 17·0	17·0	17·5
22	55·6	16·3 17·6	17·0	17·5
25	53·4	18·2	18·2	18·2
28	50·5	18·7 18·8	18·8	18·4
30	49·6	18·2 18·4	18·3	18·2
June 5	53·6	17·5 17·8	17·6	18·0
8	57·6	16·6 17·1	16·8	17·5
12	55·2	18·7 18·7	18·7	18·0
13	57·1	17·0	17·0	17·3
15	53·0	16·6 17·3	17·0	17·0
18	50·9	15·8 16·4	16·1	16·7
26	66·5	16·5 17·0	16·8	16·7
Aug. 27	57·5	16·6 16·5	16·6	16·7
Sept. 24	52·3	17·7	17·7	17·4
27	53·9	18·0	18·0	18·0
Oct. 15	47·4	20·2 19·6	19·9	19·5
16	47·8	20·4 20·0	20·2	19·8
19	58·0	18·7 19·2	19·0	19·4
30	45·0	19·0 19·4	19·2	19·3

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1866.				
Nov. 1	50·1	254 2 19·3	74 2 19·3	19·1
5	47·4	18·4 17·6	18·0	18·6
8	40·0	18·4 20·2	19·3	19·0
9	43·5	18·9 18·0	18·4	18·6
13	44·0	18·4 18·5	18·4	18·6
14	40·5	19·5 18·6	19·0	18·6
16	38·8	18·6 18·2	18·4	18·6
19	36·1	20·7 20·7	20·7	20·0
23	41·2	18·2 18·3	18·2	18·6
27	43·8	19·0 19·4	19·2	19·0
28	44·5	19·0 19·1	19·0	19·0
30	38·1	19·1 19·2	19·2	19·0
Dec. 3	42·4	18·8 18·8	18·8	19·0
5	42·0	19·2 19·3	19·2	19·0
7	39·4	19·0 17·4	18·2	18·5
10	42·3	18·6 17·5	18·0	18·0
13	41·9	16·4 18·3	17·4	18·0
27	44·6	18·1 18·2	18·2	18·0
28	47·8	18·2 18·1	18·2	18·0

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For the remaining reductions, the refractions have been computed by Bessel's Table, as represented in the Rev. R. Sheepshank's compendious forms; the Latitude of the Observatory has been assumed as in former years $=55° 57' 23''\cdot2$; and the *Apparent* N. Polar Distances on the day of observation have been converted into *Mean* North Polar Distances for the beginning of the year of observation, by applying the corrections for precession, nutation, aberration, and proper motions, taken from the elements and subsidiary tables given in the Nautical Almanac and the British Association Catalogue; and whose sum is represented in the last column of each observation-page. The individual results for magnitude and place of each star are collected on pp. 538 to 544.

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ROYAL OBSERVATORY, EDINBURGH.

CATALOGUE

OF

THE MEAN PLACES OF ALL STARS

OBSERVED WITH

EITHER THE TRANSIT INSTRUMENT OR MURAL CIRCLE,

DURING

THE YEAR, AND

REDUCED TO JANUARY 1,

1866.

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STARS. No. in B. A. C.	STARS. Name or Description.	Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place. R. A.	No. of Observations for Place. N. P. D.
				h. m. s.		° ′ ″			
4	α Andromedæ	(1·0) (a)	......	0 1 27·94	0·76	61 39 ...	......	4	0
18	......	......	(7·0)	0 4 ...	......	31 4 21·5	0·74	0	2
26	γ Pegasi	(2·0)	......	0 6 20·27	0·76	75 33 41·3	0·79	5	1
42	......	8·0	......	0 9 4·63	0·79	86 30 ...	......	1	0
57	......	7·0	......	0 10 54·77	0·79	89 3 ...	......	1	0
83	......	......	(6·0)	0 18 ...	......	37 41 44·5	0·79	0	1
98	......	......	(7·0)	0 20 ...	......	74 43 1·4	0·83	0	1
112	12 Ceti	(6·0)	......	0 23 12·02	0·79	94 42 ...	......	1	0
133	......	8·0	......	0 26 39·19	0·79	70 18 ...	......	1	0
149	......	......	(6·0)	0 29 ...	......	77 31 30·0	0·79	0	1
161	ι Andromedæ	4·0	......	0 31 28·81	0·79	61 25 ...	......	1	0
177	......	......	(7·0)	0 34 ...	......	81 22 38·8	0·83	0	1
182	......	......	7·0	0 34 ...	......	31 58 53·9	0·79	0	1
197	......	......	(6·5)	0 37 ...	......	42 52 15·0	0·84	0	2
218	η Cassiopeæ	......	(4·0)	0 41 ...	......	32 53 45·0	0·79	0	1
259	μ Andromedæ	......	(4·0)	0 49 ...	......	52 13 42·2	0·82	0	3
263	......	......	6·0	0 50 ...	......	63 43 34·0	0·84	0	1
288	ε Piscium	(4·0)	......	0 55 59·44	0·80	82 50 ...	......	3	0
299	......	......	(6·0)	0 57 ...	......	61 3 26·5	0·82	0	3
314	μ Cassiopeæ	......	(5·5)	0 59 ...	......	35 44 17·1	0·84	0	1
360	α Ursæ Minoris	......	(2·0)	1 11 ...	......	1 24 18·8	0·82	0	2
403	......	......	7·0	1 14 ...	......	17 51 19·9	0·87	0	1
453	η Piscium	(4·0)	......	1 24 18·97	0·84	75 21 ...	......	6	0
455	......	......	7·5	1 25 ...	......	73 44 14·4	0·85	0	3
514	......	......	(6·5)	1 34 ...	......	60 37 53·6	0·82	0	2
516	......	......	(5·5)	1 34 ...	......	55 25 57·4	0·85	0	2
518	ν Piscium	(5·0)	......	1 34 27·59	0·81	85 12 ...	......	5	0
547	......	......	(6·0)	1 41 ...	......	42 46 20·8	0·84	0	4
562	......	......	(6·5)	1 44 ...	......	39 11 18·6	0·81	0	2
577	β Arietis	(3·0)	......	1 47 14·52	0·82	69 51 ...	......	8	0
588	......	......	(6·5)	1 50 ...	......	26 1 59·5	0·86	0	3
626	......	......	(7·0)	1 57 ...	......	7 4 23·8	0·87	0	1
645	......	......	(6·0)	1 59 ...	......	64 48 37·6	0·84	0	4
647	......	......	(6·5)	1 59 ...	......	64 56 10·0	0·85	0	1
648	α Arietis	(2·0)	......	1 59 37·46	0·83	67 10 ...	......	7	0
694	......	7·8	......	2 8 30·14	0·88	26 11 53·7	0·87	2	4
702	......	7·2	......	2 9 57·60	0·88	26 17 4·6	0·87	2	1
704	67 Ceti	(6·0)	......	2 10 17·97	0·85	97 2 ...	......	3	0
718	......	......	(7·0)	2 12 ...	......	33 22 25·4	0·87	0	2
725	(b)	8·0	......	2 13 31·97	0·87	33 13 39·0	0·87	1	1
728	......	......	(6·5)	2 15 ...	......	79 46 34·4	0·84	0	2
738	......	7·8	......	2 17 0·23	0·88	80 20 ...	......	2	0
760	ξ² Ceti	(4·0)	......	2 21 2·21	0·86	82 8 ...	......	5	0
764	......	7·0	......	2 22 26·13	0·87	81 2 4·5	0·87	1	4
776	......	6·2	6·0	2 24 34·30	0·88	88 19 41·8	0·87	2	4
793	......	7·0	......	2 28 44·23	0·88	83 45 15·2	0·87	1	4
822	(c)	(Neb.)	......	2 33 37·47	0·88	47 52 ...	......	1	0
834	......	......	(6·5)	2 36 ...	......	64 56 1·6	0·87	0	10
837	γ Ceti	(3·0)	......	2 36 21·56	0·86	87 20 ...	......	9	0
881	ε Arietis	6·0	......	2 41 5·92	0·87	75 28 ...	......	1	0
891	......	......	8·0	2 45 34·45	0·88	84 4 35·7	0·87	2	6

(a) Magnitudes in parenthesis are taken from the British Association Catalogue.
(b) 14 seconds less than the Tab. R. A.; so also in 1868, from 8 observations.
(c) 18 seconds less than the Tab. R. A.; so also in 1863, from 3 observations.

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Stars. No. in B. A. C.	Stars. Name or Description.	Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place. R. A.	No. of Observations for Place. N. P. D.
				h. m. s.		° ′ ″			
920	....	7·8	......	2 51 12·54	0·88	68 55 14·3	0·87	2	5
949	α Ceti	(2·5)	......	2 55 16·55	0·88	86 26 17·2	0·87	13	1
962	ι Persei	4·0	......	2 59 24·88	0·90	40 54 5·1	0·87	4	9
980	....	6·3	......	3 2 29·99	0·91	[illegible] 37 8·6	0·87	3	1
986	δ Arietis	(4·0)	......	3 3 58·24	0·89	70 47 ...	......	9	0
1055	....	7·9	......	3 16 47·54	0·90	68 26 14·4	0·90	5	11
1087	f Tauri	5·0	......	3 23 28·68	0·89	77 31 ...	......	4	0
1101	....	7·5	......	3 27 18·22	0·89	58 46 13·4	0·90	4	10
1126	11 Tauri	7·2	......	3 32 46·11	0·89	65 6 ...	......	4	0
1166	η Tauri	(3·0)	......	3 39 31·42	0·89	66 18 44·8	0·90	12	8
1282	....	8·0	6·0	4 3 47·58	0·89	41 15 15·4	0·92	3	6
1309	ο² Eridani	(4·5)	......	4 9 6·12	0·90	97 51 ...	......	2	0
1318	....	6·2	......	4 10 58·51	0·90	33 49 13·1	0·92	2	5
1328	γ Tauri	4·0	......	4 12 10·24	0·92	74 42 ...	......	2	0
1347	....	8·0	......	4 15 24·83	0·89	65 55 ...	......	3	0
1351	....	8·0	......	4 15 47·38	0·93	73 41 12·6	0·94	1	1
1361	....	6·0	......	4 17 8·74	0·89	71 16 11·0	0·94	3	2
1376	ε Tauri	(3·5)	......	4 20 47·71	0·92	71 7 ...	......	7	0
1420	α Tauri	(1·0)	......	4 28 14·00	0·92	73 46 ...	......	8	0
1434	....	4·0	......	4 30 40·14	0·91	7? 45 39·0	0·92	2	4
1459	....	7·0	......	4 37 8·53	0·94	34 38 29·0	0·92	3	2
1463	....	......	8·0	4 37 ...	......	66 37 20·0	0·91	0	2
1491	....	5·8	......	4 43 18·62	0·94	81 19 59·5	0·65	3	3
1501	....	7·2	......	4 45 47·11	0·94	34 23 45·4	0·95	3	1
1520	ι Aurigæ	(4·0)	......	4 48 16·25	0·94	57 3 ...	......	6	0
1623	β Orionis	(1·0)	......	5 8 5·94	0·64	98 22 ...	......	3	0
1626	....	7·0	......	5 9 19·32	0·94	49 41 0·9	0·81	3	7
1656	....	6·2	......	5 14 25·90	0·94	81 42 ...	......	3	0
1681	β Tauri	(2·0)	......	5 17 49·42	0·69	61 31 ...	......	7	0
1683	....	6·0	......	5 17 56·47	0·63	55 43 48·4	0·80	3	6
1703	....	7·5	......	5 20 25·89	0·94	73 40 30·3	0·50	3	2
1730	δ Orionis	(2·0)	......	5 25 9·63	0·70	90 24 5·7	0·65	11	3
1765	ι Orionis	(2·5)	......	5 29 24·84	0·69	91 17 ...	......	7	0
1766	....	(4·5)	......	5 29 32·72	0·97	80 47 9·5	0·99	2	1
1772	....	......	(6·0)	5 31 ...	......	60 51 58·4	0·94	0	2
1813	....	(6·0)	......	5 38 30·94	0·01	21 34 ...	......	1	0
1826	....	......	(6·0)	5 39 ...	......	80 31 48·2	0·67	0	3
1883	α Orionis	(1·0)	......	5 47 55·03	0·61	[illegible] 37 14·0	0·99	8	1
1893	....	......	(7·0)	5 49 ...	......	80 30 49·9	0·99	0	1
1907	(a)	6·0	......	5 51 20·94	0·99	77 13 ...	......	1	0
1930	....	8·0	......	5 55 8·52	0·99	72 20 15·4	0·06	1	1
1932	....	......	(7·5)	5 55 ...	......	51 25 28·1	0·99	0	1
1958	ν Orionis	(4·5)	......	5 59 55·40	0·99	75 13 ...	......	1	0
2002	η Geminorum	(4·0)	......	6 6 47·21	0·99	67 27 ...	......	1	0
2022	....	6·0	......	6 9 43·41	0·99	80 [illegible] 43·2	0·28	1	4
2046	....	......	(7·0)	[illegible] 15 ...	......	33 38 54·2	0·04	0	2
2047	μ Geminorum	(3·0)	......	[illegible] 14 51·19	0·01	67 25 ...	......	1	0
2101	....	......	(7·5)	6 22 ...	......	67 [illegible] 9·8	0·05	0	2
2163	γ Geminorum	(2·5)	......	6 29 58·24	0·27	73 29 ...	......	9	0
2184	....	7·0	......	6 33 38·13	0·39	73 28 51·6	0·19	3	7
2238	....	6·0	......	6 43 51·90	0·09	66 14 35·6	0·07	1	4

(a) 5 secs. less than Tab. R. A.; so also in 1861.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h m s		° ′ ″			
2292		7·0	......	6 53 34·05	0·39	79 11 23·9	0·06	2	5
2306		5·6	......	6 56 12·56	0·39	78 51 15·1	0·02	3	1
2329		7·5	......	7 0 32·65	0·39	74 15 27·7	0·09	3	1
2334		......	(6·0)	7 2 ...	......	39 59 44·1	0·08	0	1
2363		7·0	......	7 6 15·90	0·38	65 3 47·5	0·06	3	3
2379		5·0	......	7 8 20·76	0·54	40 17 57·1	0·09	2	1
2410	δ Geminorum	(3·0)	......	7 12 7·11	0·15	67 46 26·7	0·10	11	4
2462	β Canis Minoris	(3·0)	......	7 19 52·95	0·07	81 27 ...	......	3	0
2463		......	(7·0)	7 20 ...	......	62 10 45·3	0·07	0	6
2485	α² Geminorum	(1·5)	......	7 26 2·81	0·08	57 49 ...	......	10	0
2488		6·0	......	7 26 47·63	0·09	43 31 40·6	0·08	1	8
2522	α Canis Minoris	(1·0)	......	7 32 17·11	0·07	84 26 5·4	0·08	11	7
2555	β Geminorum	(2·0)	......	7 37 6·80	0·08	61 39 ...	......	13	0
2586		7·5	......	7 41 38·88	0·07	61 28 6·7	0·09	3	11
2672	6 Cancri	(5·5)	......	7 55 17·08	0·09	61 50 ...	......	9	0
2683		......	(6·0)	7 57 ...	......	70 46 55·7	0·08	0	9
2688		(7·0)	......	7 57 24·18	0·10	62 5 ...	......	4	0
2737		(7·0)	......	8 3 27·06	0·07	74 58 37·3	0·11	3	3
2748		(7·0)	......	8 4 52·25	0·07	75 35 57·4	0·10	3	4
2761		(7·0)	......	8 6 53·98	0·07	76 32 56·2	0·12	3	3
2778	β Cancri	(4·0)	......	8 9 14·79	0·07	80 24 ...	......	3	0
2862	η Cancri	(6·0)	......	8 24 57·42	0·11	69 8 ...	......	3	0
2867		6·0	......	8 25 22·25	0·11	79 28 57·4	0·10	3	7
2882		7·0	......	8 28 14·39	0·10	29 36 ...	......	3	0
2937	γ Cancri	(4·5)	......	8 35 31·69	0·06	68 3 ...	......	3	0
2971	ε Hydræ	(4·0)	......	8 39 40·65	0·12	83 5 31·1	0·10	8	5
2988		7·5	......	8 43 4·56	0·11	34 33 ...	......	3	0
3013		......	(6·0)	8 45 ...	......	84 9 28·9	0·12	0	2
3048	ι Ursæ Majoris	3·0	......	8 50 1·30	0·10	41 26 ...	......	2	0
3053		......	(6·0)	8 50 ...	......	80 5 54·4	0·10	0	2
3083		(6·5)	......	8 55 52·23	0·11	38 38 10·5	0·09	2	1
3091		......	(7·0)	8 57 ...	......	39 51 26·0	0·08	0	1
3103		(7·5)	......	8 58 44·82	0·11	72 21 ...	......	2	0
3133		(6·0)	......	9 5 12·84	0·11	85 35 9·4	0·08	2	2
3157		7·0	......	9 10 12·72	0·11	29 39 24·6	0·08	2	1
3171	83 Cancri	(6·0)	......	9 11 29·97	0·15	71 44 ...	......	4	0
3242	θ Ursæ Majoris	......	(3·0)	9 24 ...	......	37 42 50·6	0·12	0	4
3312	o Leonis	(4·0)	......	9 33 59·84	0·14	79 30 ...	......	1	0
3325		(6·0)	......	9 37 18·09	0·14	26 8 ...	......	1	0
3331	ε Leonis	(3·0)	......	9 38 14·48	0·15	65 36 36·8	0·13	8	3
3336		......	(5·5)	9 39 ...	......	82 40 30·5	0·14	0	1
3371	μ Leonis	(3·0)	......	9 45 8·37	0·14	63 22 ...	......	2	0
3375		......	(6·5)	9 46 ...	......	54 23 11·4	0·16	0	1
3415	π Leonis	(4·5)	......	9 53 7·77	0·16	81 19 ...	......	4	0
3418		(8·0)	......	9 53 54·72	0·14	80 24 ...	......	1	0
3430		(8·0)	......	9 56 12·03	0·14	81 8 ...	......	1	0
3431		......	(7·0)	9 56 ...	......	56 53 59·1	0·16	0	1
3438		(6·5)	......	9 57 47·76	0·14	84 21 ...	......	1	0
3459	α Leonis	(1·0)	......	10 1 13·98	0·17	77 23 ...	......	6	0
3484		......	x	10 7 ...	......	57 54 41·4	0·19	0	1
3523	γ¹ Leonis	(2·0)	......	10 12 34·83	0·15	69 29 ...	......	1	0

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
3529	....	......	(6·0)	10 14 ...	......	82 53 47·1	0·16	0	1
3592	....	......	(6·0)	10 23 ...	......	87 49 10·7	0·18	0	2
3609	ρ Leonis..........	(4·0)	......	10 25 45·24	0·27	80 0 ...	......	4	0
3662	....	......	(7·5)	10 35 ...	......	78 33 41·8	0·18	0	2
3708	l Leonis..........	(6·0)	......	10 42 12·69	0·23	78 45 ...	......	3	0
3726	....	......	(6·0)	10 45 ...	......	88 15 54·4	0·19	0	1
3788	χ Leonis..........	(4·5)	......	10 59 6·19	0·28	81 56 ...	......	7	0
3834	δ Leonis..........	(2·5)	......	11 6 58·72	0·26	68 44 31·4	0·22	9	4
3946	ν Leonis..........	(4·5)	......	11 30 5·26	0·26	90 5 ...	......	5	0
3995	β Leonis..........	(2·5)	......	11 42 13·37	0·33	74 41 ...	......	8	0
3996	....	......	(6·0)	11 42 ...	......	84 3 57·5	0·23	0	3
4145	η Virginis..........	(3·5)	......	12 13 3·07	0·21	89 55 ...	......	1	0
4153	....	......	(6·0)	12 14 ...	......	62 37 56·0	0·27	0	3
4205	....	......	(6·0)	12 22 ...	......	63 1 51·9	0·29	0	2
4231	....	......	(7·0)	12 27 ...	......	64 48 42·5	0·31	0	1
4244	(a)	......	(Neb.)	12 28 ...	......	52 50 8·2	0·30	0	1
4268	γ¹ Virginis..........	(4·0)	......	12 34 52·04	0·29	90 43 ...	......	1	0
4364	....	......	(6·0)	12 55 ...	......	68 0 29·8	0·31	0	4
4401	θ Virginis..........	(4·5)	......	13 3 0·80	0·30	94 49 ...	......	5	0
4421	β Comæ..........	......	(4·5)	13 5 ...	......	61 26 29·9	0·31	0	3
4457	....	......	(6·5)	13 13 ...	......	54 10 2·4	0·32	0	2
4462	....	......	(7·0)	13 13 ...	......	84 28 8·0	0·37	0	1
4480	α Virginis..........	(1·0)	......	13 18 6·11	0·51	100 28 ...	......	3	0
4503	....	......	(7·0)	13 23 ...	......	85 26 2·8	0·34	0	3
4526	....	......	(6·5)	13 26 ...	......	64 57 20·2	0·37	0	1
4532	ζ Virginis..........	(4·0)	......	13 27 52·00	0·35	89 55 ...	......	9	0
4550	....	......	(7·5)	13 31 ...	......	36 37 38·1	0·32	0	2
4552	....	......	(5·0)	13 31 ...	......	53 1 22·0	0·34	0	1
4555	....	......	(7·5)	13 32 ...	......	36 42 41·3	0·38	0	1
4559	....	......	(6·0)	13 33 ...	......	78 34 17·1	0·38	0	1
4575	....	......	(6·0)	13 37 ...	......	66 37 23·5	0·34	0	3
4606	....	......	(7·0)	13 42 ...	......	57 55 49·2	0·38	0	1
4610	....	......	(6·0)	13 42 ...	......	58 8 34·3	0·30	0	1
4621	....	......	(6·0)	13 43 ...	......	70 42 10·5	0·35	0	1
4627	....	......	(7·0)	13 45 ...	......	54 33 44·5	0·32	0	2
4628	....	......	(6·0)	13 45 ...	......	54 40 10·9	0·38	0	1
4648	η Bootis..........	(3·0)	......	13 48 18·26	0·33	70 56 ...	......	11	0
4652	....	......	(7·0)	13 50 ...	......	57 18 44·4	0·37	0	3
4672	τ Virginis..........	(4·5)	......	13 54 49·66	0·32	87 48 ...	......	6	0
4678	....	......	(7·0)	13 57 ...	......	57 41 33·5	0·37	0	3
4723	....	......	(7·0)	14 8 ...	......	60 16 0·6	0·38	0	2
4729	α Bootis..........	(1·0)	......	14 9 33·00	0·34	70 7 ...	......	10	0
4756	....	......	(6·0)	14 14 ...	......	37 20 54·2	0·37	0	1
4797	....	......	(6·0)	14 23 ...	......	53 12 8·4	0·38	0	4
4808	ρ Bootis..........	(4·0)	......	14 26 3·33	0·35	59 2 ...	......	11	0
4820	....	......	(6·0)	14 28 ...	......	56 52 35·6	0·39	0	2
4863	....	......	(6·0)	14 37 ...	......	52 40 16·5	0·38	0	6
4876	ε Bootis..........	(3·0)	......	14 39 8·09	0·37	62 22 ...	......	13	0
4934	....	......	(6·5)	14 51 ...	......	48 19 19·8	0·38	0	5
4965	....	......	(5·5)	14 58 ...	......	44 49 50·1	0·38	0	6
4969	ψ Bootis..........	(5·0)	......	14 58 42·31	0·39	62 32 ...	......	8	0

(a) Reputed a Nebula in British Association Catalogue, and nearly 2′ in error.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h m s		° ′ ″			
5000		......	(6·5)	15 5 ...	......	86 21 42·7	0·37	0	3
5034	β Libræ	(2·5)	......	15 9 47·81	0·40	98 53 ...	......	5	0
5071	(a)	......	(6·0)	15 16 ...	......	37 33 27·1	0·39	0	8
5143	α Coronæ Borealis	(2·5)	......	15 29 0·93	0·41	62 50 ...	......	11	0
5196	α Serpentis	(2·5)	......	15 37 40·13	0·41	83 9 ...	......	12	0
5284	γ Serpentis	......	(3·0)	15 50 ...	......	73 53 57·4	0·42	0	6
5414	δ Ophiuchi	(3·0)	......	16 7 19·44	0·41	93 21 ...	......	4	0
5415	(b)	......	(6·0)	16 7 ...	......	31 42 44·0	0·42	0	4
5452		......	(6·0)	16 14 ...	......	68 32 31·9	0·43	0	5
5493		......	(6·0)	16 20 ...	......	87 20 48·5	0·46	0	1
5507		......	(7·0)	16 22 ...	......	74 15 59·5	0·45	0	1
5527		......	(5·5)	16 25 ...	......	69 13 31·2	0·41	0	3
5597		......	(6·0)	16 35 ...	......	64 52 50·9	0·42	0	5
5604	ζ Herculis	(3·0)	......	16 36 14·24	0·43	58 9 ...	......	6	0
5615		......	(6·0)	16 38 ...	......	53 14 14·6	0·44	0	2
5634		......	(7·0)	16 42 ...	......	78 37 44·9	0·46	0	1
5686		......	(8·0)	16 47 ...	......	74 22 8·1	0·44	0	3
5708	κ Ophiuchi	(4·0)	......	16 51 19·52	0·45	80 25 ...	......	3	0
5716		......	(6·5)	16 52 ...	......	74 20 39·2	0·43	0	2
5732		......	(6·0)	16 55 ...	......	74 51 9·6	0·44	0	2
5776		......	(6·0)	17 1 ...	......	40 0 35·6	0·45	0	2
5821	α Herculis	(3·5)	......	17 8 32·28	0·45	75 27 19·0	0·45	6	4
5863	ϖ Herculis	......	(6·0)	17 16 ...	......	57 21 28·9	0·46	0	2
5894		......	(6·0)	17 20 ...	......	82 17 35·0	0·46	0	2
5917		......	(6·0)	17 24 ...	......	29 50 20·5	0·45	0	1
5941	α Ophiuchi	(2·0)	......	17 28 42·84	0·48	77 20 ...	......	6	0
6021	μ Herculis	(4·0)	......	17 41 12·99	0·47	62 12 ...	......	5	0
6035		......	(6·5)	17 44 ...	......	80 6 29·2	0·47	0	2
6137		......	(7·5)	18 0 ...	......	87 31 56·6	0·46	0	1
6213	(c)	......	(6·0)	18 13 ...	......	82 47 31·0	0·48	0	1
6355	α Lyræ	(1·0)	......	18 32 24·06	0·53	51 20 ...	......	9	0
6429	β Lyræ	(3·0)	......	18 45 7·97	0·53	56 47 ...	......	9	0
6528	ζ Aquilæ	(3·0)	......	18 59 15·06	0·53	76 20 ...	......	11	0
6595	ω Aquilæ	(5·0)	......	19 11 31·61	0·55	78 39 ...	......	7	0
6646	δ Aquilæ	(3·5)	......	19 18 44·49	0·54	87 9 ...	......	8	0
6772	γ Aquilæ	(3·0)	......	19 39 53·31	0·66	79 43 ...	......	7	0
6802	α Aquilæ	(1·5)	......	19 44 14·68	0·69	81 29 ...	......	6	0
6833	β Aquilæ	(3·5)	......	19 48 43·80	0·69	83 56 ...	......	6	0
6966		......	5·0	20 9 ...	......	64 49 0·1	0·65	0	1
7086		......	(6·0)	20 26 ...	......	34 22 50·8	0·65	0	1
7161		......	(7·0)	20 35 ...	......	44 48 21·9	0·65	0	1
7256	32 Vulpeculæ	(4·5)	......	20 48 51·00	0·66	62 27 ...	......	2	0
7336	61¹ Cygni	......	(5·5)	21 1 ...	......	51 54 28·1	0·65	0	1
7368	ζ Cygni	(3·0)	......	21 7 14·05	0·66	60 19 ...	......	3	0
7561	ε Pegasi	(2·5)	......	21 37 36·26	0·67	80 44 ...	......	3	0
7627	16 Pegasi	(5·5)	......	21 46 57·97	0·69	64 42 ...	......	6	0
7688	α Aquarii	(3·0)	......	21 58 53·95	0·69	90 58 ...	......	8	0
7708		......	(5·5)	22 1 ...	......	28 22 18·1	0·74	0	2
7779	(d)	......	(7·5)	22 10 ...	......	17 21 0·4	0·73	0	1
7868	η Aquarii	(4·0)	......	22 28 28·15	0·70	90 48 ...	......	7	0
7908	ζ Pegasi	(3·0)	......	22 34 46·76	0·70	79 52 5·3	0·73	12	1

(a) Differs from Tab. N. P. D. by 2′.
(c) Tab. N. P. D. is 1′ in error.
(b) Differs from Tab. N. P. D. by 7′.
(d) Tab. N. P. D. nearly 80′ in error.

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Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h m s		° ′ ″			
8024	......	......	(6·5)	22 56 ...	......	33 36 51·9	0·73	0	1
8034	α Pegasi	(2·0)	......	22 58 5·23	0·71	75 31 ...	......	13	0
8091	......	......	(7·0)	23 8 ...	......	62 39 31·9	0·73	0	1
8105	γ Piscium	(4·5)	......	23 10 13·08	0·73	87 27 ...	......	6	0
8135	......	......	(6·0)	23 14 ...	......	46 36 55·8	0·79	0	2
8137	......	......	(7·0)	23 14 ...	......	28 45 48·2	0·74	0	1
8169	κ Piscium	(5·5)	......	23 20 3·78	0·74	89 29 ...	......	5	0
8201	......	......	(7·0)	23 27 ...	......	18 44 17·5	0·74	0	1
8233	ι Piscium	(4·5)	......	23 33 3·50	0·76	85 6 ...	......	7	0
8247	......	......	(7·5)	23 36 ...	......	72 4 30·8	0·80	0	2
8272	......	......	(7·0)	23 41 ...	......	82 29 54·2	0·80	0	1
8315	......	......	(7·0)	23 49 ...	......	82 31 18·5	0·80	0	1
8331	ω Piscium	(4·5)	......	23 52 25·88	0·73	83 53 ...	......	2	0
8350	85 Pegasi	......	(6·0)	23 55 ...	......	63 37 37·8	0·80	0	2

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ROYAL OBSERVATORY, EDINBURGH.

OBSERVATIONS

MADE WITH

THE TRANSIT INSTRUMENT,

AND

CALCULATION

OF

APPARENT RIGHT ASCENSIONS.

1867.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1867.
1867.				° ′	s.	s.	s.	s.	m s.	h m s.	s.	s.	s.	s.
Jan. 3	7561	ε Pegasi	....	80 43	9·6	16·0	26·3	34·4	38 43·1	21 38 26·28	− 0·20	−47·76	−47·76	+ 0·92
	1351	....	....	73 41	23·0	31·5	40·0	48·3	16 57·2	4 16 40·00	− 0·20	....	−47·78	− 1·20
	1376	(a) ε Tauri	....	71 6	23·0	31·9	40·4	48·9	21 58·0	4 21 40·44	− 0·21	−47·83	−47·78	− 1·25
	1420	α Tauri	....	73 45	49·6	58·1	6·8	15·0	29 24·0	4 29 6·70	− 0·20	−47·80	−47·78	− 1·23
	1434	....	....	77 45	16·0	24·5	33·0	41·0	31 49·9	4 31 32·88	− 0·20	....	−47·78	− 1·21
	1491	....	....	81 19	54·4	2·9	11·1	19·2	44 28·0	4 44 11·12	− 0·19	....	−47·79	− 1·21
	1656	....	....	81 42	2·0	10·4	18·6	26·8	15 35·4	5 15 18·60	− 0·19	....	−47·79	− 1·28
	1681	β Tauri	....	61 30	21·0	33·3	42·9	51·9	19 1·6	5 18 42·74	− 0·22	−47·83	−47·79	− 1·50
	1730	(b) δ Orionis	....	90 23	45·5	53·6	2·0	10·0	26 18·5	5 26 1·92	− 0·20	−47·69	−47·79	− 1·28
	1765	ι Orionis	....	91 17	0·5	9·0	17·2	25·0	30 33·9	5 30 17·12	− 0·20	−47·76	−47·80	− 1·26
	1883	α Orionis	....	82 37	31·1	39·3	47·8	55·9	49 4·2	5 48 47·66	− 0·19	−47·83	−47·80	− 1·33
Jan. 4	1958	ν Orionis	....	75 13	31·0	39·8	48·2	56·5	1 5·4	6 0 48·18	− 0·15	−47·96	−47·93	− 1·38
	6281	δ Ursæ Minoris S. P.	....	3 24	52·0	21·0	35·0	56·5	20 15·0	6 15 35·90	+ 4·67	....	−47·93	+21·98
	2163	γ Geminorum	....	73 29	34·0	42·4	51·2	59·3	31 8·4	6 30 51·06	− 0·15	−47·84	−47·94	− 1·40
	2410	δ Geminorum	....	67 46	42·4	51·3	0·2	8·9	13 18·1	7 13 0·16	− 0·17	−47·91	−47·94	− 1·40
	2485	(a) α¹ Geminorum	....	57 49	36·9	46·6	56·3	5·6	27 16·2	7 26 56·32	− 0·19	−48·05	−47·95	− 1·45
	2522	α Canis Minoris	....	84 26	53·1	1·5	9·8	17·5	33 26·5	7 33 9·74	− 0·14	−47·91	−47·95	− 1·34
	2555	β Geminorum	....	61 39	41·2	50·8	0·1	8·9	38 19·0	7 38 0·00	− 0·18	−47·89	−47·95	− 1·38
Jan. 5	1883	α Orionis	....	82 37	33·0	41·4	49·7	57·9	49 6·4	5 48 49·68	− 0·06	−49·97	−50·06	− 1·34
	1958	ν Orionis	....	75 13	33·4	41·7	50·4	58·5	1 7·5	6 0 50·30	− 0·08	−50·13	−50·07	− 1·40
	6281	δ Ursæ Minoris S. P.	....	3 24	54·0	23·5	37·0	56·0	20 15·5	6 15 37·20	+ 5·80	....	−50·08	+21·58
	2163	γ Geminorum	....	73 29	36·1	44·8	53·2	1·7	31 10·8	6 30 53·32	− 0·08	−50·14	−50·08	− 1·43
	2410	δ Geminorum	....	67 46	44·6	53·4	2·2	11·0	13 20·3	7 13 2·30	− 0·10	−50·06	−50·09	− 1·44
	2485	α¹ Geminorum	....	57 49	39·0	48·7	56·4	7·9	27 18·0	7 26 58·40	− 0·14	−50·12	−50·10	− 1·51
Jan. 11	1883	α Orionis	....	82 37	33·9	42·4	50·6	58·4	49 7·1	5 48 50·48	− 0·19	−50·64	−50·65	− 1·34
	1907	....	....	44 5	59·8	8·2	16·6	24·8	52 33·7	5 52 16·62	− 0·27	....	−50·66	− 1·38
	1936	ν Orionis	....	75 13	34·0	42·2	51·0	58·9	1 8·3	6 0 50·88	− 0·19	−50·59	−50·67	− 1·41
	2002	η Geminorum	....	67 27	25·5	34·4	43·4	52·0	8 1·2	6 7 43·30	− 0·20	....	−50·67	− 1·48
	6281	δ Ursæ Minoris S. P.	....	3 24	57·0	26·0	40·0	57·5	20 18·5	6 15 39·80	+ 3·90	....	−50·68	+21·72
	2163	γ Geminorum	....	73 29	36·9	45·2	54·0	2·3	31 11·3	6 30 53·91	− 0·19	−50·63	−50·68	− 1·45
	2410	δ Geminorum	....	67 46	45·6	54·3	3·2	11·7	13 21·0	7 13 3·16	− 0·20	−50·78	−50·69	− 1·48
	2485	α² Geminorum	....	57 49	39·7	49·5	59·0	8·6	27 18·9	7 26 59·14	− 0·21	−50·75	−50·70	− 1·55
	2522	α Canis Minoris	....	84 26	56·0	4·2	12·5	20·6	33 29·3	7 33 12·52	− 0·19	−50·56	−50·70	− 1·42
	2555	β Geminorum	....	61 39	44·3	53·7	3·0	12·0	38 21·9	7 38 2·98	− 0·20	−50·54	−50·71	− 1·49
Jan. 14	7368	(c) ζ Cygni	....	60 18	48·3	57·8	7·2	16·4	8 26·4	21 8 7·22	− 0·14	−51·54	−51·50	+ 1·04
	7561	ε Pegasi	....	80 43	13·0	21·6	30·0	38·0	38 46·8	21 38 29·58	− 0·08	−51·52	−51·50	+ 0·96
	6281	δ Ursæ Minoris S. P.	....	3 24	57·5	25·0	39·0	57·5	20 18·0	6 15 39·10	+ 5·32	....	−51·45	+21·49
	2163	γ Geminorum	....	73 29	37·6	46·0	54·8	3·0	31 12·0	6 30 54·68	− 0·10	−51·45	−51·45	− 1·46
	2410	δ Geminorum	....	67 46	46·0	54·9	3·8	12·4	13 21·9	7 13 3·80	− 0·11	−51·49	−51·44	− 1·50
	2522	α Canis Minoris	....	84 26	56·8	4·8	13·1	21·4	33 30·0	7 33 13·22	− 0·08	−51·35	−51·43	− 1·44
	2555	β Geminorum	....	61 39	44·8	54·2	3·5	12·5	38 22·4	7 38 3·48	− 0·12	−51·39	−51·43	− 1·52
Jan. 15	1681	β Tauri	....	61 30	27·9	37·0	46·6	56·4	19 5·4	5 18 46·46	− 0·11	−51·68	−51·70	− 1·48
	1730	δ Orionis	....	90 23	49·4	57·4	5·9	13·9	26 22·4	5 26 5·80	− 0·05	−51·75	−51·71	− 1·25
	1766	....	....	80 47	12·3	20·9	29·1	37·3	30 46·0	5 30 29·12	− 0·06	....	−51·72	− 1·31
	1883	α Orionis	....	82 37	34·8	43·0	51·5	59·6	49 8·0	5 48 51·38	− 0·06	−51·68	−51·72	− 1·33
	6281	δ Ursæ Minoris S. P.	....	3 24	58·0	25·5	39·0	56·0	20 16·0	6 15 39·70	+ 5·12	....	−51·72	+21·40

(a) Definition bad. (b) Definition becoming very bad. (c) Apparent inversion of the clock's rate, through temperature effects on the Transit piers.

Date.	No. in British Association Catalogue.	OBJECT OBSERVED.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1867.
1867.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Jan. 15	2163	γ Geminorum	....	73 29	37·8	46·4	55·0	3·4	31 12·4	6 30 55·00	− 0·08	− 51·79	− 51·73	− 1·46
	2410	δ Geminorum	....	67 46	46·2	55·3	4·2	12·0	13 22·4	7 13 3·96	− 0·09	− 51·67	− 51·73	− 1·50
Jan. 25	2410	δ Geminorum	....	67 46	49·6	58·4	7·3	16·0	13 25·2	7 13 7·30	− 0·09	− 54·97	− 54·98	− 1·54
	2522	α Canis Minoris	....	84 26	0·2	8·5	16·9	24·8	33 33·6	7 33 16·80	− 0·08	− 54·87	− 54·99	− 1·50
	2555	β Geminorum	....	61 39	48·5	37·8	7·1	16·0	38 26·0	7 38 7·08	− 0·11	− 54·92	− 55·00	− 1·40
	2672	6 Cancri	....	61 50	59·0	8·1	17·5	26·6	56 36·3	7 56 17·50	− 0·11	− 55·07	− 55·00	− 1·59
	2862	η Cancri	....	69 7	40·0	48·8	57·5	6·0	26 15·4	8 25 57·54	− 0·09	− 55·10	− 55·01	− 1·51
Jan. 28	2410	δ Geminorum	....	67 46	49·5	58·5	7·5	16·0	13 25·2	7 13 7·31	+ 0·14	− 55·23	− 55·20	− 1·55
	2485	α² Geminorum	....	57 49	44·0	53·7	3·4	12·8	27 23·0	7 27 3·38	+ 0·14	− 55·24	− 55·20	− 1·65
	2522	α Canis Minoris	....	84 26	0·4	8·5	16·9	24·9	33 33·6	7 33 16·86	+ 0·13	− 55·14	− 55·20	− 1·50
	2555	β Geminorum	....	61 39	48·4	57·9	7·1	16·2	38 26·1	7 38 7·14	+ 0·13	− 55·21	− 55·20	− 1·60
	2672	6 Cancri	....	61 50	58·8	8·0	17·4	26·5	56 36·3	7 56 17·40	+ 0·13	− 55·19	− 55·20	− 1·61
	2971	ι Hydræ	....	83 6	23·9	32·1	40·5	48·4	40 57·2	8 40 40·42	+ 0·14	− 55·18	− 55·20	− 1·52
Jan. 30	2410	δ Geminorum	....	67 46	49·2	58·0	7·0	15·6	13 25·0	7 13 6·96	+ 0·09	− 54·80	− 54·85	− 1·55
	2485	α² Geminorum	....	57 49	43·7	53·3	3·0	12·5	27 22·8	7 27 3·06	+ 0·10	− 54·87	− 54·85	− 1·66
	2522	α Canis Minoris	....	84 26	0·0	8·3	16·6	24·4	33 33·3	7 33 16·52	+ 0·09	− 54·75	− 54·85	− 1·51
	2555	β Geminorum	....	61 39	48·0	57·5	7·0	15·9	38 25·8	7 38 6·84	+ 0·09	− 54·86	− 54·85	− 1·62
	2672	6 Cancri	....	61 50	58·5	7·9	17·3	26·2	56 36·0	7 56 17·18	+ 0·09	− 54·93	− 54·85	− 1·61
	2971	ι Hydræ	....	83 6	23·8	32·0	40·2	48·0	40 57·0	8 40 40·20	+ 0·09	− 54·89	− 54·85	− 1·54
Feb. 4	2862	η Cancri	....	69 7	39·0	47·9	56·9	5·3	26 14·6	8 25 56·74	+ 0·06	− 54·39	− 54·36	− 1·57
	2971	ι Hydræ	....	83 6	23·0	31·1	39·8	47·7	40 56·5	8 40 39·68	+ 0·07	− 54·32	− 54·36	− 1·57
	3171	83 Cancri	....	71 11	11·9	20·5	29·2	37·6	12 46·8	9 12 29·20	+ 0·08	− 54·48	− 54·36	− 1·53
	3223	α Hydræ	....	98 5	42·5	50·6	59·0	7·0	22 15·9	9 21 59·00	+ 0·05	− 54·33	− 54·36	− 1·65
	3331	ι Leonis	....	65 37	55·4	4·6	13·5	22·3	39 32·0	9 39 13·56	+ 0·07	− 54·27	− 54·36	− 1·49
Feb. 6	4	α Andromedæ	....	61 37	6·8	16·0	25·4	34·4	2 44·4	0 2 25·40	+ 0·06	− 54·83	− 54·83	+ 0·41
	26	γ Pegasi	....	75 32	0·5	9·1	17·7	26·0	7 35·0	0 7 17·66	+ 0·06	− 54·81	− 54·83	+ 0·45
	2163	γ Geminorum	....	73 29	40·8	49·2	58·0	6·2	31 15·2	6 30 57·88	+ 0·06	− 54·88	− 54·83	− 1·39
	2238	....	6·0	66 15	33·9	43·0	52·0	0·6	45 10·0	6 44 51·90	+ 0·06	....	− 54·83	− 1·48
	2410	δ Geminorum	....	67 46	49·1	58·2	7·1	15·6	13 25·0	7 13 7·00	+ 0·06	− 54·83	− 54·83	− 1·53
	2485	α² Geminorum	....	57 49	43·0	53·2	3·1	12·5	27 22·8	7 27 2·92	+ 0·07	− 54·72	− 54·83	− 1·64
	2522	α Canis Minoris	....	84 26	0·0	8·3	16·6	24·4	33 33·4	7 33 16·54	+ 0·05	− 54·74	− 54·83	− 1·50
	2555	β Geminorum	....	61 39	48·1	57·5	6·9	16·0	38 25·8	7 38 6·86	+ 0·06	− 54·87	− 54·84	− 1·60
	2971	ι Hydræ	....	83 6	23·8	32·0	40·3	48·3	40 57·0	8 40 40·28	+ 0·05	− 54·90	− 54·85	− 1·57
	3331	ι Leonis	....	65 37	56·0	5·1	14·3	23·0	39 32·6	9 39 14·20	+ 0·06	− 54·87	− 54·86	− 1·52
Feb. 8	2410	δ Geminorum	....	67 46	49·9	58·8	7·8	16·1	13 25·6	7 13 7·64	+ 0·03	− 55·45	− 55·45	− 1·52
	2485	α² Geminorum	....	57 49	44·1	54·0	3·9	13·0	27 23·4	7 27 3·68	+ 0·05	− 55·46	− 55·46	− 1·64
	2555	β Geminorum	....	61 39	48·8	58·0	7·4	16·5	38 26·2	7 38 7·38	+ 0·04	− 55·37	− 55·46	− 1·60
	2971	ι Hydræ	....	83 6	24·2	32·7	40·9	49·0	40 57·5	8 40 40·86	+ 0·02	− 55·44	− 55·48	− 1·58
	3331	ι Leonis	....	65 37	56·9	6·0	15·0	23·8	39 33·0	9 39 14·91	+ 0·03	− 55·56	− 55·50	− 1·53
Feb. 13	2410	δ Geminorum	....	67 46	49·6	58·4	7·3	16·0	13 25·2	7 13 7·30	+ 0·01	− 55·13	− 55·14	− 1·48
	2485	α² Geminorum	....	57 49	44·0	53·8	3·4	12·9	27 23·0	7 27 3·42	+ 0·01	− 55·20	− 55·13	− 1·60
	2522	α Canis Minoris	....	84 26	0·2	8·7	17·0	24·9	33 33·6	7 33 16·88	+ 0·01	− 55·07	− 55·12	− 1·47
	2555	β Geminorum	....	61 39	48·5	57·9	7·0	16·1	38 26·0	7 38 7·10	+ 0·02	− 55·10	− 55·12	− 1·57

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed.					Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock		Correction to Mean R.A., Jan. 1, 1867.
					I.	II.	III.	IV.	V.			observed.	interpolated.	
1867.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Feb. 21	2971	ε Hydræ	....	83 [illegible]	22·1	30·5	39·0	46·9	40 55·7	8 40 38·84	− 0·03	−53·38	−53·42	− 1·57
	3171	83 Cancri	....	71 44	10·9	19·6	28·3	36·6	12 45·9	9 12 28·30	− 0·03	−53·40	−53·42	− 1·60
	3331	ε Leonis	....	65 37	54·6	3·9	13·0	21·7	39 31·2	9 39 12·92	− 0·02	−53·41	−53·42	− 1·62
	3415	π Leonis	....	81 20	49·4	57·9	6·2	14·2	54 23·0	9 54 6·14	− 0·03	−53·50	−53·42	− 1·62
	3459	α Leonis	....	77 23	55·3	3·8	12·2	20·5	2 29·2	10 2 12·20	− 0·02	−53·39	−53·42	− 1·60
Feb. 25	3171	83 Cancri	....	71 44	10·1	19·0	27·6	36·0	12 45·0	9 12 27·54	− 0·04	−52·64	−52·64	− 1·59
	3331	ε Leonis	....	65 37	54·0	3·1	12·1	20·9	39 30·5	9 39 12·12	− 0·03	−52·60	−52·64	− 1·62
	3415	π Leonis	....	81 20	48·7	57·0	5·4	13·4	54 22·1	9 54 5·32	− 0·04	−52·66	−52·64	− 1·63
	3459	α Leonis	....	77 23	54·6	3·0	11·5	19·6	2 28·4	10 2 11·46	− 0·03	−52·63	−52·64	− 1·61
	3523	γ¹ Leonis	....	69 30	15·0	23·7	32·4	41·[illegible]	13 50·2	10 13 32·46	− 0·03	−52·64	−52·64	− 1·61
Feb. 26	2555	3 Geminorum	....	61 39	45·6	55·1	4·2	13·2	38 23·0	7 38 4·22	− 0·03	−52·29	−52·41	− 1·45
	2672	6 Cancri	....	61 30	56·0	5·4	14·8	24·0	56 33·6	7 56 14·76	− 0·03	−52·49	−52·40	− 1·51
	2971	ε Hydræ	....	83 6	21·3	29·6	38·0	46·0	40 54·7	8 40 37·92	− 0·05	−52·47	−52·40	− 1·54
	3331	ε Leonis	....	65 37	54·0	3·0	12·0	20·8	39 30·2	9 39 12·00	− 0·04	−52·47	−52·40	− 1·62
	3415	π Leonis	....	81 20	46·4	56·8	5·0	13·0	54 21·9	9 54 5·02	− 0·05	−52·35	−52·40	− 1·63
	3459	α Leonis	....	77 23	54·4	3·0	11·2	19·5	2 28·4	10 2 11·30	− 0·04	−52·45	−52·40	− 1·62
	3523	γ¹ Leonis	....	69 30	14·4	23·2	32·3	40·8	13 50·0	10 13 32·14	− 0·04	−52·31	−52·39	− 1·61
Feb. 27	2971	ε Hydræ	....	83 6	21·0	29·4	37·7	45·8	40 54·4	8 40 37·66	− 0·06	−52·20	−52·20	− 1·54
	3331	ε Leonis	....	65 37	53·7	2·8	11·6	20·5	39 30·[illegible]	9 39 11·72	− 0·04	−52·19	−52·20	− 1·62
	3415	π Leonis	....	81 20	48·2	56·4	4·9	13·0	54 21·9	9 54 4·88	− 0·05	−52·21	−52·19	− 1·63
	3459	α Leonis	....	77 23	54·1	2·5	11·0	19·1	2 26·0	10 2 10·94	− 0·04	−52·09	−52·18	− 1·62
	3523	γ¹ Leonis	....	69 30	14·3	23·2	32·3	40·7	13 50·0	10 13 32·10	− 0·04	−52·26	−52·18	− 1·62
Feb. 28	3171	83 Cancri	....	71 44	9·6	18·2	27·0	35·4	12 44·4	9 12 26·92	− 0·07	−52·00	−51·98	− 1·58
	3331	ε Leonis	....	65 37	53·3	2·4	11·5	20·4	39 30·0	9 39 11·52	− 0·06	−51·97	−51·98	− 1·62
	3415	π Leonis	....	81 20	48·0	56·3	4·6	12·7	54 21·4	9 54 4·60	− 0·07	−51·90	−51·97	− 1·64
	3459	(a) α Leonis	....	77 23	54·0	2·5	11·0	19·1	2 26·0	10 2 10·92	− 0·07	−52·04	−51·97	− 1·62
	3523	γ¹ Leonis	....	69 30	14·1	23·0	31·9	40·4	13 49·7	10 13 31·82	− 0·07	−51·95	−51·97	− 1·62
	3609	ρ Leonis	....	80 1	25·4	33·8	42·0	50·2	26 59·0	10 26 42·08	− 0·07	−51·98	−51·96	− 1·64
Mar. 1	3171	83 Cancri	....	71 44	9·4	18·0	26·9	35·1	12 44·4	9 12 26·76	− 0·07	−51·84	−51·77	− 1·58
	3331	ε Leonis	....	65 37	53·2	2·4	11·4	20·0	39 29·6	9 39 11·32	− 0·07	−51·76	−51·76	− 1·62
	3415	π Leonis	....	81 20	47·9	56·[illegible]	4·5	12·5	54 21·2	9 54 4·42	− 0·08	−51·71	−51·76	− 1·64
	3459	α Leonis	....	77 23	53·8	2·2	10·7	18·8	2 27·8	10 2 10·66	− 0·08	−51·76	−51·75	− 1·63
	3523	γ¹ Leonis	....	69 30	14·0	22·8	31·6	40·1	13 49·4	10 13 31·58	− 0·07	−51·70	−51·75	− 1·63
	3609	ρ Leonis	....	80 1	25·0	33·6	42·[illegible]	50·0	26 58·9	10 26 41·90	− 0·08	−51·78	−51·74	− 1·65
Mar. 2	2862	η Cancri	....	69 7	36·2	45·[illegible]	54·0	2·4	26 11·6	8 25 53·88	− 0·08	−51·47	−51·47	− 1·49
	2971	ε Hydræ	....	83 6	20·4	28·6	37·0	45·0	40 53·6	8 40 36·92	− 0·10	−51·44	−51·47	− 1·52
	3171	83 Cancri	....	71 44	9·0	17·9	26·5	34·9	12 44·0	9 12 26·46	− 0·08	−51·53	−51·47	− 1·58
	3331	ε Leonis	....	65 37	52·9	2·0	11·0	20·0	39 29·2	9 39 11·02	− 0·07	−51·46	−51·47	− 1·62
Mar. 4	3331	ε Leonis	....	65 37	52·4	1·4	10·5	19·1	39 28·8	[illegible] 39 10·44	− 0·08	−50·88	−50·83	− 1·61
	3415	π Leonis	....	81 20	47·0	55·3	3·5	11·5	54 20·4	9 54 3·54	− 0·09	−50·83	−50·82	− 1·63
	3459	α Leonis	....	77 23	52·9	1·1	9·8	17·9	2 26·9	10 2 9·72	− 0·09	−50·82	−50·82	− 1·63
	3523	γ¹ Leonis	....	69 30	13·0	22·0	30·9	39·2	13 48·4	10 13 30·70	− 0·08	−50·81	−50·81	− 1·63
	3609	ρ Leonis	....	80 1	24·0	32·4	41·0	49·0	26 57·9	10 26 40·86	− 0·09	−50·73	−50·80	− 1·63

(a) Definition becoming bad.

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Date.	No. in British Association Catalogue.	Object Observed	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1867.
1867.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Mar. 15	3459	(a) α Leonis	....	77 23	53·0	1·4	10·0	18·1	2 27·0	10 2 9·90	− 0·12	− 51·00	− 51·05	− 1·59
	3523	γ¹ Leonis	....	69 30	13·3	22·0	31·0	39·6	13 49·0	10 13 30·98	− 0·11	− 51·08	− 51·05	− 1·61
	3609	ζ Leonis	....	80 1	24·5	33·0	41·2	49·3	26 58·0	10 26 41·20	− 0·12	− 51·05	− 51·06	− 1·64
	3834	δ Leonis	....	68 45	37·1	46·0	54·9	3·3	8 12·7	11 7 54·80	− 0·11	− 51·12	− 51·06	− 1·65
	3946	υ Leonis	....	90 6	45·0	53·1	1·3	9·2	31 15·0	11 31 1·32	− 0·14	− 51·09	− 51·07	− 1·77
	3995	β Leonis	....	74 42	52·0	0·9	9·2	17·5	43 26·6	11 43 9·24	− 0·11	− 51·05	− 51·07	− 1·64
Mar. 16	3708	l Leonis	....	78 46	52·0	0·5	9·0	17·0	43 25·9	10 43 8·88	− 0·14	− 51·24	− 51·17	− 1·65
	3788	χ Leonis	....	81 57	15·6	54·0	2·5	10·3	59 19·0	10 59 2·28	− 0·14	− 51·16	− 51·17	− 1·69
	3834	δ Leonis	....	68 45	37·3	46·1	55·0	3·3	8 12·8	11 7 54·90	− 0·12	− 51·21	− 51·18	− 1·65
	3946	υ Leonis	....	90 6	44·9	53·1	1·3	9·3	31 18·0	11 31 1·32	− 0·16	− 51·07	− 51·18	− 1·77
	3995	β Leonis	....	74 42	52·5	1·0	9·4	17·6	43 26·6	11 43 9·42	− 0·12	− 51·21	− 51·19	− 1·65
Mar. 18	3331	ι Leonis	....	65 37	53·0	2·0	11·1	19·9	39 29·4	9 39 11·08	− 0·12	− 51·56	− 51·56	− 1·53
	3415	ε Leonis	....	81 20	47·6	56·0	4·2	12·3	54 21·0	9 54 4·22	− 0·15	− 51·51	− 51·56	− 1·57
	3459	α Leonis	....	77 23	53·9	2·0	10·4	18·6	2 27·4	10 2 10·46	− 0·14	− 51·56	− 51·56	− 1·57
	3523	γ¹ Leonis	....	69 30	13·9	22·7	31·5	40·0	13 49·3	10 13 31·48	− 0·13	− 51·58	− 51·56	− 1·59
	3609	ζ Leonis	....	80 1	25·0	33·3	41·9	49·8	26 56·7	10 26 41·74	− 0·14	− 51·58	− 51·56	− 1·63
Mar. 20	3459	(b) α Leonis	....	77 23	54·0	2·3	10·9	19·0	2 28·0	10 2 10·81	− 0·15	− 51·94	− 51·97	− 1·56
	3523	γ¹ Leonis	....	69 30	14·1	23·0	31·9	40·2	13 49·8	10 13 31·60	− 0·14	− 51·90	− 51·98	− 1·58
	3609	ζ Leonis	....	80 1	25·4	33·9	42·0	50·2	26 59·0	10 26 42·10	− 0·15	− 51·93	− 51·99	− 1·63
	3788	χ Leonis	....	81 57	46·5	55·0	3·1	11·2	59 20·1	10 59 3·18	− 0·15	− 52·06	− 52·00	− 1·68
	3834	δ Leonis	....	68 45	38·0	47·0	55·8	4·4	8 13·6	11 7 55·76	− 0·13	− 52·06	− 52·00	− 1·65
	3995	β Leonis	....	74 42	53·2	1·8	10·4	18·4	43 27·8	11 43 10·32	− 0·14	− 52·08	− 52·01	− 1·66
Mar. 21	3171	83 Cancri	....	71 41	10·5	19·1	27·9	36·2	12 45·4	9 12 27·82	− 0·16	− 53·02	− 53·00	− 1·37
	3223	α Hydræ	....	98 5	41·0	49·4	57·8	5·8	22 14·7	9 21 57·74	− 0·22	− 52·94	− 53·00	− 1·51
	3331	ι Leonis	....	65 37	51·3	3·5	12·4	21·2	39 30·9	9 39 12·46	− 0·14	− 52·98	− 53·00	− 1·47
	3415	ε Leonis	....	81 20	49·0	57·3	5·9	13·8	54 22·6	9 54 5·72	− 0·18	− 53·03	− 53·00	− 1·52
	3459	α Leonis	....	77 23	55·0	3·4	12·0	20·0	2 29·0	10 2 11·88	− 0·17	− 52·99	− 53·00	− 1·53
Mar. 25	3708	l Leonis	....	78 46	54·1	2·5	11·0	19·0	43 28·0	10 43 10·92	− 0·19	− 53·26	− 53·20	− 1·62
	3834	δ Leonis	....	68 45	39·0	48·1	57·0	5·3	8 14·8	11 7 56·64	− 0·17	− 53·11	− 53·20	− 1·64
	3946	υ Leonis	....	90 6	47·0	55·2	3·4	11·6	31 20·2	11 31 3·48	− 0·22	− 53·15	− 53·21	− 1·79
	3995	β Leonis	....	74 42	54·4	3·0	11·6	20·0	43 29·0	11 43 11·60	− 0·17	− 53·32	− 53·22	− 1·67
Mar. 26	3708	l Leonis	....	78 46	54·5	2·8	11·1	19·1	43 28·0	10 43 11·10	− 0·20	− 53·43	− 53·40	− 1·62
	3768	d Leonis	....	85 41	20·3	28·4	37·0	44·8	54 53·4	10 54 36·78	− 0·21	....	− 53·40	− 1·69
	3780	....	8·0	81 43	25·0	33·4	41·6	49·5	57 58·5	10 57 41·60	− 0·20	....	− 53·40	− 1·67
	3788	χ Leonis	....	81 57	48·0	56·3	4·6	12·6	59 21·4	10 59 4·58	− 0·20	− 53·43	− 53·40	− 1·66
	3834	δ Leonis	....	68 45	39·5	48·2	57·1	5·7	8 15·0	11 7 57·10	− 0·18	− 53·36	− 53·40	− 1·64
	3869	(c)	6·5	71 51	9·0	17·9	26·5	35·0	16 44·1	11 16 26·50	− 0·18	....	− 53·40	− 1·65
	4145	η Virginis	....	89 56	45·1	53·5	1·6	9·5	14 18·0	12 14 1·54	− 0·23	− 53·39	− 53·40	− 1·82
Mar. 27	3609	ζ Leonis	....	80 1	27·0	35·5	44·0	52·0	27 0·8	10 26 43·86	− 0·22	− 53·66	− 53·64	− 1·59
	3662	....	8·0	78 35	19·3	27·8	36·0	44·2	35 53·0	10 35 36·06	− 0·22	....	− 53·64	− 1·60
	3726	....	6·0	88 17	2·8	11·0	19·2	27·4	46 36·0	10 46 19·28	− 0·24	....	− 53·64	− 1·68
	3768	d Leonis	5·0	85 41	20·5	28·9	37·0	45·0	54 53·9	10 54 37·06	− 0·23	....	− 53·64	− 1·68
	3780	....	7·0	81 43	25·1	33·5	42·0	50·0	57 59·0	10 57 41·92	− 0·22	....	− 53·64	− 1·66
	3788	χ Leonis	....	81 57	48·1	56·5	5·0	12·9	59 21·8	10 59 4·56	− 0·22	− 53·69	− 53·64	− 1·66

(a) Definition bad. (b) A break, or an almost impossible change of clock-rate, appears between the three first and three last stars observed this night, but is most probably an effect of temperature on the piers carrying the Transit Instrument. (c) Suddenly overcast.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to. (° ′)	Wires observed. I. (s.)	II. (s.)	III. (s.)	IV. (s.)	V. (m. s.)	Reduction to Mean of Wires. (h. m. s.)	Correction for Instrumental Deviations. (s.)	Correction of Clock observed. (s.)	Correction of Clock interpolated. (s.)	Correction to Mean R.A., Jan. 1, 1867. (s.)
1867. Mar. 27	3834	δ Leonis	....	68 45	39·8	48·5	57·4	6·0	8 15·1	11 7 57·36	− 0·19	− 53·61	− 53·64	− 1·64
	3869	....	7·5	71 51	9·2	18·0	26·9	35·2	16 44·3	11 16 26·72	− 0·20	....	− 53·64	− 1·65
	3900	τ Leonis	4·0	86 26	45·0	52·2	1·5	9·5	22 18·0	11 22 1·24	− 0·23	....	− 53·64	− 1·74
	3946	υ Leonis	....	90 6	47·4	55·9	4·0	12·0	31 20·9	11 31 4·04	− 0·25	− 53·68	− 53·64	− 1·79
	3995	β Leonis	....	74 42	55·0	3·3	12·0	20·1	43 29·1	11 43 11·90	− 0·20	− 53·59	− 53·64	− 1·67
	4052	π Virginis	5·0	82 40	42·5	50·8	59·0	7·0	55 16·0	11 54 59·06	− 0·23	....	− 53·64	− 1·74
	4145	η Virginis	....	89 56	45·2	53·5	1·9	9·9	14 18·4	12 14 1·78	− 0·25	− 53·61	− 53·64	− 1·82
	4199	....	7·0	63 22	36·0	45·5	54·9	3·6	22 13·4	12 21 54·68	− 0·17	....	− 53·64	− 1·67
	4231	....	7·0	64 50	31·9	41·0	50·1	59·0	28 8·4	12 27 50·08	− 0·18	....	− 53·64	− 1·67
	4244	....	....	52 49	16·0	26·0	36·9	46·5	29 57·4	12 29 36·56	− 0·15	....	− 53·64	− 1·68
	4268	γ¹ Virginis	....	90 44	34·7	42·9	51·0	59·0	36 7·7	12 35 51·06	− 0·25	....	− 53·64	− 1·82
Mar. 28	3708	(a) l Leonis	....	78 46	54·9	3·1	11·6	19·8	43 28·5	10 43 11·58	− 0·23	− 53·89	− 53·85	− 1·61
	3726	....	6·0	88 17	3·0	11·0	19·4	27·3	46 36·0	10 46 19·34	− 0·25	....	− 53·85	− 1·67
	3768	d Leonis	5·0	85 41	20·8	29·0	37·3	45·2	54 54·0	10 54 37·20	− 0·25	....	− 53·85	− 1·68
	3780	....	6·0	81 43	25·4	33·8	42·1	50·1	57 59·0	10 57 42·08	− 0·24	....	− 53·85	− 1·66
	3788	χ Leonis	....	81 57	48·4	56·9	5·1	13·0	59 21·9	10 59 5·06	− 0·24	− 53·87	− 53·85	− 1·66
	3821	....	6·0	21 0	49·9	12·0	35·9	58·0	5 22·7	11 4 35·70	+ 0·03	....	− 53·85	− 2·50
	3834	δ Leonis	....	68 45	40·0	48·8	57·6	6·0	8 15·4	11 7 57·56	− 0·21	− 53·80	− 53·85	− 1·63
	3869	....	7·5	71 51	9·4	18·1	27·0	35·3	16 44·6	11 16 26·88	− 0·22	....	− 53·85	− 1·64
	3900	τ Leonis	6·0	86 26	45·0	53·3	1·7	9·6	22 18·2	11 22 1·56	− 0·25	....	− 53·85	− 1·73
	3946	υ Leonis	....	90 6	47·8	56·0	4·1	12·0	31 20·9	11 31 4·16	− 0·27	− 53·79	− 53·85	− 1·78
	3995	β Leonis	....	74 42	55·1	3·5	12·2	20·3	43 29·4	11 43 12·10	− 0·21	− 53·77	− 53·85	− 1·68
	4005	....	6·5	77 0	44·6	53·1	1·5	9·9	45 15·5	11 45 1·52	− 0·23	....	− 53·85	− 1·58
	4052	π Virginis	....	82 40	42·7	51·0	59·2	7·2	55 16·0	11 54 59·22	− 0·24	....	− 53·85	− 1·69
	4199	....	7·0	63 22	36·4	45·6	55·0	3·9	22 13·5	12 21 54·85	− 0·18	....	− 53·85	− 1·84
	4231	....	7·0	64 50	32·0	41·7	50·4	59·3	28 8·5	12 27 50·26	− 0·19	....	− 53·85	− 1·89
	4244	....	....	52 49	16·0	26·2	36·9	46·8	29 57·6	12 29 36·70	− 0·16	....	− 53·85	− 1·94
	4268	γ¹ Virginis	....	90 44	34·9	43·0	51·3	59·0	36 7·8	12 35 51·20	− 0·27	....	− 53·85	− 1·83
	4340	δ Virginis	3·0	85 54	33·8	42·0	50·2	58·0	50 6·9	12 49 50·18	− 0·25	....	− 53·85	− 1·78
	4364	....	....	68 2	42·4	51·1	0·2	8·8	56 18·3	12 56 0·16	− 0·20	....	− 53·85	− 1·67
	4401	θ Virginis	....	94 50	43·6	51·8	0·0	8·0	4 16·9	13 4 0·06	− 0·28	− 53·99	− 53·85	− 1·87
	360	α Ursæ Minoris S. P.	....	1 24	26·0	24·0	......	26·0	22 4·0	13 10 50·61	− 3·69	....	− 53·85	+ 24·30
Mar. 29	3331	ι Leonis	....	65 37	55·1	4·2	13·4	22·0	39 31·9	9 39 13·32	− 0·19	− 53·85	− 53·92	− 1·41
	3459	α Leonis	....	77 23	56·0	4·3	13·0	21·0	2 30·0	10 2 12·86	− 0·23	− 53·95	− 53·92	− 1·49
	3662	....	8·0	78 35	19·1	28·0	36·6	44·5	35 53·3	10 35 36·30	− 0·23	....	− 53·93	− 1·58
	3788	χ Leonis	....	81 57	48·5	56·9	5·0	13·0	59 22·0	10 59 5·08	− 0·24	− 53·90	− 53·93	− 1·65
	3821	....	6·0	21 0	50·0	12·9	36·0	58·0	5 22·5	11 4 35·68	+ 0·03	....	− 53·93	− 2·48
	3836	....	6·0	87 2	42·7	51·0	59·4	7·2	8 16·0	11 7 59·26	− 0·25	....	− 53·93	− 1·71
	3900	τ Leonis	5·0	86 26	45·1	53·7	1·9	10·0	22 18·8	11 22 1·90	− 0·25	....	− 53·93	− 1·73
	3995	β Leonis	....	74 42	55·1	3·9	12·2	20·5	43 29·4	11 43 12·22	− 0·21	− 53·89	− 53·93	− 1·68
	4005	....	6·0	77 0	44·8	53·2	1·8	10·0	45 16·8	11 45 1·72	− 0·23	....	− 53·94	− 1·70
	4052	π Virginis	....	82 40	42·8	51·1	59·5	7·4	55 16·0	11 54 59·36	− 0·24	....	− 53·94	− 1·75
	4145	η Virginis	....	89 56	45·8	54·0	2·1	10·0	14 18·9	12 14 2·16	− 0·27	− 53·96	− 53·95	− 1·83
	4401	θ Virginis	....	94 50	43·6	52·0	0·1	8·0	4 16·9	13 4 0·12	− 0·28	− 54·04	− 53·96	− 1·88
	360	α Ursæ Minoris S. P.	....	1 24	27·0	24·0	47·0	27·5	22 7·5	13 10 50·60	− 3·69	....	− 53·96	+ 24·43
April 2	3667	(b) 34 Sextantis	6·0	85 44	24·2	32·5	41·0	48·9	36 57·5	10 36 40·82	− 0·20	....	− 53·55	− 1·60
	3708	l Leonis	....	78 46	54·4	2·9	11·2	19·2	43 28·0	10 43 11·14	− 0·24	− 53·47	− 53·55	− 1·58
	3788	χ Leonis	....	81 57	48·0	56·2	4·9	12·8	59 21·5	10 59 4·68	− 0·25	− 53·51	− 53·55	− 1·63

(a) A steady decrease of clock-rate against the daily rate is indicated by the first 5 of the stars observed to-night; the effect probably of temperature on the Transit piers.

(b) The clock's rate to-day during observation appears an inversion of the rate from day to day, and is caused most probably by temperature effects on the Transit piers swerving the instrument out of its due position.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1867.
1867.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
April 2	3821	....	6·0	21 0	49·3	12·0	35·6	57·8	3 22·0	11 4 35·34	+ 0·04	....	− 53·55	− 2·40
	3834	δ Leonis.....................	....	68 45	39·5	48·4	57·2	5·9	8 15·1	11 7 57·22	− 0·21	− 53·48	− 53·55	− 1·61
	3995	β Leonis.....................	....	74 42	55·0	3·3	12·0	20·2	43 29·1	11 43 11·92	− 0·22	− 53·58	− 53·55	− 1·68
	4145	η Virginis.....................	....	89 56	45·3	53·6	1·8	9·6	14 18·3	12 14 1·72	− 0·28	− 53·50	− 53·55	− 1·84
	4401	θ Virginis.....................	....	94 50	43·2	51·5	59·9	7·9	4 16·7	13 3 59·84	− 0·29	− 53·72	− 53·55	− 1·91
	360	α Ursæ Minoris S. P. ...	....	1 24	26·0	21·5	47·5	27·5	22 6·0	13 10 49·70	− 3·93	....	− 53·55	+ 24·75
	4532	ζ Virginis.....................	....	89 55	34·3	42·6	50·8	58·8	29 7·3	13 28 50·76	− 0·28	− 53·58	− 53·55	− 1·84
April 5	3786	χ Leonis.....................	....	81 57	47·9	56·1	4·4	12·5	59 21·2	10 59 4·42	− 0·25	− 53·26	− 53·24	− 1·62
	3834	δ Leonis.....................	....	68 45	39·1	48·0	57·0	5·5	8 15·0	11 7 56·92	− 0·21	− 53·20	− 53·24	− 1·59
	3946	υ Leonis.....................	....	90 6	47·1	55·4	3·5	11·4	31 20·2	11 31 3·52	− 0·28	− 53·16	− 53·24	− 1·76
	3995	β Leonis.....................	....	74 42	54·4	3·0	11·8	20·0	43 29·0	11 43 11·64	− 0·22	− 53·32	− 53·24	− 1·66
April 15	3115	π Leonis.....................	....	81 20	49·1	57·5	6·0	14·0	54 22·9	9 54 5·90	− 0·28	− 53·35	− 53·31	− 1·28
	3459	α Leonis.....................	....	77 23	55·1	3·5	12·0	20·1	2 29·1	10 2 11·96	− 0·26	− 53·22	− 53·31	− 1·29
	3834	δ Leonis.....................	....	68 45	39·2	48·2	57·0	5·5	8 15·0	11 7 56·96	− 0·24	− 53·31	− 53·31	− 1·51
	3946	υ Leonis.....................	....	90 6	47·2	55·4	3·7	11·9	31 20·2	11 31 3·68	− 0·30	− 53·35	− 53·31	− 1·71
	3995	β Leonis.....................	....	74 42	54·5	3·2	11·5	20·0	43 29·0	11 43 11·64	− 0·25	− 53·33	− 53·31	− 1·62
	360	α Ursæ Minoris S. P....	....	1 24	27·5	24·0	48·0	27·5	22 7·5	13 10 50·90	− 4·33	....	− 53·31	+ 23·93
April 16	3834	δ Leonis.....................	....	68 45	39·4	48·2	57·0	5·5	8 15·0	11 7 57·02	− 0·25	− 53·35	− 53·42	− 1·50
	3946	υ Leonis.....................	....	90 6	47·2	55·5	3·9	11·9	31 20·4	11 31 3·78	− 0·31	− 53·44	− 53·43	− 1·71
	3995	β Leonis.....................	....	74 42	54·5	3·2	11·8	20·0	43 29·0	11 43 11·70	− 0·26	− 53·39	− 53·43	− 1·61
	4145	η Virginis.....................	....	89 56	45·2	53·3	1·9	9·8	14 18·3	12 14 1·70	− 0·31	− 53·46	− 53·44	− 1·83
	4401	θ Virginis.....................	....	94 50	43·1	51·4	59·9	7·8	4 16·4	13 3 59·72	− 0·33	− 53·50	− 53·44	− 1·97
	360	α Ursæ Minoris S. P....	....	1 24	28·0	25·0	48·5	26·5	22 5·0	13 10 50·60	− 3·99	....	− 53·45	+ 23·75
	4532	ζ Virginis.....................	....	89 55	34·2	42·5	50·8	58·8	29 7·4	13 28 50·74	− 0·31	− 53·45	− 53·45	− 1·92
May 7	3331	ε Leonis.....................	....	65 37	52·9	2·0	11·0	19·8	39 29·2	9 39 10·98	− 0·31	− 51·98	− 51·95	− 0·82
	3459	α Leonis.....................	....	77 23	53·6	2·0	10·5	18·6	2 27·5	10 2 10·44	− 0·35	− 51·91	− 51·95	− 0·99
	4532	ζ Virginis.....................	....	89 55	33·0	41·2	49·4	57·2	29 6·0	13 28 49·36	− 0·39	− 51·94	− 51·95	− 1·97
	4648	η Bootis.....................	....	70 56	57·9	6·4	15·4	23·6	49 33·0	13 49 15·26	− 0·34	− 51·93	− 51·95	− 1·85
	4729	α Bootis.....................	....	70 8	12·5	21·0	30·0	38·4	10 47·6	14 10 29·90	− 0·33	− 51·95	− 51·95	− 1·86
	4876	ε Bootis.....................	....	62 22	46·2	55·5	5·0	14·0	40 23·8	14 40 4·90	− 0·29	− 51·98	− 51·95	− 1·91
May 13	3331	ε Leonis.....................	....	65 37	52·1	1·3	10·3	19·0	39 28·6	9 39 10·26	− 0·35	− 51·31	− 51·37	− 0·73
	3459	α Leonis.....................	....	77 23	53·6	1·4	10·0	18·0	2 26·9	10 2 9·86	− 0·39	− 51·38	− 51·37	− 0·90
	3834	δ Leonis.....................	....	68 45	37·0	46·0	55·0	3·4	8 12·8	11 7 54·84	− 0·37	− 51·35	− 51·37	− 1·20
	3995	β Leonis.....................	....	74 42	52·5	1·0	9·8	18·0	43 27·0	11 43 9·66	− 0·38	− 51·45	− 51·37	− 1·39
May 21	3331	ε Leonis.....................	....	65 37	50·7	0·0	9·0	17·4	39 27·2	9 39 8·66	− 0·39	− 49·99	− 49·90	− 0·61
	3459	α Leonis.....................	....	77 23	51·4	0·0	8·4	16·4	2 25·3	10 2 8·30	− 0·43	− 49·88	− 49·90	− 0·80
	360	α Ursæ Minoris S. P....	....	1 24	......	36·0	59·5	39·5	22 18·0	13 11 4·70	− 6·07	....	− 49·90	+ 8·28
	4532	ζ Virginis.....................	....	89 55	31·0	39·1	47·3	55·4	29 4·0	13 28 47·36	− 0·48	− 49·88	− 49·90	− 1·94
	4648	η Bootis.....................	....	70 56	56·0	4·5	13·2	21·8	49 31·0	13 49 13·30	− 0·41	− 49·93	− 49·90	− 1·82
	5000	....	6·5	56 25	48·0	58·0	7·9	17·6	0 28·0	15 0 7·90	− 0·34	....	− 49·90	− 1·99
	5071	....	6·0	37 36	35·8	49·5	3·1	16·0	17 30·4	15 17 2·96	− 0·24	....	− 49·90	− 2·13
	5091	....	6·0	26 11	40·6	59·8	18·5	36·4	21 56·0	15 21 18·26	− 0·15	....	− 49·90	− 2·44
	5143	α Coronæ Borealis	....	62 50	37·3	46·4	55·0	4·8	30 14·5	15 29 55·80	− 0·37	− 49·92	− 49·90	− 2·05
	5196	α Serpentis.....................	....	83 9	19·0	27·3	35·6	43·7	38 52·4	15 38 35·60	− 0·45	− 49·87	− 49·90	− 2·19
	5245	ε Serpentis.....................	....	85 8	47·4	55·7	4·0	12·0	45 20·7	15 45 3·96	− 0·46	....	− 49·90	− 2·21

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1867.
1867.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
May 21	5284	γ Serpentis	....	73 54	54.0	2.7	11.2	19.5	51 28.4	15 51 11.16	− 0.42	....	−49.90	− 2.12
	5414	δ Ophiuchi	....	93 21	58.9	7.0	15.3	23.3	8 32.0	16 8 15.30	− 0.50	−49.86	−49.90	− 2.31
	5452	....	6.5	68 33	53.0	1.9	10.8	19.3	15 26.7	16 15 10.74	− 0.40	....	−49.90	− 2.11
	5466	γ Herculis	3.5	70 32	38.2	47.0	55.8	4.1	17 13.4	16 16 55.70	− 0.41	....	−49.90	− 2.12
	5493	....	7.0	87 21	44.5	52.6	1.0	8.9	21 17.6	16 21 0.92	− 0.47	....	−49.90	− 2.24
	5504	....	8.0	74 21	37.2	45.7	54.4	2.5	23 11.6	16 22 54.26	− 0.42	....	−49.90	− 2.14
	5527	....	5.0	69 14	22.0	30.8	39.8	48.2	25 57.7	16 25 39.70	− 0.40	....	−49.90	− 2.12
	5537	....	7.0	79 21	51.6	59.9	8.1	16.3	28 25.1	16 28 8.20	− 0.43	....	−49.90	− 2.17
May 22	3331	ε Leonis	....	65 37	50.5	59.6	8.8	17.3	39 27.0	[illegible] 39 8.64	− 0.32	−49.85	−49.80	− 0.60
	3459	α Leonis	....	77 23	51.2	59.8	8.2	16.3	2 25.2	10 2 8.14	− 0.34	−49.82	−49.80	− 0.79
	360	α Ursæ Minoris S. P.	....	1 24	......	......	0.5	38.5	22 17.0	13 11 1.86	− 2.91	....	−49.80	+ 7.61
	4648	η Bootis	....	70 56	55.6	4.3	13.0	21.4	49 30.9	13 49 13.04	− 0.33	−49.75	−49.80	− 1.62
	4729	α Bootis	....	70 8	10.2	19.0	27.8	36.2	10 45.4	14 10 27.72	− 0.33	−49.78	−49.80	− 1.85
	4876	ε Bootis	....	62 22	44.2	53.5	3.0	11.7	40 21.5	14 40 2.78	− 0.30	−49.82	−49.80	− 1.94
	4934	....	6.0	48 20	29.0	40.0	51.0	1.8	52 13.2	14 51 51.00	− 0.26	....	−49.80	− 1.96
	4912	....	6.0	49 50	50.5	1.2	12.0	22.7	55 34.[illegible]	14 55 12.08	− 0.28	....	−49.80	− 1.96
	4965	....	6.0	44 51	53.4	5.1	17.0	28.1	59 10.3	14 59 16.78	− 0.26	....	−49.80	− 2.00
	4992	....	5.5	34 57	52.1	6.6	21.0	35.0	3 50.0	15 3 20.94	− 0.21	....	−49.80	− 2.12
	5001	....	7.0	60 17	51.5	1.0	10.4	19.9	[illegible] 29.8	15 6 10.52	− 0.30	....	−49.80	− 1.99
	5071	....	6.0	37 38	35.9	49.4	3.0	16.0	17 30.2	15 17 2.90	− 0.23	....	−49.80	− 2.12
	5091	....	6.0	26 11	40.8	59.7	18.3	36.4	21 56.0	15 21 18.24	− 0.18	....	−49.80	− 2.43
	5143	α Coronæ Borealis	....	62 50	37.1	46.3	55.5	4.6	30 14.2	15 29 55.54	− 0.30	−49.73	−49.80	− 2.05
	5196	α Serpentis	....	83 9	18.9	27.2	35.4	43.4	38 52.1	15 38 35.40	− 0.35	−49.77	−49.50	− 2.19
	5245	ε Serpentis	....	85 8	47.0	55.3	3.8	11.5	45 20.4	15 45 3.60	− 0.36	....	−49.80	− 2.21
	5284	γ Serpentis	....	73 54	54.0	2.4	11.0	19.2	51 28.2	15 51 10.96	− 0.33	....	−49.80	− 2.13
	5414	δ Ophiuchi	....	93 21	58.7	7.0	15.2	23.0	8 32.0	16 8 15.18	− 0.39	−49.84	−49.80	− 2.32
	5452	....	6.0	68 33	52.8	1.7	10.4	19.0	15 28.4	16 15 10.46	− 0.33	....	−49.80	− 2.12
	5493	....	6.5	87 21	44.0	52.5	0.6	8.6	21 17.3	16 21 0.60	− 0.37	....	−49.80	− 2.25
	5504	....	7.0	74 21	37.0	45.8	54.4	2.4	23 11.4	16 22 54.20	− 0.33	....	−49.80	− 2.15
	5527	....	....	69 14	21.9	30.8	39.7	48.0	25 57.4	16 25 39.56	− 0.33	....	−49.80	− 2.13
	5537	....	7.0	79 21	51.1	59.7	8.0	16.1	28 25.0	16 28 7.98	− 0.34	....	−49.80	− 2.18
	5597	....	....	64 53	4.2	13.0	22.0	31.0	36 40.5	16 36 22.14	− 0.31	....	−49.80	− 2.12
May 28	360	α Ursæ Minoris S. P.	....	1 24	45.0	41.5	6.0	43.5	22 22.0	13 11 7.60	− 8.09	....	−48.87	+ 3.39
	4460	(a) α Virginis	....	100 28	45.9	54.1	2.5	11.0	19 19.8	13 19 2.66	− 0.43	−48.89	−48.87	− 2.03
	4729	α Bootis	....	70 8	9.4	18.0	26.6	35.3	10 44.4	14 10 26.78	− 0.36	−48.83	−48.67	− 1.63
	4808	ζ Bootis	....	59 3	37.6	47.2	57.0	6.2	27 16.7	14 26 56.94	− 0.32	−48.88	−48.87	− 1.85
June 2	4648	η Bootis	....	70 56	53.5	2.2	11.0	19.4	49 28.7	13 49 10.96	− 0.36	−47.70	−47.78	− 1.76
	4672	τ Virginis	....	87 49	26.4	34.8	43.0	51.0	55 59.8	13 55 43.00	− 0.40	−47.66	−47.78	− 1.98
	4729	α Bootis	....	70 8	8.0	17.0	25.9	34.2	10 43.5	14 10 25.72	− 0.36	−47.79	−47.78	− 1.91
	4876	ε Bootis	....	62 22	42.0	51.4	0.9	9.8	40 19.6	14 40 0.74	− 0.34	−47.77	−47.78	− 1.91
June 4	5034	β Libræ	....	98 54	25.0	33.2	41.4	49.4	10 58.2	15 10 41.44	− [illegible].47	−47.45	−47.50	− 2.39
	5143	α Coronæ Borealis	....	62 50	35.0	44.1	53.5	2.3	30 12.0	15 29 53.38	− 0.35	−47.49	−47.50	− 2.08
	5196	α Serpentis	....	83 [illegible]	16.6	25.0	33.4	41.2	38 50.0	15 38 33.24	− 0.42	−47.48	−47.49	− 2.25
	5414	δ Ophiuchi	....	93 21	56.7	4.8	13.0	21.0	8 29.8	16 8 13.06	− 0.45	−47.56	−47.49	− 2.42
	5604	ζ Herculis	....	58 9	47.0	56.8	6.5	15.8	37 25.9	16 37 6.40	− 0.33	−47.46	−47.48	− 2.22

(a) Definition bad.

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1867.				° ′	s	s	s	s	m s	h m s	s	s	s	s
June 8	5034	β Libræ	....	98 54	24·9	33·0	41·4	49·5	10 58·3	15 10 41·42	− 0·48	− 47·41	− 47·40	− 2·40
	5143	α Coronæ Borealis	....	62 50	34·9	44·0	53·3	2·1	30 2·0	15 29 53·26	− 0·37	− 47·36	− 47·40	− 2·07
	5196	α Serpentis	....	83 9	16·5	25·0	33·2	41·1	38 50·0	15 38 33·16	− 0·43	− 47·38	− 47·40	− 2·26
	5414	δ Ophiuchi	....	93 21	56·5	4·7	13·0	21·0	8 29·7	16 8 12·98	− 0·46	− 47·45	− 47·40	− 2·44
June 11	4876	ι Bootis	....	62 22	41·1	50·4	59·8	8·9	40 18·6	14 39 59·76	− 0·38	− 46·80	− 46·80	− 1·86
	4969	ψ Bootis	....	62 32	15·4	24·8	34·0	43·0	59 52·7	14 59 33·98	− 0·38	− 46·83	− 46·80	− 1·93
	5143	α Coronæ Borealis	....	62 50	34·0	43·4	52·9	1·8	30 11·4	15 29 52·70	− 0·38	− 46·79	− 46·80	− 2·07
	5414	δ Ophiuchi	....	93 21	55·9	4·0	12·4	20·2	8 29·0	16 8 12·30	− 0·47	− 46·75	− 46·78	− 2·45
June 12	360	α Ursæ Minoris S. P.	....	1 24	56·0	52·0	15·0	53·5	22 31·0	13 11 17·50	− 5·53	....	− 46·68	− 8·39
	4480	α Virginis	....	100 28	43·5	52·0	0·4	8·4	19 17·4	13 19 0·34	− 0·51	− 46·61	− 46·68	− 1·91
	4532	ζ Virginis	....	89 55	27·1	35·6	44·0	52·0	29 0·9	13 28 43·96	− [illegible]·46	− 46·64	− 46·68	− 1·80
	5604	ζ Herculis	....	58 9	46·5	56·0	5·7	15·0	37 25·4	16 37 5·72	− 0·38	− 46·70	− 46·68	− 2·25
	5708	κ Ophiuchi	....	80 25	55·5	3·5	12·0	20·0	52 28·8	16 52 11·96	− 0·44	− 46·76	− 46·68	− 2·37
	5821	α Herculis	....	75 27	7·5	16·0	24·5	32·9	9 41·7	17 9 24·52	− 0·43	− 46·68	− 46·68	− 2·37
June 13	360	α Ursæ Minoris S. P.	....	1 21	55·5	51·5	15·0	54·0	22 30·5	13 11 17·30	− 4·31	....	− 46·61	− 9·23
	4532	ζ Virginis	....	89 55	27·1	35·6	44·0	52·0	29 0·7	13 28 43·91	− 0·42	− 46·66	− 46·61	− 1·80
	5604	ζ Herculis	....	58 9	46·1	55·9	5·7	15·0	37 25·0	16 37 5·54	− 0·35	− 46·55	− 46·61	− 2·25
	5708	κ Ophiuchi	....	80 25	55·1	3·4	11·9	20·0	52 28·8	16 52 11·84	− 0·39	− 46·65	− 46·60	− 2·38
	5821	α Herculis	....	75 27	7·2	15·8	24·5	32·7	9 41·8	17 9 24·40	− 0·38	− 46·60	− 46·60	− 2·38
	5941	α Ophiuchi	....	77 20	18·1	26·8	35·0	43·1	29 52·1	17 29 35·02	− 0·35	− 46·56	− 46·60	− 2·41
	6021	μ Herculis	....	62 12	46·0	55·3	4·6	13·7	42 23·3	17 42 4·58	− 0·36	− 46·58	− 46·60	− 2·38
June 18	5604	ζ Herculis	....	58 9	45·2	55·0	4·8	14·0	37 24·2	16 37 4·64	− 0·46	− 45·53	− 45·53	− 2·26
	5708	κ Ophiuchi	....	80 25	54·1	2·6	11·0	19·0	52 27·9	16 52 10·92	− 0·54	− 45·58	− 45·53	− 2·41
	5821	α Herculis	....	75 27	6·4	15·0	23·4	31·8	9 40·5	17 9 23·42	− 0·53	− 45·43	− 45·52	− 2·42
	6021	μ Herculis	....	62 12	45·0	54·4	3·3	12·7	42 22·3	17 42 3·66	− 0·17	− 45·51	− 45·52	− 2·42
	6281	δ Ursæ Minoris	....	3 24	35·[illegible]	55·0	16·0	29·0	20 56·5	18 16 14·30	+ 1·95	....	− 45·52	− 16·02
	6429	β Lyræ	....	56 47	39·0	48·8	58·9	8·3	46 18·6	18 45 58·72	− 0·45	− 45·56	− 45·52	− 2·52
June 19	5708	κ Ophiuchi	....	80 25	54·0	2·3	10·7	18·8	52 27·5	16 52 10·66	− 0·44	− 45·42	− 45·39	− 2·41
	5821	α Herculis	....	75 27	6·4	14·9	23·4	31·5	9 40·3	17 9 23·30	− 0·42	− 45·42	− 45·38	− 2·42
	5941	α Ophiuchi	....	77 20	17·0	25·5	34·0	42·1	29 51·0	17 29 33·92	− 0·43	− 45·36	− 45·38	− 2·46
	6021	μ Herculis	....	62 12	44·9	54·[illegible]	3·6	12·4	42 22·2	17 42 3·42	− 0·33	− 45·34	− 45·37	− 2·43
	6281	δ Ursæ Minoris	....	3 24	36·0	57·0	17·5	29·5	20 57·0	18 16 15·40	+ 0·74	....	− 45·36	− 16·00
June 24	5821	(a) α Herculis	....	75 27	5·5	14·0	22·2	30·8	9 39·6	17 9 22·42	− 0·45	− 44·49	− 44·37	− 2·44
	5941	α Ophiuchi	....	77 20	16·0	24·4	33·0	41·1	29 50·0	17 29 32·90	− 0·45	− 44·29	− 44·36	− 2·49
	6021	μ Herculis	....	62 12	43·9	53·1	2·5	11·4	42 21·3	17 42 2·44	− 0·40	− 44·32	− 44·36	− 2·46
	6281	δ Ursæ Minoris	....	3 24	34·5	55·0	16·0	28·0	20 56·[illegible]	18 16 13·90	+ 0·91	....	− 44·36	− 15·78
	6355	α Lyræ	....	51 20	52·2	3·[illegible]	13·6	23·8	33 34·9	18 33 13·50	− 0·38	− 44·35	− 44·35	− 2·64
	6429	β Lyræ	....	56 47	37·7	47·7	57·6	7·0	46 17·5	18 45 57·50	− 0·39	− 44·33	− 44·35	− 2·59
June 25	5143	α Coronæ Borealis	....	62 50	31·4	40·7	50·0	59·0	30 8·8	15 29 49·96	− 0·49	− 44·03	− 43·94	− 2·00
	5196	α Serpentis	....	83 9	13·1	21·5	30·0	37·9	38 46·7	15 38 29·84	− 0·59	− 43·92	− 43·93	− 2·24
	5821	α Herculis	....	75 27	5·0	13·4	22·0	30·0	9 39·1	17 9 21·90	− 0·55	− 43·87	− 43·91	− 2·44
	5941	α Ophiuchi	....	77 20	15·8	24·1	32·8	40·9	29 49·5	17 29 32·62	− 0·56	− 43·90	− 43·90	− 2·49
	6281	δ Ursæ Minoris	....	3 24	33·0	52·0	12·5	28·[illegible]	20 55·0	18 16 12·10	+ 2·30	....	− 43·89	− 15·71
	6429	β Lyræ	....	56 47	37·3	47·5	57·2	6·6	46 17·0	18 45 57·12	− 0·47	− 43·86	− 43·88	− 2·60

(a) Definition bad.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1867.
1867.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
June 26	5143	α Coronæ Borealis	....	62 50	31·0	40·2	49·6	58·5	30 8·1	15 29 49·48	− 0·43	−43·60	−43·63	− 1·99
	5196	α Serpentis	....	83 9	12·9	21·1	29·5	37·4	38 46·2	15 38 29·12	− 0·51	−43·36	−43·62	− 2·24
	5414	δ Ophiuchi	....	93 21	52·8	1·0	9·4	17·1	8 26·0	16 8 9·26	− [illegible]·55	−43·62	−43·62	− 2·46
	5821	α Herculis	....	75 27	4·6	13·0	21·7	30·0	9 38·9	17 9 21·64	− 0·47	−43·69	−43·62	− 2·44
	5941	α Ophiuchi	....	77 20	15·1	24·0	32·2	40·3	29 49·2	17 29 32·22	− 0·48	−43·58	−43·61	− 2·49
	6281	δ Ursæ Minoris	....	3 24	33·5	53·5	13·5	27·5	20 55·0	18 16 12·60	+ 1·44	....	−43·61	−15·64
	6429	β Lyræ	....	56 47	36·9	47·0	57·0	6·5	46 16·9	18 45 56·86	− 0·42	−43·64	−43·61	− 2·61
June 28	5143	α Coronæ Borealis	....	62 50	30·3	39·6	49·0	58·0	30 7·7	15 29 48·92	− 0·44	−43·05	−43·00	− 1·97
	5196	α Serpentis	....	83 9	12·2	20·5	28·9	36·9	38 45·5	15 38 28·80	− [illegible]·51	−42·97	−43·00	− 2·23
	5941	α Ophiuchi	....	77 20	14·8	23·2	31·8	40·0	29 48·8	17 29 31·72	− 0·48	−43·01	−43·00	− 2·50
	6021	μ Herculis	....	62 12	42·6	52·[illegible]	1·0	10·0	42 20·0	17 42 1·12	− 0·43	−42·96	−42·99	− 2·47
	6281	δ Ursæ Minoris	....	3 24	33·0	54·0	13·0	26·5	20 53·0	18 16 11·90	+ 1·35	....	−42·99	−15·49
	6429	β Lyræ	....	56 47	36·5	46·4	56·2	5·8	46 16·2	18 45 56·22	− 0·42	−42·98	−42·98	− 2·63
July 4	5143	α Coronæ Borealis	....	62 50	30·4	39·9	49·1	58·0	30 7·7	15 29 49·02	− 0·45	−43·19	−43·18	− 1·92
	5196	α Serpentis	....	83 9	12·3	20·6	29·0	37·0	38 45·9	15 38 28·96	− 0·51	−43·16	−43·18	− 2·20
	5941	α Ophiuchi	....	77 20	15·0	23·4	31·9	40·0	29 49·0	17 29 31·86	− 0·49	−43·19	−43·18	− 2·51
	6281	δ Ursæ Minoris	....	3 24	34·0	53·0	12·0	27·0	20 53·5	18 16 11·90	+ 0·93	....	−43·18	−14·87
	6528	ζ Aquilæ	....	76 19	47·2	55·7	4·1	12·2	[illegible] 21·4	[illegible] 0 4·12	− 0·48	−43·20	−43·18	− 2·66
July 5	5941	α Ophiuchi	....	77 20	15·0	23·3	32·0	40·0	29 49·0	17 29 31·86	− 0·54	−43·14	−43·15	− 2·51
	6021	μ Herculis	....	62 12	42·9	52·0	1·4	10·4	42 20·1	17 42 1·36	− 0·48	−43·14	−43·18	− 2·48
	6281	(a) δ Ursæ Minoris	....	3 24	32·0	52·5	12·0	26·[illegible]	....	18 16 11·12	+ 1·54	....	−43·18	−14·74
	6355	α Lyræ	....	51 20	51·2	1·9	12·3	22·6	33 33·9	18 33 12·38	− 0·44	−43·10	−43·18	− 2·71
	6429	β Lyræ	....	56 47	37·0	46·9	56·8	6·0	46 16·5	18 45 56·64	− 0·47	−43·30	−43·18	− 2·68
	6528	ζ Aquilæ	....	76 19	47·1	55·9	4·2	12·4	0 21·2	19 0 4·16	− 0·54	−43·17	−43·19	− 2·67
	6646	δ Aquilæ	....	87 8	17·4	25·9	34·0	42·0	19 50·8	19 19 34·02	− 0·58	−43·26	−43·19	− 2·70
July 8	5414	(b) δ Ophiuchi	....	93 21	52·0	0·2	8·6	16·5	8 25·2	16 8 8·50	− 0·60	−42·84	−42·94	− 2·43
	5821	α Herculis	....	75 27	4·0	12·3	21·0	29·3	9 38·1	17 9 20·94	− 0·53	−42·93	−42·95	− 2·44
	5941	α Ophiuchi	....	77 20	14·9	23·2	31·9	39·8	29 48·8	17 29 31·72	− 0·54	−42·99	−42·95	− 2·52
	6021	μ Herculis	....	62 12	42·5	51·9	1·3	10·0	42 20·0	17 42 1·14	− 0·49	−42·91	−42·95	− 2·48
	6281	δ Ursæ Minoris	....	3 24	31·5	53·0	12·0	26·0	20 51·5	18 16 10·80	+ 1·21	....	−42·95	−14·33
	6429	β Lyræ	....	56 47	36·5	46·5	56·4	6·0	46 16·2	18 45 56·32	− 0·47	−42·96	−42·95	− 2·79
	6528	ζ Aquilæ	....	76 19	47·0	55·6	4·1	12·2	0 21·2	19 0 4·06	− 0·53	−43·06	−42·96	− 2·69
July 10	5821	α Herculis	....	75 27	3·7	12·0	20·5	28·8	9 37·9	17 9 20·56	− 0·43	−42·67	−42·68	− 2·44
	5941	α Ophiuchi	....	77 20	14·2	23·0	31·3	39·4	29 48·2	17 29 31·22	− 0·44	−42·59	−42·68	− 2·[illegible]
	6281	δ Ursæ Minoris	....	3 24	32·5	52·5	12·5	27·0	20 53·0	[illegible] 16 11·50	− 0·01	....	−42·68	−14·02
	6429	β Lyræ	....	56 47	36·0	46·0	56·2	5·5	46 16·0	18 45 55·94	− 0·40	−42·64	−42·68	− 2·71
	6528	ζ Aquilæ	....	76 19	46·7	55·2	3·9	11·8	0 20·8	19 0 3·68	− 0·41	−42·75	−42·68	− 2·71
	6595	ω Aquilæ	....	78 38	3·7	12·0	20·4	28·3	12 37·3	19 12 20·34	− 0·45	−42·78	−42·68	− 2·72
	6646	δ Aquilæ	....	87 8	17·0	25·1	33·4	41·3	19 50·0	19 19 33·36	− 0·46	−42·66	−42·68	− 2·76
July 20	6646	δ Aquilæ	....	87 8	18·9	27·0	35·4	43·2	19 52·0	19 19 35·30	− 0·51	−44·48	−44·46	− 2·83
	6772	γ Aquilæ	....	79 42	27·1	35·6	44·0	52·[illegible]	41 0·9	19 40 43·92	− 0·50	−44·42	−44·46	− 2·81
	6802	α Aquilæ	....	81 28	48·8	57·0	5·4	13·4	45 22·3	19 45 5·38	− 0·50	−44·42	−44·46	− 2·84
	6833	β Aquilæ	....	83 54	18·0	26·3	34·6	42·8	49 51·4	19 49 34·62	− 0·50	−44·51	−44·46	− 2·83

(a) Cloudy. (b) Definition bad. An inversion of the clock-rate during observation, caused apparently by effects of temperature on Transit piers.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1867.
1867.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Sept. 2	5941	α Ophiuchi …………	………	77 20	16·0	24·6	33·1	41·2	29 50·0	17 29 32·98	− 0·49	−44·88	−44·89	− 1·91
	7368	ζ Cygni …………	………	60 18	46·0	55·5	5·2	14·3	8 24·1	21 8 5·02	− 0·45	−44·89	−44·90	− 3·10
	7688	α Aquarii …………	………	90 57	29·0	37·2	45·6	53·6	0 2·2	21 59 45·52	− 0·53	−44·86	−44·90	− 3·06
	7908	ζ Pegasi …………	………	79 50	21·5	30·0	38·3	46·4	35 55·2	22 35 38·28	− 0·50	−44·92	−44·91	− 3·15
	8034	α Pegasi …………	………	75 29	39·9	48·3	56·9	5·0	59 14·0	22 58 56·62	− 0·48	−44·93	−44·91	− 3·20
Sept. 7	7256	32 Vulpeculæ …………	………	62 26	23·6	33·0	42·3	51·2	50 1·0	20 49 42·22	− 0·46	−45·28	−45·23	− 2·95
	7368	ζ Cygni …………	………	60 18	46·3	56·0	5·5	14·4	8 24·5	21 8 5·34	− 0·45	−45·24	−45·23	− 3·07
	7478	β Aquarii …………	………	96 8	5·6	14·0	22·1	30·0	25 39·0	21 25 22·14	− 0·55	−45·29	−45·23	− 3·02
	7561	ε Pegasi …………	………	80 43	11·2	19·6	28·0	36·0	38 44·9	21 38 27·91	− 0·51	−45·14	−45·22	− 3·05
	7627	16 Pegasi …………	………	61 41	31·4	40·5	49·6	58·4	48 8·0	21 47 49·56	− 0·46	−45·21	−45·22	− 3·20
Sept. 10	6429	β Lyræ …………	………	56 47	38·1	48·0	58·0	7·4	46 17·9	18 45 57·68	− 0·45	−45·20	−45·21	− 2·04
	7688	α Aquarii …………	………	90 57	29·3	37·6	46·0	53·9	0 2·6	21 59 45·88	− 0·55	−45·20	−45·21	− 3·06
	7759	…………	………	29 53	55·0	11·8	28·2	44·3	9 1·7	22 8 28·20	− 0·36	………	−45·21	− 4·49
	7779	…………	7·0	17 20	26·4	52·0	19·8	46·5	12 15·8	22 11 20·10	− 0·24	………	−45·21	− 6·32
	7795	γ Aquarii …………	3·0	92 2	19·5	27·7	36·0	44·0	15 52·7	22 15 35·98	− 0·55	………	−45·20	− 3·12
	7908	ζ Pegasi …………	………	79 50	21·9	30·4	38·6	46·7	35 55·5	22 35 38·62	− 0·51	−45·22	−45·20	− 3·17
	7958	μ Pegasi …………	3·5	66 5	6·1	15·2	24·2	33·0	44 42·6	22 44 24·22	− 0·47	………	−45·20	− 3·34
	7977	…………	7·0	88 51	37·0	45·3	53·5	1·4	48 10·3	22 47 53·50	− 0·54	………	−45·20	− 3·12
	7996	…………	7·5	86 53	18·9	27·1	35·4	43·3	51 52·0	22 51 35·34	− 0·54	………	−45·20	− 3·13
	8024	…………	7·0	33 35	14·1	29·1	44·2	58·4	57 14·0	22 56 43·96	− 0·36	………	−45·20	− 4·59
	8034	α Pegasi …………	………	75 29	40·1	48·6	57·3	5·4	59 14·4	22 58 57·16	− 0·50	−45·21	−45·20	− 3·24
	8065	…………	9·0	88 34	7·0	15·4	23·9	31·7	3 40·4	23 3 23·66	− 0·54	………	−45·20	− 3·13
	8083	…………	6·0	33 33	13·9	29·0	44·0	58·4	8 14·0	23 7 43·86	− 0·36	………	−45·21	− 4·67
	8105	γ Piscium …………	………	87 25	48·6	57·0	5·1	13·0	11 21·9	23 11 5·12	− 0·53	−45·21	−45·21	− 3·16
	8137	…………	7·0	28 45	43·0	0·0	17·2	33·9	15 51·9	23 15 17·20	− 0·34	………	−45·21	− 5·17
	8233	ι Piscium …………	………	85 4	39·0	47·4	55·6	3·4	34 12·2	23 33 55·52	− 0·53	−45·24	−45·21	− 3·17
Sept. 12	7688	α Aquarii …………	………	90 57	29·3	37·6	46·0	53·9	0 2·8	21 59 45·92	− 0·55	−45·25	−45·20	− 3·05
	8233	ι Piscium …………	………	85 4	39·0	47·2	55·4	3·4	34 12·2	23 33 55·44	− 0·53	−45·15	−45·20	− 3·18
	4	α Andromedæ …………	………	61 37	1·6	11·0	20·1	29·2	2 39·1	0 2 20·20	− 0·47	−45·11	−45·19	− 3·58
	26	γ Pegasi …………	………	75 32	55·4	4·0	12·4	20·6	7 29·0	0 7 12·40	− 0·50	−45·25	−45·19	− 3·29
Sept. 16	8233	ι Piscium …………	………	85 4	39·0	47·1	55·4	3·0	34 12·0	23 33 55·30	− 0·53	−44·98	−44·98	− 3·21
	8331	ω Piscium …………	………	83 51	1·0	9·4	17·8	25·9	53 34·5	23 53 17·72	− 0·52	−45·06	−44·98	− 3·21
	4	α Andromedæ …………	………	61 37	1·5	10·8	20·1	29·0	2 39·0	0 2 20·08	− 0·46	−44·97	−44·98	− 3·61
	26	γ Pegasi …………	………	75 32	55·0	3·9	12·2	20·4	7 29·2	0 7 12·14	− 0·49	−44·96	−44·97	− 3·33
	112	12 Ceti …………	………	94 40	47·1	55·3	3·7	11·6	24 20·3	0 24 3·60	− 0·56	−44·92	−44·97	− 3·07
Sept. 23	7908	ζ Pegasi …………	………	79 50	21·0	29·2	37·7	45·9	35 54·6	22 35 37·68	− 0·51	−44·32	−44·21	− 3·14
	7977	…………	7·0	88 51	36·0	44·4	52·6	0·5	48 9·1	22 47 52·52	− 0·55	………	−44·21	− 3·12
	7996	…………	7·0	86 53	17·8	26·0	34·4	42·4	51 51·0	22 51 34·32	− 0·54	………	−44·23	− 3·13
	8024	…………	6·0	33 35	13·0	28·0	43·0	57·2	57 13·0	22 56 42·84	− 0·33	………	−44·23	− 3·82
	8034	α Pegasi …………	………	75 29	39·2	47·7	56·2	4·4	59 13·3	22 58 56·16	− 0·49	−44·21	−44·23	− 3·25
	8065	…………	8·0	88 34	6·2	14·6	22·9	30·9	3 39·4	23 3 22·80	− 0·55	………	−44·23	− 3·14
	8083	…………	5·5	33 33	13·0	28·0	43·0	57·1	8 13·0	23 7 42·82	− 0·33	………	−44·23	− 4·61
	8105	γ Piscium …………	………	87 25	47·8	56·0	4·2	12·0	11 20·9	23 11 4·18	− 0·54	−44·24	−44·23	− 3·19
	8137	…………	6·0	28 45	42·9	59·3	16·5	33·0	15 51·1	23 15 16·56	− 0·30	………	−44·23	− 5·15
	8204	…………	8·0	18 43	52·0	17·8	43·7	8·0	28 35·2	23 27 43·34	− 0·20	………	−44·23	− 7·01
	8233	ι Piscium …………	………	85 4	38·0	46·2	54·6	2·5	34 11·2	23 33 54·50	− 0·53	−44·16	−44·23	− 3·23

Date	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1867.
1867.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Sept. 23	8247	....	8·0	72 3	18·7	27·2	36·0	44·4	36 53·4	23 36 35·94	− 0·49	....	− 44·23	− 3·38
	8269	....	8·0	86 29	28·4	36·7	45·0	53·0	42 1·8	23 41 44·98	− 0·53	....	− 44·23	− 3·20
	8298	....	6·5	13 7	18·0	54·8	31·0	6·0	47 44·3	23 46 30·82	− 0·07	....	− 44·22	− 9·50
	8335	....	7·0	28 33	13·4	30·7	48·0	4·7	55 23·0	23 54 47·96	− 0·30	....	− 44·22	− 5·51
	8372	....	6·0	32 17	38·4	53·9	9·2	24·0	0 40·6	23 [illegible] 9·22	− 0·33	....	− 44·22	− 5·13
	4	α Andromedæ	....	61 37	0·8	10·1	19·4	28·3	2 38·1	0 2 19·34	− 0·46	− 44·18	− 44·22	− 3·66
	26	γ Pegasi	....	75 32	54·5	3·0	11·5	19·8	7 28·6	0 7 11·52	− 0·50	− 44·28	− 44·22	− 3·38
	83	....	6·0	37 40	18·1	31·5	45·0	58·1	19 12·4	0 18 45·02	− 0·35	....	− 44·22	− 4·76
	113	....	7·0	85 51	50·0	58·2	6·5	14·4	24 23·2	0 24 6·46	− 0·53	....	− 44·22	− 3·22
Sept. 30	8331	ω Piscium	....	83 51	59·6	8·0	16·1	24·1	53 33·0	23 53 16·16	− 0·53	− 43·43	− 43·48	− 3·27
	4	α Andromedæ	....	61 37	0·0	9·3	18·8	27·9	2 37·6	0 2 18·72	− 0·44	− 43·56	− 43·48	− 3·68
	26	γ Pegasi	....	75 32	54·0	2·3	10·8	19·0	7 28·0	0 7 10·82	− 0·50	− 43·56	− 43·47	− 3·40
	288	ι Piscium	....	52 48	33·0	41·4	50·0	57·9	57 6·5	0 56 49·76	− 0·52	− 43·38	− 43·47	− 3·30
	360	α Ursæ Minoris	....	1 21	2·5	46·5	26·0	......	23 46·0	1 12 22·08	+ 4·31	....	− 43·46	− 85·13
	420	θ Ceti	....	98 51	53·0	1·2	9·6	17·5	18 26·5	1 18 9·56	− 0·59	− 43·40	− 43·46	− 3·07
Oct. 2	7759	(a)	6·0	29 53	53·0	9·5	26·2	42·2	8 59·6	22 8 26·10	− 0·26	....	− 43·32	− 4·09
	7779	....	6·0	17 20	21·9	49·5	17·0	43·5	12 13·0	22 11 16·98	− 0·10	....	− 43·32	− 5·60
	7795	γ Aquarii	3·0	92 2	17·2	25·9	34·0	42·0	15 50·6	22 15 33·94	− 0·50	....	− 43·32	− 2·99
	7908	ζ Pegasi	....	79 50	20·0	28·1	36·6	44·9	35 53·5	22 35 36·62	− 0·47	− 43·35	− 43·32	− 3·09
	7958	μ Pegasi	4·0	66 5	4·0	13·0	22·2	31·0	44 40·3	22 44 22·10	− 0·42	....	− 43·32	− 3·27
	7977	....	8·0	88 51	35·0	43·4	51·6	59·5	48 5·2	22 47 51·54	− 0·40	....	− 43·32	− 3·08
	7996	....	8·0	86 53	16·9	25·1	33·3	41·2	51 50·0	22 51 33·30	− 0·48	....	− 43·32	− 3·10
	8024	....	6·0	33 35	12·0	27·0	42·0	56·2	57 12·0	22 56 41·84	− 0·27	....	− 43·32	− 4·41
	8031	α Pegasi	....	75 29	36·2	46·8	55·2	3·3	59 12·4	22 58 55·18	− 0·44	− 43·31	− 43·32	− 3·22
	8065	....	7·5	88 34	5·2	13·4	21·6	29·9	3 36·4	23 3 21·74	− 0·49	....	− 43·32	− 3·12
	8233	ι Piscium	....	85 4	37·0	45·2	53·5	1·4	34 10·2	23 33 53·46	− 0·49	− 43·16	− 43·32	− 3·23
	8247	....	8·0	72 3	17·9	26·4	35·0	43·6	36 52·4	23 36 35·06	− 0·44	....	− 43·32	− 3·38
	8269	....	8·0	86 29	27·7	35·8	44·0	52·0	42 0·9	23 41 44·08	− 0·48	....	− 43·32	− 3·21
	8298	....	7·0	13 7	17·0	53·2	29·8	4·8	47 43·3	23 46 29·62	− 0·01	....	− 43·32	− 9·41
	8335	....	....	28 33	12·6	29·8	47·1	3·8	55 22·0	23 54 47·06	− 0·24	....	− 43·32	− 5·50
	8361	....	6·0	32 12	22·4	37·9	53·4	8·0	59 24·3	23 58 53·20	− 0·28	....	− 43·32	− 5·14
	8372	....	....	32 17	37·2	52·7	8·2	23·0	0 39·4	0 [illegible] 8·10	− 0·29	....	− 43·32	− 5·14
	4	α Andromedæ	....	61 37	59·6	9·0	18·5	27·6	2 37·4	0 2 18·42	− 0·41	− 43·29	− 43·32	− 3·68
	26	γ Pegasi	....	75 32	53·5	2·0	10·7	18·9	7 27·9	0 7 10·60	− 0·45	− 43·38	− 43·32	− 3·41
	83	....	6·5	37 40	17·0	30·6	44·1	57·0	19 11·2	0 18 43·98	− 0·30	....	− 43·32	− 4·81
	98	....	6·5	74 42	6·5	15·0	23·7	32·0	21 41·0	[illegible] 21 23·64	− 0·44	....	− 43·32	− 3·44
	113	....	7·5	85 51	49·0	57·3	5·5	13·7	24 22·4	0 24 5·58	− 0·48	....	− 43·32	− 3·27
	133	....	8·0	70 17	12·1	21·0	29·8	38·2	27 47·3	0 27 29·68	− 0·43	....	− 43·32	− 3·53
	149	....	7·0	77 30	31·9	40·3	48·9	57·0	30 5·9	0 29 48·80	− 0·45	....	− 43·32	− 3·40
	164	ι Andromedæ	6·0	61 24	0·6	10·1	19·5	28·6	32 38·4	0 32 19·44	− 0·40	....	− 43·32	− 3·76
	360	α Ursæ Minoris	....	1 24	2·5	45·5	27·5	52·5	23 49·0	1 12 23·40	+ 3·29	....	− 43·32	− 85·55
	453	ε Piscium	....	75 19	52·5	1·0	9·4	17·9	25 26·7	1 25 9·50	− 0·44	− 43·44	− 43·32	− 3·46
Oct. 3	7795	γ Aquarii	....	92 2	17·4	25·8	33·9	42·0	15 50·6	22 15 33·94	− 0·57	....	− 43·20	− 2·96
	7908	ζ Pegasi	....	79 50	19·9	28·2	36·7	44·9	35 53·6	22 35 36·66	− 0·52	− 43·35	− 43·20	− 3·08
	7958	μ Pegasi	....	66 5	4·0	13·1	22·2	30·9	44 40·2	22 44 22·08	− 0·47	....	− 43·20	− 3·26
	7970	λ Aquarii	....	98 16	10·7	19·0	27·1	35·0	46 44·0	22 46 27·16	− 0·60	....	− 43·20	− 3·04
	8024	....	7·0	33 35	12·2	27·0	42·0	56·2	57 11·9	22 56 41·86	− 0·27	....	− 43·20	− 4·42
	8031	α Pegasi	....	75 29	36·0	46·6	55·1	3·2	59 12·3	22 58 55·04	− 0·50	− 43·12	− 43·20	− 3·21

(a) An apparent inversion of the clock-rate during observation, caused by the effects of temperature on the Transit piers.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1867.
1867.				° ′	s.	s.	s.	s.	m s	h m s	s	s	s	s
Oct. 3	8083	....	7·0	33 33	12·0	27·0	42·0	56·1	8 12·0	23 7 41·82	– 0·27	....	–43·20	– 4·55
	8147	....	7·0	70 9	38·1	47·0	55·9	4·1	17 13·4	23 16 55·70	– 0·48	....	–43·20	– 3·31
	8204	....	7·0	18 43	51·0	16·8	42·5	7·0	28 34·4	23 27 42·34	– 0·08	....	–43·20	– 6·88
	8233	ι Piscium..................	......	85 4	37·0	45·3	53·4	1·4	34 10·2	23 33 53·46	– 0·55	–43·10	–43·20	– 3·23
	8247	....	7·5	72 3	17·8	26·1	35·0	43·3	36 52·4	23 36 34·98	– 0·49	....	–43·20	– 3·38
	8269	....	8·0	86 29	27·6	36·0	44·1	52·0	42 0·9	23 41 44·12	– 0·54	....	–43·20	– 3·31
	8298	....	7·0	13 7	16·4	53·5	30·0	5·1	47 43·0	23 46 29·60	+ 0·12	....	–43·20	– 9·40
	8338	....	7·0	28 33	12·5	30·0	47·2	3·8	55 22·2	23 54 47·14	– 0·23	....	–43·20	– 5·50
	8364	....	7·0	32 12	22·5	37·8	53·5	8·1	59 24·5	23 58 53·28	– 0·28	....	–43·20	– 5·14
	8372	....	6·5	32 17	37·5	52·6	8·2	23·0	0 39·2	0 [illegible] 8·14	– 0·29	....	–43·20	– 5·14
	4	α Andromedæ..............	......	61 37	59·8	9·0	18·5	27·3	2 37·2	0 2 18·36	– 0·45	–43·19	–43·20	– 3·68
	18	....	7·5	31 3	53·5	9·8	25·8	41·0	4 58·0	0 4 25·62	– 0·26	....	–43·20	– 5·30
	28	....	6·5	49 41	3·0	14·0	24·9	35·5	7 46·5	0 7 21·78	– 0·39	....	–43·20	– 4·06
	48	....	8·0	76 49	24·6	33·[illegible]	41·1	49·6	10 58·5	0 10 41·36	– 0·51	....	–43·20	– 3·39
	53	....	6·0	37 40	17·0	30·8	44·2	57·0	19 11·2	0 18 44·04	– 0·30	....	–43·20	– 4·81
	98	....	......	71 12	6·4	15·0	23·7	31·9	21 41·0	0 21 23·60	– 0·50	....	–43·20	– 3·44
	112	12 Ceti....................		91 40	45·5	54·0	2·0	10·0	24 18·9	0 24 2·08	– 0·59	–43·27	–43·20	– 3·17
	288	ε Piscium..................		82 18	33·0	41·3	49·6	57·7	57 6·4	0 56 49·60	– 0·54	–43·18	–43·20	– 3·32
	360	α Ursæ Minoris............		1 21	4·0	45·0	25·3	46·0	23 47·0	1 12 21·50	+ 5·12	....	–43·20	–85·71
	376	....	7·0	17 18	52·0	19·0	46·2	12·0	10 40·5	1 9 45·91	– 0·05	....	–43·20	– 8·46
Oct. 7	8233	(a) ι Piscium..............	......	85 4	37·0	45·2	53·4	1·5	34 10·2	23 33 53·46	– 0·44	–43·22	–43·27	– 3·22
	8252	....	......	37 34	58·4	12·0	25·8	39·0	37 53·0	23 37 25·64	– 0·28	....	–43·27	– 4·51
	8270	....	8·5	86 33	31·6	40·0	48·4	56·0	42 5·0	23 41 48·20	– 0·45	....	–43·27	– 3·21
	8298	....	7·0	13 7	16·6	53·4	30·0	5·4	47 43·0	23 46 29·68	– 0·06	....	–43·27	– 9·31
	8315	....	8·0	82 30	20·0	28·3	36·8	44·8	49 53·6	23 49 36·70	– 0·42	....	–43·27	– 3·26
	8331	ω Piscium..................	......	83 51	59·2	7·4	15·8	24·0	53 32·8	23 53 15·84	– 0·43	–43·21	–43·27	– 3·27
	8364	....	7·0	32 12	22·0	37·8	53·3	9·0	59 21·0	23 58 53·02	– 0·27	....	–43·27	– 5·12
	4	α Andromedæ..............	......	61 37	59·8	9·0	18·6	27·3	2 37·4	0 2 18·42	– 0·37	–43·32	–43·27	– 5·69
	18	....	7·5	31 3	53·5	9·7	25·6	41·0	4 58·0	0 4 25·56	– 0·25	....	–43·27	– 5·29
	26	γ Pegasi..................	......	75 52	53·6	2·0	10·6	18·9	7 27·0	0 7 10·54	– 0·40	–43·36	–43·27	– 3·42
	42	....	8·0	86 28	38·1	46·5	54·8	2·7	10 11·4	0 9 54·70	– 0·44	....	–43·27	– 3·2[illegible]
	57	....	7·0	83 2	28·1	36·8	45·0	53·0	12 1·4	0 11 44·88	– 0·45	....	–43·27	– 3·23
	68	....	7·0	22 54	28·2	50·0	11·2	31·4	15 53·5	0 15 10·86	– 0·20	....	–43·27	– 6·58
	98	....	7·0	74 42	6·4	15·0	23·6	31·7	21 40·8	0 21 23·50	– 0·40	....	–43·27	– 3·45
	112	(b) 12 Ceti................	......	94 40	45·4	53·8	2·0	10·0	24 18·6	0 24 1·96	– 0·46	–43·26	–43·27	– 3·19
	218	η Cassiopeæ..............	3·0	32 52	22·8	38·1	53·4	8·0	42 24·0	0 41 53·26	– [illegible]·27	....	–43·27	– 5·38
	237	....	7·0	67 20	58·0	6·0	14·5	22·4	45 31·2	0 45 14·42	– 0·45	....	–43·27	– 3·28
	259	μ Andromedæ..............	4·0	52 12	49·8	0·1	10·5	20·8	50 31·6	0 50 10·56	– 0·33	....	–43·27	– 4·14
	290	....	8·0	36 29	47·8	1·6	15·6	28·9	57 43·6	0 57 15·50	– 0·27	....	–43·27	– 5·12
	314	μ Cassiopeæ..............	4·0	35 43	47·4	1·8	15·8	29·3	0 44·4	1 0 15·74	– 0·27	....	–43·27	– 5·20
	360	α Ursæ Minoris............	......	1 21	......	49·0	27·0	53·5	23 48·0	1 12 25·04	+ 2·52	....	–43·27	–86·35
	403	....	8·0	17 50	7·0	34·1	1·0	27·5	15 55·4	1 15 1·06	– 0·13	....	–43·27	– 8·56
	453	η Piscium..................	......	75 19	52·3	1·0	9·4	17·8	25 26·7	1 25 9·44	– 0·40	–43·37	–43·27	– 3·51
	514	....	7·0	60 36	37·2	46·9	56·3	5·4	35 15·3	1 34 56·22	– 0·37	....	–43·27	– 3·01
	538	....	7·0	73 14	52·3	1·0	9·9	18·0	40 27·1	1 40 9·66	– 0·40	....	–43·27	– 3·55
	562	....	7·0	39 10	44·0	57·3	10·1	23·0	45 36·8	1 45 10·24	– 0·29	....	–43·27	– 5·03
	577	β Arietis..................	......	69 49	47·0	56·3	5·1	13·5	48 22·8	1 48 4·94	– 0·40	–43·12	–43·27	– 3·61
Oct. 8	8147	(c)	7·0	70 9	38·1	46·9	55·5	4·0	17 13·1	23 16 55·52	– 0·42	....	–43·30	– 3·32
	8169	κ Piscium..................	......	89 27	37·1	45·4	53·6	1·7	21 10·4	23 20 53·68	– 0·48	–43·23	–43·31	– 3·13

(a) Definition indifferent for the greater part of the night. (b) Definition improving.
(c) An excessive clock-rate during the observations, produced with little doubt by the action of temperature in swerving the Transit piers.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1867.
1867.				° ′	s	s	s	s	m s	h m s	s	s	s	s
Oct. 8	8204	......	7·0	18 43	50·6	16·7	42·6	7·0	28 34·0	23 27 42·20	− 0·09	......	−43·33	− 6·78
	8233	ι Piscium	......	85 4	37·0	45·2	53·6	1·5	34 10·2	23 33 53·50	− 0·47	−43·23	−43·34	− 3·22
	8252	......	7·0	37 31	58·9	12·0	25·8	38·9	37 53·0	23 37 25·72	− 0·27	......	−43·34	− 4·50
	8315	......	7·5	82 30	20·0	28·6	36·9	44·9	49 53·8	23 49 36·84	− 0·45	......	−43·35	− 3·26
	8338	......	7·5	28 33	12·5	20·8	47·0	4·0	55 21·9	23 54 47·04	− 0·20	......	−43·36	− 5·47
	4	α Andromedæ	......	61 37	59·8	9·1	18·5	27·7	2 37·3	0 2 18·48	− 0·39	−43·36	−43·36	− 3·69
	18	......	7·5	31 3	53·6	9·8	25·9	41·2	4 58·0	0 4 25·70	− 0·[illegible]	......	−43·36	− 5·27
	28	......	6·0	49 41	3·0	14·0	24·8	35·2	7 46·6	0 7 24·72	− 0·34	......	−43·37	− 4·06
	42	......	6·0	86 28	38·4	46·6	55·0	2·8	10 11·4	0 9 54·84	− 0·47	......	−43·37	− 3·23
	57	......	7·0	89 2	28·5	36·9	45·0	53·0	12 1·8	0 11 45·04	− 0·48	......	−43·37	− 3·23
	68	......	7·0	22 54	28·5	50·0	11·0	31·4	15 53·8	0 15 10·94	− 0·15	......	−43·38	− 6·57
	105	......	6·0	13 42	10·3	45·0	20·0	53·3	24 30·0	0 23 19·72	+ 0·05	......	−43·38	− 9·77
	133	(a)	......	70 17	12·0	21·0	29·4	38·0	27 47·2	0 27 29·52	− 0·42	......	−43·38	− 3·55
	360	α Ursæ Minoris	......	1 24	6·5	48·0	26·5	30·0	23 47·[illegible]	1 12 23·60	+ 4·01	......	−43·40	− 96·47
	453	η Piscium	......	75 19	52·5	1·0	9·6	17·8	25 26·8	1 25 9·54	− 0·43	−43·43	−43·40	− 3·52
	538	......	......	73 14	52·7	1·1	10·0	18·1	40 27·4	1 40 9·86	− 0·43	......	−43·41	− 3·56
	562	......	......	39 10	44·2	57·5	10·6	23·0	45 36·9	1 45 10·44	− 0·28	......	−43·42	− 5·04
	577	β Arietis	......	69 49	47·9	56·6	5·8	13·8	48 23·0	1 48 5·42	− 0·42	−43·57	−43·43	− 3·65
Oct. 9	8331	ω Piscium	......	83 51	59·5	7·8	16·0	24·0	53 32·8	23 53 16·02	− 0·48	−43·34	−43·34	− 3·27
	8350	85 Pegasi	......	63 30	43·0	52·0	1·1	10·0	56 19·6	23 56 1·14	− 0·41	......	−43·34	− 3·60
	4	α Andromedæ	......	61 37	59·8	9·0	18·5	27·6	2 37·2	0 2 18·42	− 0·40	−43·29	−43·34	− 3·69
	26	γ Pegasi	......	75 32	53·5	2·0	10·5	18·9	7 27·7	0 7 10·32	− 0·45	−43·29	−43·34	− 3·42
	42	......	......	86 26	38·2	46·4	54·9	2·9	10 11·4	0 9 54·76	− 0·49	......	−43·34	− 3·26
	57	......	......	89 2	28·4	36·6	45·0	52·9	12 1·5	0 11 44·88	− 0·50	......	−43·34	− 3·23
	112	12 Ceti	......	94 40	45·4	53·9	2·1	10·0	24 18·9	0 24 2·06	− 0·53	−43·29	−43·34	− 3·19
	133	......	......	70 17	12·1	21·0	29·5	38·0	27 47·4	0 27 29·60	− 0·43	......	−43·34	− 3·55
	149	......	......	77 30	31·9	40·3	49·0	57·0	30 5·7	0 29 48·78	− 0·46	......	−43·34	− 3·42
	164	δ Andromedæ	......	61 24	0·6	10·2	19·6	28·5	32 38·4	0 32 19·46	− 0·39	......	−43·34	− 3·78
	218	α Cassiopeæ	......	32 52	23·2	38·4	53·6	8·0	42 24·1	0 41 53·46	− 0·24	......	−43·34	− 5·39
	237	......	......	87 20	58·0	6·4	14·6	22·5	45 31·2	0 45 14·54	− 0·49	......	−43·34	− 3·29
	259	μ Andromedæ	......	52 12	49·9	0·3	10·6	20·9	50 31·8	0 50 10·70	− 0·35	......	−43·34	− 4·16
	290	......	......	36 29	47·6	1·8	15·6	29·9	57 43·8	0 57 15·54	− 0·26	......	−43·34	− 5·13
	360	α Ursæ Minoris	......	1 24	4·5	46·5	25·5	52·0	23 47·5	1 12 23·20	+ 4·47	......	−43·34	− 86·58
	453	η Piscium	......	75 19	52·5	1·0	9·6	17·9	25 26·8	1 25 9·56	− 0·45	−43·42	−43·34	− 3·53
	472	......	......	89 43	28·2	36·4	44·7	52·8	29 1·3	1 28 44·68	− 0·50	......	−43·34	− 3·27
	514	......	......	60 36	37·4	46·9	56·4	5·5	35 15·4	1 34 56·32	− 0·39	......	−43·34	− 3·93
	538	......	......	73 14	52·6	1·4	10·0	18·2	40 27·2	1 40 9·88	− 0·44	......	−43·34	− 3·57
	562	......	......	39 10	44·2	57·4	10·4	23·0	45 36·9	1 45 10·38	− 0·28	......	−43·34	− 5·06
	577	β Arietis	......	69 49	47·8	56·5	5·3	13·8	48 23·0	1 48 5·28	− 0·43	−43·41	−43·34	− 3·66
Oct. 11	8331	ω Piscium	......	83 51	59·4	7·4	15·9	24·0	53 32·4	23 53 15·82	− 0·43	−43·20	−43·26	− 3·26
	4	α Andromedæ	......	61 37	59·6	9·0	18·3	27·5	2 37·2	0 2 18·32	− 0·36	−43·24	−43·26	− 3·68
	26	γ Pegasi	......	75 32	53·4	1·9	10·4	18·6	7 27·4	0 7 10·34	− 0·41	−43·16	−43·26	− 3·41
	48	......	......	76 49	24·3	32·9	41·2	49·4	10 58·3	0 10 41·22	− 0·41	......	−43·26	− 3·39
	66	......	6·5	22 54	28·5	49·8	11·0	31·6	15 53·9	0 15 10·96	− 0·17	......	−43·26	− 6·56
	112	12 Ceti	......	94 40	45·4	53·8	2·0	10·0	24 18·9	0 24 2·02	− 0·47	−43·31	−43·26	− 3·19
	149	......	6·0	77 30	31·8	40·2	48·4	57·0	30 5·8	0 29 48·64	− 0·42	......	−43·26	− 3·42
	164	δ Andromedæ	......	61 24	0·6	10·0	19·4	28·2	32 38·2	0 32 19·28	− 0·36	......	−43·26	− 3·79
	177	......	7·0	81 21	50·0	58·3	6·9	14·9	35 23·6	0 35 6·74	− 0·42	......	−43·26	− 3·37
	197	......	......	42 51	27·6	40·0	52·1	3·9	38 16·3	0 37 51·98	− 0·30	......	−43·26	− 4·58

(a) Faint. Cloudy.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	interpolated.	Correction to Mean R.A. Jan. 1, 1867.
1867.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Oct. 11	218	η Cassiopeæ	4·0	32 52	23·0	38·0	53·6	8·0	42 24·9	0 41 53·32	− 0·25	....	−43·26	− 5·39
	237	....	7·0	87 20	58·0	6·2	14·5	22·4	45 31·0	0 45 14·42	− 0·44	....	−43·26	− 3·30
	290	....	7·5	36 29	47·7	1·6	15·5	29·0	57 43·5	0 57 15·46	− 0·26	....	−43·26	− 5·14
	376	....	7·0	17 48	52·0	19·4	46·0	12·0	10 40·6	1 9 46·00	− 0·09	....	−43·26	− 8·57
	360	α Ursæ Minoris	....	1 24	5·5	47·5	27·0	53·5	23 49·0	1 12 24·50	+ 3·10	....	−43·26	−86·75
	453	η Piscium	....	75 19	52·2	1·0	9·5	17·4	25 26·8	1 25 9·38	− 0·40	−43·28	−43·26	− 3·54
	514	....	7·0	60 36	37·1	46·9	56·3	5·4	35 15·4	1 34 56·22	− 0·36	....	−43·26	− 3·93
	547	(a)	....	42 45	25·0	37·2	49·5	1·1	42 14·0	1 41 49·36	− 0·30	....	−43·26	− 4·81
	577	β Arietis	....	69 49	47·7	56·4	5·1	13·8	48 23·0	1 48 5·20	− 0·39	−43·35	−43·26	− 3·68
	588	....	6·0	26 1	4·0	22·0	42·0	0·0	51 19·8	1 50 41·56	− 0·20	....	−43·26	− 6·70
	620	....	6·0	25 31	54·0	13·4	32·5	51·0	56 11·0	1 55 32·38	− 0·19	....	−43·26	− 6·80
	645	....	7·0	64 48	39·9	49·0	58·1	7·0	0 16·5	1 59 58·10	− 0·37	....	−43·26	− 3·82
Oct. 17	8331	ω Piscium	....	83 51	59·4	7·9	16·0	24·0	53 32·6	23 53 15·98	− 0·48	−43·33	−43·28	− 3·24
	4	α Andromedæ	....	61 37	59·5	9·0	18·3	27·3	2 37·2	0 2 18·26	− 0·40	−43·15	−43·28	− 3·67
	26	γ Pegasi	....	75 32	53·4	2·0	10·5	18·9	7 27·7	0 7 10·50	− 0·45	−43·29	−43·28	− 3·40
	288	ι Piscium	....	82 48	33·0	41·5	49·9	58·0	57 6·4	0 56 49·76	− 0·48	−43·32	−43·29	− 3·40
	360	α Ursæ Minoris	....	1 24	4·5	47·0	25·0	52·0	23 48·0	1 12 23·30	+ 4·69	....	−43·29	−86·93
	577	β Arietis	....	69 49	47·7	56·5	5·4	13·9	48 23·0	1 48 5·30	− 0·43	−43·35	−43·30	− 3·74
	648	α Arietis	....	67 9	10·5	19·3	28·4	37·0	0 46·5	2 0 28·34	− 0·42	−43·26	−43·30	− 3·83
Oct. 22	8331	ω Piscium	....	83 51	59·1	7·6	16·0	24·0	53 32·8	23 53 15·90	− 0·49	−43·26	−43·20	− 3·22
	4	α Andromedæ	....	61 37	59·5	9·0	18·4	27·3	2 37·1	0 2 18·26	− 0·41	−43·16	−43·20	− 3·65
	26	γ Pegasi	....	75 32	53·5	2·0	10·5	18·5	7 27·6	0 7 10·42	− 0·46	−43·22	−43·20	− 3·38
	288	ι Piscium	....	82 48	33·0	41·2	49·8	57·6	57 6·4	0 56 49·60	− 0·49	−43·15	−43·20	− 3·40
	360	(b) α Ursæ Minoris	....	1 24	4·0	44·0	26·5	50·5	....	1 12 22·54	+ 5·16	....	−43·20	−86·70
Oct. 25	4	α Andromedæ	....	61 37	59·0	8·0	17·5	26·9	2 36·5	0 2 17·58	− 0·42	−42·49	−42·55	− 3·63
	28	....	6·0	49 41	2·3	13·0	24·0	34·2	7 46·0	0 7 23·90	− 0·37	....	−42·55	− 4·01
	103	....	6·5	13 42	9·0	43·8	19·0	52·5	24 29·0	0 23 18·66	+ 0·06	....	−42·55	− 9·46
	161	δ Andromedæ	4·0	61 24	0·0	9·2	18·9	27·9	32 37·8	0 32 18·76	− 0·41	....	−42·55	− 3·78
	182	....	6·5	31 58	10·6	26·1	41·9	56·8	36 12·9	0 35 41·66	− 0·26	....	−42·55	− 5·39
	197	....	6·0	42 51	26·9	39·1	51·1	3·0	38 15·7	0 37 51·16	− 0·33	....	−42·55	− 4·56
	218	η Cassiopeæ	3·0	32 52	22·0	37·3	52·7	7·2	42 23·1	0 41 52·46	− 0·26	....	−42·55	− 5·36
	237	....	8·0	87 20	57·4	5·6	14·0	21·9	45 30·4	0 45 13·86	− 0·52	....	−42·55	− 3·31
	259	μ Andromedæ	4·0	52 12	49·0	59·4	10·0	19·9	50 31·0	0 50 9·86	− 0·37	....	−42·55	− 4·18
	288	ι Piscium	....	82 48	32·2	40·9	49·0	57·0	57 6·0	0 56 49·02	− 0·50	−42·56	−42·55	− 3·40
	376	....	7·5	17 48	51·6	18·5	45·8	11·5	10 40·0	1 9 45·48	− 0·05	....	−42·55	− 8·59
	360	α Ursæ Minoris	....	1 24	3·5	44·0	25·5	50·5	23 47·0	1 12 22·10	+ 4·56	....	−42·55	−86·39
	472	....	8·0	89 43	27·4	36·0	44·0	52·0	29 0·8	1 28 44·04	− 0·53	....	−42·55	− 3·35
	514	....	6·5	60 36	36·8	46·2	55·9	4·9	35 14·9	1 34 55·74	− 0·41	....	−42·55	− 4·04
	588	....	....	26 1	4·4	22·8	41·2	59·6	51 19·4	1 50 41·48	− 0·19	....	−42·55	− 6·88
	620	....	6·5	25 31	53·9	13·0	32·1	50·5	56 10·8	1 55 32·06	− 0·18	....	−42·55	− 7·01
	648	α Arietis	....	67 9	9·9	18·9	27·9	36·6	0 46·0	2 0 27·86	− 0·44	−42·69	−42·55	− 3·90
	694	....	8·0	26 11	47·0	5·7	24·5	42·2	10 2·1	2 9 24·30	− 0·20	....	−42·55	− 6·95
	702	....	8·0	26 16	14·5	33·2	51·9	9·8	11 29·5	2 10 51·78	− 0·20	....	−42·55	− 6·95
	760	ξ² Ceti	....	82 8	35·2	43·8	52·0	0·0	22 8·8	2 21 51·96	− 0·49	−42·49	−42·55	− 3·53
	776	....	7·0	88 19	7·4	15·8	24·0	31·9	25 40·4	2 25 23·90	− 0·52	....	−42·55	− 3·41
	793	....	7·5	83 45	17·5	25·9	34·1	42·0	29 50·9	2 29 34·08	− 0·50	....	−42·55	− 3·50
	920	....	....	68 54	45·0	54·0	3·0	11·4	52 20·8	2 52 2·84	− 0·45	....	−42·55	− 3·86
	949	α Ceti	....	86 25	49·8	58·0	6·1	14·1	56 23·0	2 56 6·20	− 0·51	−42·54	−42·55	− 3·43

(a) Double, 8th and 9th mags. (b) Cloudy.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1867.
1867				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Oct. 29	112	12 Ceti	....	94 40	45·3	53·7	2·0	9·9	24 18·6	0 24 1·90	− 0·50	−43·19	−43·12	− 3·15
	288	ι Piscium	....	82 49	33·0	41·2	49·5	57·4	57 6·2	0 56 49·46	− 0·45	−43·05	−43·12	− 3·40
	360	α Ursæ Minoris	....	1 21	3·5	45·5	26·0	50·5	23 49·[illegible]	1 12 22·90	+ 3·78	....	−43·12	−85·79
	453	η Piscium	....	75 19	52·2	0·9	9·4	17·5	25 26·4	1 25 9·28	− 0·43	−43·07	−43·12	− 3·62
	482	....	6·0	32 42	46·0	1·1	16·4	31·2	30 47·1	1 30 16·36	− 0·24	....	−43·12	− 5·78
	514	....	7·0	60 36	37·3	46·8	56·2	5·2	35 15·1	1 34 56·12	− 0·37	....	−43·12	− 4·05
	577	β Arietis	....	69 49	47·7	56·4	5·1	13·6	48 23·0	1 48 5·16	− 0·41	−43·16	−43·12	− 3·81
	588	....	6·0	26 1	4·0	23·0	41·8	[illegible]	51 19·8	1 50 41·72	− 0·18	....	−43·12	− 6·91
	620	....	7·0	25 31	54·0	13·4	32·6	51·0	56 11·1	1 55 32·42	− 0·17	....	−43·12	− 7·01
	648	α Arietis	....	67 9	10·3	19·3	28·2	37·0	0 46·4	2 [illegible] 28·24	− 0·40	−43·09	−43·12	− 3·92
	764	....	6·5	81 1	0·0	8·2	16·5	24·7	23 33·4	2 23 16·56	− 0·45	....	−43·12	− 3·59
	776	....	6·0	88 19	8·0	16·2	24·6	32·6	25 41·1	2 25 24·50	− 0·47	....	−43·12	− 3·44
	793	....	6·0	83 45	18·0	26·3	34·7	42·7	29 51·2	2 29 34·58	− 0·46	....	−43·12	− 3·53
	837	γ Ceti	....	87 18	55·1	3·5	11·9	19·8	37 28·5	2 37 11·76	− 0·47	−43·18	−43·12	− 3·46
	881	ε Arietis	6·0	75 27	39·5	48·0	56·6	4·8	45 13·8	2 44 56·54	− 0·43	....	−43·12	− 3·72
	891	(a)	....	84 4	8·2	16·4	25·0	32·8	46 41·6	2 46 24·60	− 0·46	....	−43·12	− 3·53
	920	....	7·5	68 54	45·8	54·6	3·6	12·0	52 21·2	2 52 3·44	− 0·41	....	−43·12	− 3·91
	949	α Ceti	....	86 25	50·2	58·5	6·8	14·8	56 23·6	2 56 6·78	− 0·46	−43·12	−43·12	− 3·48
	962	ι Persei	3·0	40 53	52·4	5·2	17·9	30·0	[illegible] 43·2	3 0 17·74	− 0·28	....	−43·12	− 5·30
	980	....	7·0	63 36	2·8	12·0	21·1	30·0	3 39·7	3 3 21·12	− 0·39	....	−43·12	− 4·08
Nov. 1	453	η Piscium	....	75 19	52·9	1·1	9·7	18·6	25 27·0	1 25 9·74	− 0·42	−43·64	−43·43	− 3·62
	472	....	7·0	69 43	28·1	36·6	45·0	52·9	29 1·4	1 28 44·80	− 0·46	....	−43·43	− 3·37
	516	....	6·0	55 25	50·8	0·9	10·8	20·3	35 31·0	1 35 10·76	− 0·35	....	−43·42	− 4·26
	547	(b)	....	42 45	25·3	37·5	49·6	1·3	42 14·1	1 41 49·56	− 0·30	....	−43·42	− 4·96
	577	β Arietis	....	69 49	48·0	56·7	5·4	14·[illegible]	48 23·2	1 48 5·46	− 0·41	−43·44	−43·42	− 3·83
	598	....	7·0	26 1	3·9	23·3	42·1	59·9	51 19·0	1 50 41·82	− 0·19	....	−43·42	− 6·92
	620	....	7·0	25 31	54·5	13·8	33·0	51·5	56 11·5	1 55 32·86	− 0·18	....	−43·42	− 7·05
	648	α Arietis	....	67 9	10·9	19·7	28·4	37·2	[illegible] 46·5	2 0 28·54	− 0·39	−43·38	−43·41	− 3·94
	694	....	7·5	26 11	47·5	6·2	25·0	43·0	10 3·0	2 9 24·94	− 0·19	....	−43·41	− 7·03
	702	....	7·5	26 16	15·2	33·9	52·8	10·5	11 30·0	2 10 52·48	− 0·19	....	−43·41	− 7·02
	718	....	7·0	33 21	52·6	7·4	22·7	37·0	13 53·0	2 13 22·54	− 0·25	....	−43·41	− 3·97
	738	....	6·0	80 19	34·0	42·4	51·0	59·0	18 7·7	2 17 50·82	− 0·43	....	−43·40	− 3·62
	760	ξ² Ceti	....	82 8	36·2	44·4	52·9	0·9	22 9·5	2 21 52·78	− 0·43	−43·31	−43·40	− 3·59
	776	....	6·0	88 19	8·3	16·4	25·0	33·0	25 41·5	2 25 24·84	− 0·46	....	−43·40	− 3·46
	793	....	7·0	83 45	18·3	26·5	35·0	43·0	29 51·7	2 29 34·90	− 0·44	....	−43·40	− 3·[illegible]
	881	ε Arietis	....	75 27	39·8	48·4	56·8	5·0	45 14·0	2 44 56·80	− 0·42	....	−43·39	− 3·75
	891	(c)	....	84 4	8·8	17·0	25·2	33·2	46 42·0	2 46 25·24	− 0·44	....	−43·39	− 3·56
	920	....	7·0	68 54	46·0	54·8	3·8	12·2	52 21·6	2 52 3·68	− 0·40	....	−43·39	− 3·94
	949	α Ceti	....	86 25	50·5	58·9	7·1	15·0	56 23·8	2 56 7·06	− 0·45	−43·36	−43·39	− 3·51
	962	ι Persei	4·0	40 53	53·0	5·5	18·0	30·2	0 43·8	3 0 18·10	− 0·29	....	−43·38	− 5·35
	980	....	6·0	63 36	3·0	12·1	21·5	30·3	3 40·0	3 3 21·38	− 0·39	....	−43·38	− 4·12
Nov. 4	288	(d) ι Piscium	....	82 48	32·9	41·0	49·2	57·2	57 6·0	0 56 49·26	− 0·46	−42·85	−42·84	− 3·39
	370	....	7·0	17 48	51·5	19·0	45·8	11·8	10 40·2	1 9 45·66	− 0·02	....	−42·84	− 8·49
	360	α Ursæ Minoris	....	1 24	......	44·5	23·[illegible]	47·5	....	1 12 20·70	+ 4·36	....	−42·84	−84·47
	453	η Piscium	....	75 19	52·4	0·7	9·1	17·3	25 26·4	1 25 9·18	− 0·42	−42·97	−42·83	− 3·63
	482	....	6·0	32 42	45·6	1·0	16·0	31·0	30 47·0	1 30 16·12	− 0·22	....	−42·83	− 5·78
	516	....	6·0	55 25	50·[illegible]	0·2	10·3	19·9	35 30·4	1 35 10·16	− 0·35	....	−42·83	− 4·26
	577	β Arietis	....	69 49	47·2	56·0	5·0	13·4	48 22·6	1 48 4·84	− 0·41	−42·81	−42·82	− 3·84
	648	α Arietis	....	67 9	10·0	19·0	27·9	36·8	0 45·0	2 0 27·94	− 0·39	−42·73	−42·82	− 3·96

(a) Double. (b) Double, 9th and 10th mags. (c) Double, 10th mag. (d) Definition bad. Stars unsteady all night.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1867.
1867.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Nov. 4	704	67 Ceti	....	97 1	51·0	59·4	7·7	15·9	11 24·5	2 11 7·70	− 0·51	−42·65	−42·82	− 3·34
	718	....	7·0	33 21	52·0	7·1	22·0	36·5	13 52·2	2 13 21·96	− 0·23	....	−42·82	− 6·00
	738	....	8·0	80 19	33·8	42·0	50·2	58·6	18 7·1	2 17 50·34	− 0·45	....	−42·82	− 3·63
	764	....	6·5	81 1	59·8	8·0	16·4	24·4	23 33·2	2 23 16·36	− 0·45	....	−42·82	− 3·63
	831	....	6·5	64 55	37·5	46·9	56·0	4·7	37 14·3	2 36 55·88	− 0·38	....	−42·81	− 4·08
	881	σ Arietis	6·0	75 27	39·2	47·9	56·2	4·4	45 13·4	2 44 56·22	− 0·42	....	−42·81	− 3·78
	891	(a)	....	84 4	8·0	16·2	24·8	32·5	46 41·2	2 46 24·54	− 0·46	....	−42·81	− 3·58
	949	α Ceti	....	86 25	50·0	58·2	6·4	14·5	56 23·2	2 56 6·46	− 0·47	−42·74	−42·81	− 3·53
	962	ι Persei	4·0	40 53	52·0	5·0	17·8	30·0	0 43·0	3 0 17·56	− 0·28	....	−42·81	− 5·39
	980	....	7·0	63 36	2·4	11·6	21·0	30·0	3 39·4	3 3 20·88	− 0·39	....	−42·80	− 4·15
	1057	....	4·5	81 26	10·0	18·1	26·4	34·1	18 43·2	3 18 26·42	− 0·45	....	−42·80	− 3·64
Nov. 6	376	....	7·0	17 48	51·2	18·0	45·0	11·1	10 39·6	1 8 44·98	− 0·13	....	−42·39	− 8·46
	360	α Ursæ Minoris	....	1 24	4·0	44·5	24·0	50·0	23 47·0	1 12 21·90	+ 1·87	....	−42·39	−83·91
	453	η Piscium	....	75 19	51·5	0·0	8·6	16·8	25 25·8	1 25 8·54	− 0·35	−42·40	−42·38	− 3·63
	482	....	6·0	32 42	45·0	0·4	15·7	30·3	30 46·5	1 30 15·58	− 0·23	....	−42·38	− 5·77
	516	....	5·5	55 25	49·8	59·8	9·8	19·5	35 29·9	1 35 9·76	− 0·30	....	−42·38	− 4·26
	547	(b)	....	42 45	24·2	36·5	48·8	0·3	42 13·0	1 41 48·56	− 0·26	....	−42·38	− 4·97
	577	β Arietis	....	69 49	46·9	55·6	4·4	12·8	48 22·0	1 48 4·34	− 0·34	−42·37	−42·37	− 3·85
	626	....	7·0	7 3	31·6	39·0	46·0	53·2	0 1·2	1 57 46·20	+ 0·13	....	−42·37	−19·88
	702	....	7·0	26 16	14·0	32·9	51·8	9·5	11 29·4	2 10 51·52	− 0·19	....	−42·36	− 7·05
	738	....	8·0	80 19	33·0	41·4	50·0	58·0	18 6·7	2 17 49·82	− 0·36	....	−42·36	− 3·64
	764	....	6·5	81 1	59·0	7·5	15·9	24·0	23 32·7	2 23 15·82	− 0·37	....	−42·36	− 3·64
	837	γ Ceti	....	87 18	54·4	2·6	11·0	19·0	37 27·6	2 37 10·92	− 0·39	−42·37	−42·35	− 3·51
	949	α Ceti	....	86 25	49·5	57·7	6·0	14·0	56 22·7	2 56 5·98	− 0·38	−42·33	−42·35	− 3·55
Nov. 8	577	β Arietis	....	69 49	46·4	55·2	4·0	12·4	48 21·8	1 48 3·96	− 0·35	−41·98	−41·94	− 3·85
	626	....	7·0	7 3	31·5	39·0	46·0	51·0	0 1·2	1 57 45·74	+ 0·27	....	−41·94	−19·84
	704	67 Ceti	....	97 1	50·0	58·5	6·8	14·9	11 23·4	2 11 6·72	− 0·42	−41·95	−41·93	− 3·35
	760	ξ² Ceti	....	82 8	34·8	43·0	51·3	59·4	22 8·1	2 21 51·32	− 0·38	−41·88	−41·93	− 3·63
	837	γ Ceti	....	87 18	54·0	2·2	10·4	18·5	37 27·2	2 37 10·46	− 0·39	−41·89	−41·92	− 3·53
	949	α Ceti	....	86 25	49·0	57·2	5·6	13·6	56 22·2	2 56 5·52	− 0·39	−41·84	−41·92	− 3·57
	965	....	8·0	6 37	18·4	57·0	5·0	10·5	5 22·5	3 3 4·68	+ 0·29	....	−41·91	−21·72
	1057	ο Tauri	....	81 26	8·9	17·1	25·6	33·4	18 42·3	3 18 25·46	− 0·37	....	−41·91	− 3·63
	1087	f Tauri	....	77 31	1·0	9·8	18·0	26·2	21 35·1	3 21 18·02	− 0·36	....	−41·91	− 3·78
	1101	....	8·0	58 45	49·1	59·0	8·6	17·9	28 28·0	3 28 8·52	− 0·30	....	−41·91	− 4·40
	1126	11 Tauri	7·0	65 6	18·0	27·3	36·4	45·1	33 55·0	3 33 36·36	− 0·32	....	−41·91	− 4·15
	1166	η Tauri	....	66 17	3·4	12·3	21·3	30·0	40 39·5	3 40 21·30	− 0·33	−41·92	−41·91	− 4·11
Nov. 9	704	67 Ceti	....	97 1	50·0	58·2	6·4	14·3	11 23·0	2 11 6·38	− 0·46	−41·57	−41·54	− 3·35
	760	ξ² Ceti	....	82 8	34·4	42·6	51·0	59·0	22 7·7	2 21 50·94	− 0·40	−41·46	−41·54	− 3·64
	837	γ Ceti	....	87 18	53·8	2·0	10·1	18·1	37 26·9	2 37 10·18	− 0·43	−41·57	−41·53	− 3·53
	949	α Ceti	....	86 25	48·8	57·0	5·2	13·2	56 22·0	2 56 5·24	− 0·42	−41·53	−41·52	− 3·57
	986	δ Arietis	....	70 46	30·0	39·0	47·5	56·0	5 5·2	3 4 47·54	− 0·37	−41·53	−41·52	− 3·99
Nov. 11	288	ι Piscium	....	82 48	30·9	39·1	47·3	55·5	57 4·0	0 56 47·36	− 0·43	−41·00	−40·98	− 3·37
	379	....	7·0	22 52	20·5	41·8	3·0	23·4	10 46·0	1 10 2·94	− 0·07	....	−40·97	− 6·99
	360	α Ursæ Minoris	....	1 24	59·5	38·0	18·0	44·0	23 42·0	1 12 16·10	+ 4·84	....	−40·97	−82·28
	403	....	8·0	17 50	4·5	32·0	58·6	21·6	15 53·0	1 14 58·54	+ 0·03	....	−40·97	− 8·45
	453	η Piscium	....	75 19	50·0	58·8	7·2	15·4	25 24·4	1 25 7·16	− 0·40	−40·98	−40·96	− 3·62
	525	....	8·0	33 7	48·8	4·0	19·0	33·8	36 49·7	1 36 19·06	− 0·18	....	−40·96	− 5·76

(a) Double. (b) Double, 9th and 11th mags.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1867.
1867.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Nov. 11	577	β Arietis	....	69 49	45·5	54·2	3·0	11·4	48 20·8	1 48 2·98	− 0·38	−40·97	−40·95	− 3·85
	648	α Arietis	....	67 9	8·1	17·1	26·1	34·8	0 44·2	2 0 26·06	− 0·37	−40·89	−40·95	− 3·97
Nov. 13	1883	α Orionis	....	82 37	26·0	34·5	43·0	50·9	48 59·6	5 48 42·80	− 0·42	−40·59	−40·63	− 3·48
	1958	ν Orionis	....	75 13	26·4	34·9	43·4	51·8	1 0·6	6 [illegible] 43·12	− 0·38	−40·76	−40·62	− 3·59
	2047	μ Geminorum	....	67 25	21·6	30·7	39·6	48·0	15 57·7	6 15 39·52	− 0·36	−40·59	−40·62	− 3·72
	2163	γ Geminorum	....	73 29	29·0	37·4	46·0	54·5	31 3·5	[illegible] 30 46·08	− 0·38	−40·54	−40·61	− 3·49
Nov. 17	288	ι Piscium	....	82 48	30·0	38·4	46·8	54·5	57 3·5	0 56 46·64	− 0·39	−40·35	−40·38	− 3·31
	453	η Piscium	....	75 19	49·4	58·0	6·5	14·8	25 24·0	1 25 6·54	− 0·36	−40·41	−40·38	− 3·61
	518	ν Piscium	....	85 10	58·5	6·7	15·0	22·8	35 31·6	1 35 14·92	− 0·40	−40·41	−40·37	− 3·45
	577	β Arietis	....	69 49	44·8	53·5	2·3	11·0	48 20·1	1 48 2·34	− 0·34	−40·37	−40·37	− 3·85
	648	α Arietis	....	67 9	7·8	16·4	25·4	34·2	0 43·5	2 0 25·46	− 0·32	−40·[illegible]	−40·36	− 3·98
Nov. 18	704	67 Ceti	....	97 1	48·4	56·6	5·0	13·0	11 21·9	2 11 4·98	− 0·41	−40·21	−40·19	− 3·36
	760	ξ² Ceti	....	82 8	33·0	41·2	49·5	57·5	22 6·4	2 21 49·52	− 0·36	−40·06	−40·19	− 3·66
	837	γ Ceti	....	87 18	52·2	0·4	8·9	16·9	37 25·4	2 37 8·76	− 0·37	−40·17	−40·18	− 3·57
	949	α Ceti	....	86 25	47·3	55·6	3·9	11·9	56 20·6	2 56 3·86	− 0·37	−40·14	−40·18	− 3·63
	965	....	8·0	6 57	47·6	56·0	3·8	9·6	5 21·0	3 3 3·60	+ 0·52	....	−40·18	−21·93
	1055	....	8·0	68 25	18·0	26·9	35·8	44·2	17 53·6	3 17 35·70	− 0·31	....	−40·18	− 4·13
	1087	f Tauri	5·0	77 31	59·5	8·0	16·4	24·5	24 33·4	3 21 16·42	− 0·34	....	−40·17	− 3·88
	1101	....	7·0	58 45	47·6	57·3	7·0	16·3	28 26·4	3 [illegible] 6·92	− 0·27	....	−40·17	− 4·51
	1126	11 Tauri	6·0	65 6	16·6	25·9	34·9	43·6	[illegible] 53·1	3 33 34·86	− 0·29	....	−40·17	− 4·27
	1166	η Tauri	....	66 17	1·8	10·5	19·8	28·4	40 38·0	3 40 19·70	− 0·30	−40·23	−40·17	− 4·23
Nov. 19	360	α Ursæ Minoris	....	1 24	......	......	16·0	40·0	23 43·0	1 12 13·80	+ 2·82	....	−40·12	−78·97
	453	η Piscium	....	75 19	49·1	58·0	6·2	14·4	25 23·3	1 25 6·20	− 0·30	−40·14	−40·12	− 3·60
	525	....	7·0	33 7	48·0	3·1	18·2	32·9	36 48·5	1 36 18·14	− 0·15	....	−40·12	− 5·70
	547	....	....	42 45	22·0	34·0	46·2	55·0	42 11·0	1 41 46·24	− [illegible]·21	....	−40·12	− 4·94
	577	β Arietis	....	69 49	44·5	53·2	2·1	10·6	48 19·9	1 48 2·06	− 0·29	−40·15	−40·12	− 3·84
	645	....	8·0	64 48	37·0	46·0	55·0	3·8	0 13·5	1 59 55·06	− 0·27	....	−40·11	− 4·[illegible]
	721	....	5·5	34 45	23·5	38·0	52·7	6·6	14 22·0	2 13 52·56	− 0·17	....	−40·11	− 5·67
	837	γ Ceti	....	87 18	52·0	0·3	8·9	16·6	37 25·3	2 37 8·62	− 0·34	−40·06	−40·11	− 3·57
	949	α Ceti	....	86 25	47·2	55·6	4·0	11·9	56 20·5	2 56 3·84	− 0·34	−40·14	−40·11	− 3·64
	965	....	8·0	6 57	46·0	55·0	3·5	9·0	5 21·5	3 3 3·00	+ 0·37	....	−40·11	−21·94
	1055	....	8·0	68 25	17·8	26·6	35·5	44·2	17 53·5	3 17 35·52	− [illegible]·28	....	−40·11	− 4·14
	1087	(a) f Tauri	5·0	77 31	59·4	8·0	16·4	24·4	24 33·3	3 24 16·30	− 0·31	....	−40·10	− 3·88
	1101	....	....	56 45	47·4	57·0	7·0	16·0	28 26·0	3 28 6·68	− 0·26	....	−40·10	− 4·52
	1126	11 Tauri	....	65 [illegible]	16·4	25·4	34·8	43·4	33 53·0	3 33 34·60	− 0·27	....	−40·10	− 4·28
	1166	η Tauri	....	66 17	1·5	10·4	19·5	28·2	40 37·9	3 40 19·50	− 0·27	−40·08	−40·10	− 4·24
Nov. 22	6355	α Lyræ	....	51 20	44·6	55·4	6·0	16·2	33 27·4	18 33 5·92	− 0·21	−39·35	−39·33	− 0·22
	6429	β Lyræ	....	56 47	30·4	40·4	50·2	0·0	46 10·3	18 46 50·26	− 0·24	−39·32	−39·33	− 0·51
	577	β Arietis	....	69 49	43·6	52·2	1·0	9·7	48 19·0	1 48 1·10	− 0·29	−39·20	−39·28	− 3·83
	645	....	8·0	64 48	36·0	45·1	54·2	3·0	0 12·6	1 59 54·18	− 0·26	....	−39·28	− 4·03
	721	....	5·0	34 45	22·8	37·1	51·9	5·6	14 21·0	2 13 51·68	− [illegible]·15	....	−39·28	− 5·86
	760	ξ² Ceti	....	82 8	32·0	40·2	48·9	56·7	22 5·5	2 21 48·66	− 0·32	−39·25	−39·28	− 3·66
	837	γ Ceti	....	87 18	51·0	59·5	7·8	16·0	37 24·5	2 37 7·76	− 0·34	−39·19	−39·27	− 3·58
	949	α Ceti	....	86 25	46·3	54·8	3·0	11·0	56 19·9	2 56 3·00	− 0·34	−39·30	−39·27	− 3·64
	1055	....	7·0	68 25	17·0	26·0	34·8	43·4	17 52·6	3 17 34·76	− 0·27	....	−39·27	− 4·16
	1166	η Tauri	....	66 17	0·9	9·8	18·8	27·5	40 37·0	3 40 18·80	− 0·26	−39·33	−39·27	− 4·27

(a) Definition becoming very bad.

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1867.				° ′	s.	s.	s.	s.	m s	h. m. s.	s.	s.	s.	s.
Nov. 22	1282	....	....	41 15	12·0	24·6	37·0	49·3	5 2·2	4 4 37·02	− 0·18	....	− 39·27	− 5·67
	1318	....	6·0	33 49	19·3	34·5	49·3	3·4	12 19·0	4 11 49·10	− 0·14	....	− 39·26	− 6·45
	1347	....	....	65 54	54·1	3·2	12·3	21·0	16 30·4	4 16 12·20	− 0·26	....	− 39·26	− 4·29
	1361	....	....	71 16	38·7	47·3	56·0	4·4	18 13·5	4 17 55·98	− 0·29	....	− 39·26	− 4·12
	1376	ε Tauri	....	71 6	17·4	26·2	35·0	43·3	21 52·5	4 21 34·88	− 0·29	− 39·32	− 39·26	− 4·12
	1420	α Tauri............	....	73 45	44·0	52·5	1·0	9·2	29 18·4	4 29 1·02	− 0·30	− 39·21	− 39·26	− 4·04
Nov. 26	6355	α Lyræ............	....	51 20	44·0	54·8	5·2	15·4	33 26·6	18 33 5·20	− 0·20	− 38·70	− 38·74	− 0·17
	6429	β Lyræ............	....	56 47	30·0	39·8	49·7	59·2	46 9·6	18 45 49·66	− 0·22	− 38·79	− 38·74	− 0·46
	403	....	....	17 50	2·2	29·3	56·0	22·4	15 50·0	1 14 55·98	− 0·04	....	− 38·70	− 8·13
	453	η Piscium............	....	75 19	47·6	56·1	4·9	13·0	25 21·9	1 25 4·70	− 0·28	− 38·69	− 38·70	− 3·57
	525	....	7·0	33 7	46·3	1·8	16·9	31·2	36 47·0	1 36 16·61	− 0·12	....	− 38·70	− 5·66
	577	β Arietis............	....	69 49	43·0	51·9	0·5	9·0	48 18·3	1 48 0·54	− 0·28	− 38·66	− 38·70	− 3·82
	721	....	6·0	34 45	22·0	36·6	51·0	5·0	14 20·5	2 13 51·02	− 0·13	....	− 38·69	− 5·86
	934	....	6·5	64 55	33·4	42·4	51·7	0·4	37 10·0	2 36 51·58	− 0·25	....	− 38·69	− 4·18
	949	α Ceti............	....	86 25	46·0	54·0	2·4	10·4	56 19·0	2 56 2·36	− 0·33	− 38·65	− 38·69	− 3·66
	985	....	8·0	15 14	42·0	13·4	45·0	15·0	6 48·0	3 5 44·68	+ 0·09	....	− 38·68	− 11·32
	1057	....	4·0	61 26	5·7	14·0	22·2	30·2	18 39·1	3 18 22·24	− 0·31	....	− 38·68	− 3·82
	1166	η Tauri............	....	66 17	0·0	9·1	18·1	27·0	40 36·3	3 40 18·10	− 0·25	− 38·61	− 38·68	− 4·30
	1282	....	8·5	41 15	11·8	24·2	36·9	48·8	5 2·0	4 4 36·74	− 0·10	....	− 38·68	− 5·72
	1318	....	6·0	33 49	18·9	33·9	48·8	3·0	12 18·5	4 11 48·62	− 0·12	....	− 38·68	− 6·52
	1347	....	8·0	65 54	53·7	2·8	11·8	20·3	16 29·9	4 16 11·70	− 0·25	....	− 38·68	− 4·34
	1361	....	6·0	71 16	38·0	46·6	55·4	3·9	18 13·0	4 17 55·38	− 0·28	....	− 38·67	− 4·16
	1376	ε Tauri............	....	71 6	16·9	25·4	34·2	42·8	21 52·0	4 21 34·26	− 0·28	− 38·65	− 38·67	− 4·18
	1420	α Tauri............	....	73 45	43·2	52·0	0·4	8·8	29 17·8	4 29 0·44	− 0·29	− 38·59	− 38·67	− 4·09
Nov. 27	6355	α Lyræ	....	51 20	44·0	54·4	5·1	15·2	33 26·4	18 33 5·02	− 0·20	− 38·53	− 38·53	− 0·16
	6429	β Lyræ............	....	56 47	29·7	39·7	49·4	59·0	46 9·4	18 45 49·44	− 0·22	− 38·58	− 38·53	− 0·15
	986	δ Arietis............	....	70 46	27·0	35·8	44·4	53·0	5 2·0	3 4 44·44	− 0·28	− 38·41	− 38·47	− 4·10
	1166	η Tauri............	....	66 17	0·0	9·0	18·0	26·7	40 36·2	3 40 17·98	− 0·25	− 38·48	− 38·47	− 4·31
	1282	....	....	41 15	11·2	24·0	36·5	48·3	5 1·7	4 4 36·31	− 0·15	....	− 38·47	− 5·74
	1347	....	....	65 54	53·4	2·4	11·3	20·0	16 29·5	4 16 11·32	− 0·25	....	− 38·47	− 4·36
	1361	....	....	71 16	37·7	46·4	55·1	3·4	18 12·8	4 17 55·08	− 0·28	....	− 38·47	− 4·18
	1376	ε Tauri	....	71 6	16·5	25·3	34·1	42·4	21 51·8	4 21 34·02	− 0·28	− 38·40	− 38·47	− 4·19
	1420	α Tauri............	....	73 45	43·1	51·7	0·2	8·4	29 17·5	4 20 0·18	− 0·29	− 38·32	− 38·46	− 4·10
	1434	....	....	77 45	9·2	17·8	26·1	34·3	31 43·2	4 31 26·12	− 0·30	....	− 38·46	− 3·99
	1459	....	....	34 35	29·2	44·0	58·5	12·4	38 27·7	4 37 56·36	− 0·12	....	− 38·46	− 6·42
	1491	....	....	81 19	48·0	56·1	4·5	12·6	44 21·3	4 44 4·50	− 0·31	....	− 38·46	− 3·89
	1501	....	....	31 23	7·8	22·2	37·0	51·0	47 8·4	4 46 36·86	− 0·10	....	− 38·46	− 6·43
	1520	ι Aurigæ............	....	57 2	43·9	53·8	3·7	13·0	49 23·5	4 49 3·58	− 0·22	− 38·54	− 38·46	− 4·70
Dec. 4	1420	α Tauri............	....	73 45	43·0	51·5	0·0	8·3	29 17·2	4 29 0·00	− 0·28	− 38·08	− 38·17	− 4·17
	1520	ι Aurigæ............	....	57 2	43·8	53·6	3·4	13·0	49 23·2	4 49 3·40	− 0·21	− 38·27	− 38·16	− 4·80
	1623	β Orionis	....	98 21	34·0	42·6	51·0	59·0	9 7·6	5 6 50·88	− 0·37	− 38·12	− 38·16	− 3·61
	1681	β Tauri............	....	61 30	17·5	27·0	36·2	45·2	18 55·0	5 18 36·18	− 0·23	− 38·18	− 38·16	− 4·58
	1730	δ Orionis............	....	90 23	38·5	46·8	55·0	3·8	26 11·7	5 25 55·00	− 0·34	− 38·15	− 38·16	− 3·76
	1765	ε Orionis	....	91 17	53·8	1·9	10·1	18·0	30 26·9	5 30 10·14	− 0·34	− 38·19	− 38·15	− 3·73
Dec. 6	1420	α Tauri	....	73 45	43·1	51·6	0·1	8·4	29 17·5	4 29 0·14	− 0·29	− 38·19	− 38·20	− 4·19
	1520	ι Aurigæ............	....	57 2	43·9	53·9	3·6	13·0	49 23·4	4 49 3·54	− 0·22	− 38·37	− 38·20	− 4·83
	1623	β Orionis............	....	98 21	34·3	42·7	51·0	59·0	9 7·6	5 8 50·92	− 0·38	− 38·12	− 38·20	− 3·64

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1867.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Dec. 6	1681	β Tauri	....	61 30	17·6	27·0	36·4	45·4	18 55·2	5 18 36·32	− 0·25	− 38·27	− 38·20	− 4·61
	1730	δ Orionis	....	90 23	38·6	46·6	55·0	3·0	26 11·8	5 25 55·00	− 0·36	− 38·10	− 38·20	− 3·79
	1765	ε Orionis	....	91 17	53·8	2·0	10·1	18·0	30 26·9	5 30 10·16	− 0·36	− 38·15	− 38·20	− 3·77
Dec. [illegible]	1420	(a) α Tauri	....	73 45	43·2	51·9	0·4	8·8	29 17·8	4 29 0·42	− 0·31	− 38·43	− 38·37	− 4·21
	1520	ι Aurigæ	....	57 2	44·0	54·0	3·8	13·1	49 23·[illegible]	4 49 3·70	− 0·22	− 38·50	− 38·37	− 4·86
	1623	β Orionis	....	98 21	34·4	42·8	51·3	59·2	9 8·0	5 8 51·14	− 0·40	− 38·29	− 38·36	− 3·67
	1681	β Tauri	....	61 30	17·6	27·1	36·5	45·4	18 55·3	5 18 36·38	− 0·26	− 38·28	− 38·36	− 4·65
	1730	δ Orionis	....	90 23	39·0	47·0	55·4	3·1	26 12·0	5 25 55·30	− 0·37	− 38·36	− 38·36	− 3·82
	1765	ε Orionis	....	91 17	54·0	2·2	10·4	18·3	30 27·0	5 30 10·38	− 0·37	− 38·33	− 38·36	− 3·80
Dec. 10	1166	η Tauri	....	66 17	0·0	9·1	18·0	26·9	40 36·0	3 40 18·00	− 0·27	− 38·42	− 38·32	− 4·37
	1623	β Orionis	....	98 21	34·5	42·8	51·1	59·2	9 8·1	5 8 51·14	− 0·40	− 38·28	− 38·31	− 3·68
	1681	β Tauri	....	61 30	17·8	27·0	36·5	45·4	18 55·4	5 18 36·42	− 0·26	− 38·30	− 38·31	− 4·67
	1730	δ Orionis	....	90 23	38·8	47·0	55·2	3·0	26 12·0	5 25 55·20	− 0·37	− 38·25	− 38·31	− 3·83
	1765	ε Orionis	....	91 17	54·0	2·1	10·4	18·4	30 27·0	5 30 10·38	− 0·37	− 38·32	− 38·31	− 3·81
	1883	α Orionis	....	82 37	24·3	32·5	41·0	49·0	48 57·8	5 48 40·92	− 0·34	− 38·29	− 38·30	− 3·98
Dec. 11	1318	....	....	33 49	18·8	33·8	48·5	2·8	12 18·4	4 11 48·46	− 0·10	....	− 38·21	− 6·67
	1347	....	....	65 34	53·3	2·3	11·4	20·1	16 29·6	4 16 11·31	− 0·27	....	− 38·24	− 4·47
	1361	....	....	71 10	37·8	46·4	55·1	3·4	18 12·7	4 17 55·08	− 0·29	....	− 38·24	− 4·29
	1376	ε Tauri	....	71 6	16·5	25·2	34·1	42·4	21 51·5	4 21 33·94	− 0·29	− 38·19	− 38·23	− 4·31
	1420	α Tauri	....	73 45	43·1	51·5	0·1	8·5	29 17·5	4 29 0·14	− 0·31	− 38·13	− 38·23	− 4·[illegible]
	1434	....	....	77 45	9·5	17·9	26·3	34·2	31 43·1	4 31 26·20	− 0·32	....	− 38·23	− 4·12
	1459	....	....	34 38	29·2	44·0	58·5	12·4	38 27·9	4 37 58·40	− 0·12	....	− 38·23	− 6·62
	1491	....	....	81 19	47·9	56·1	4·4	12·4	44 21·3	4 44 4·42	− 0·33	....	− 38·23	− 4·03
	1501	....	....	34 23	7·9	22·4	37·[illegible]	51·2	47 6·5	4 46 37·00	− 0·10	....	− 38·23	− 6·65
	1520	ι Aurigæ	....	57 2	43·9	53·8	3·6	13·0	49 23·4	4 49 3·54	− 0·22	− 38·32	− 38·[illegible]	− 4·88
	1626	....	....	49 41	45·5	56·4	7·3	17·8	10 29·0	5 10 7·20	− 0·21	....	− 38·22	− 5·28
	1656	....	....	81 42	55·2	3·4	12·0	19·[illegible]	15 28·6	5 15 11·82	− 0·33	....	− 38·22	− 4·04
	1681	β Tauri	....	61 30	17·5	27·0	36·4	45·4	18 55·3	5 18 36·32	− 0·26	− 38·19	− 38·22	− 4·68
	1730	δ Orionis	....	90 23	38·8	47·0	55·4	3·2	26 12·0	5 25 55·28	− 0·37	− 38·32	− 38·[illegible]	− 3·84
	1765	ε Orionis	....	91 17	54·0	2·0	10·4	18·2	30 27·0	5 30 10·32	− 0·37	− 38·25	− 38·22	− 3·82
Dec. 12	949	α Ceti	....	86 25	45·1	53·4	1·7	9·9	56 18·2	2 56 1·66	− 0·35	− 37·[illegible]	− 37·96	− 3·66
	985	....	....	13 14	41·0	12·7	44·0	14·5	6 47·5	3 5 43·94	+ 0·17	....	− 37·96	− 11·10
	1376	ε Tauri	....	71 6	16·2	25·0	33·9	42·1	21 51·4	4 21 33·72	− 0·30	− 37·95	− 37·96	− 4·32
	1420	α Tauri	....	73 45	42·9	51·4	0·0	8·2	29 17·1	4 [illegible] 59·92	− 0·31	− 37·90	− 37·95	− 4·24
	1434	....	5·0	77 45	9·0	17·5	26·0	34·1	31 43·0	4 31 25·92	− 0·32	....	− 37·95	− 3·76
	1491	....	....	81 19	47·7	56·0	4·2	12·1	44 21·1	4 44 4·22	− 0·33	....	− 37·95	− 4·04
	1501	....	....	34 23	7·5	22·0	37·0	50·8	47 6·4	4 46 36·74	− 0·11	....	− 37·95	− 6·66
	1520	ι Aurigæ	....	57 2	43·6	53·6	3·2	12·9	49 23·1	4 49 3·26	− 0·23	− 38·02	− 37·95	− 4·89
	1730	δ Orionis	....	90 23	38·5	46·8	55·0	3·0	26 11·0	5 25 54·98	− 0·37	− 38·00	− 37·94	− 3·86
	1883	α Orionis	....	82 37	24·1	32·3	40·5	48·5	48 57·4	5 48 40·56	− 0·34	− 37·90	− 37·94	− 4·01
Dec. 17	360	α Ursæ Minoris	....	1 24	......	......	56·0	22·0	23 20·0	1 11 52 65	+ 4·09	....	− 37·79	− 61·29
	453	η Piscium	....	75 19	46·8	55·2	3·8	12·0	25 21·0	1 25 3·76	− 0·32	− 37·88	− 37·78	− 3·40
	1166	η Tauri	....	66 17	59·4	8·3	17·4	26·2	40 35·7	3 40 17·40	− 0·29	− 37·79	− 37·75	− 4·39
	1623	β Orionis	....	98 21	34·0	42·1	50·5	58·8	[illegible] 7·5	5 8 50·58	− 0·41	− 37·65	− 37·73	− 3·74
	1681	β Tauri	....	61 30	17·4	26·5	36·[illegible]	45·0	[illegible] 56·0	5 18 35·98	− 0·28	− 37·76	− 37·72	− 4·75
	1696	....	....	87 11	59·1	7·5	15·4	23·8	20 32·4	5 20 15·64	− 0·37	....	− 37·72	− 3·97

(a) Cloudy.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	interpolated.	Correction to Mean R.A., Jan. 1, 1867.
1867				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Dec. 17	1730	δ Orionis	....	90 23	38·0	46·4	54·8	2·8	26 11·4	5 25 54·68	− 0·38	− 37·64	− 37·71	− 3·91
	1765	ε Orionis	....	91 17	53·5	1·4	10·0	17·9	30 26·5	5 30 9·96	− 0·38	− 37·71	− 37·71	− 3·89
	1883	α Orionis	....	82 37	23·9	32·0	40·5	48·4	48 57·1	5 48 40·38	− 0·35	− 37·65	− 37·70	− 4·07
Dec. 18	288	(a) ε Piscium	....	82 48	27·0	35·3	43·8	51·8	57 0·4	0 56 43·66	− 0·28	− 37·74	− 37·75	− 3·08
	379	....	....	22 52	16·0	37·2	58·6	19·0	10 41·4	1 9 58·44	− 0·11	....	− 37·74	− 5·92
	360	α Ursæ Minoris	....	1 24	36·0	13·0	57·0	23·5	23 22·8	1 11 54·30	+ 1·46	....	− 37·74	− 60·51
	453	η Piscium	....	75 19	46·7	55·0	3·9	12·0	25 21·0	1 25 3·72	− 0·26	− 37·91	− 37·74	− 3·39
	1520	ι Aurigæ	....	57 2	13·5	53·1	3·1	12·6	49 23·0	4 49 3·06	− 0·22	− 37·79	− 37·73	− 4·93
	1681	β Tauri	....	61 30	17·1	26·4	36·0	44·9	18 54·8	5 18 35·84	− 0·24	− 37·65	− 37·73	− 4·76
	1696	....	....	87 11	59·3	7·6	16·0	24·0	20 32·6	5 20 15·90	− 0·29	....	− 37·73	− 3·98
	1730	δ Orionis	....	90 23	38·1	46·3	54·8	2·8	26 11·2	5 25 54·64	− 0·30	− 37·67	− 37·72	− 3·92
	1765	ε Orionis	....	91 17	53·4	1·5	9·9	17·6	30 26·4	5 30 9·80	− 0·30	− 37·72	− 37·72	− 3·90
	1826	....	6·0	80 31	59·5	8·0	16·1	24·1	40 33·0	5 40 16·14	− 0·28	....	− 37·72	− 4·14
	1883	α Orionis	....	82 37	23·9	32·1	40·4	48·2	48 57·1	5 48 40·34	− 0·28	− 37·67	− 37·72	− 4·08
Dec. 19	288	ε Piscium	....	82 48	27·0	35·3	43·8	51·5	57 0·2	0 56 43·56	− 0·26	− 37·67	− 37·70	− 3·07
	379	....	7·0	22 52	16·5	37·5	58·8	19·0	10 41·3	1 9 58·62	− 0·10	....	− 37·70	− 5·88
	360	α Ursæ Minoris	....	1 24	30·0	14·5	56·5	24·0	23 23·0	1 11 53·60	+ 1·37	....	− 37·70	− 59·73
	453	η Piscium	....	75 19	46·5	55·0	3·5	11·8	25 20·9	1 25 3·54	− 0·24	− 37·76	− 37·70	− 3·38
	1166	η Tauri	....	66 17	59·4	8·2	17·2	26·0	40 35·5	3 40 17·26	− 0·22	− 37·73	− 37·70	− 4·37
	1376	ε Tauri	....	71 6	15·8	24·6	33·4	42·0	21 51·1	4 21 33·38	− 0·24	− 37·65	− 37·69	− 4·34
	1420	α Tauri	....	73 45	42·4	51·0	59·6	7·9	29 17·0	4 28 59·58	− 0·25	− 37·59	− 37·69	− 4·27
	1459	....	7·0	34 38	28·7	43·2	58·0	12·0	38 27·0	4 37 57·78	− 0·15	....	− 37·70	− 6·67
	1520	ι Aurigæ	....	57 2	43·4	53·1	3·0	12·4	49 23·0	4 49 2·92	− 0·20	− 37·66	− 37·70	− 4·94
	1883	α Orionis	....	82 37	23·9	32·0	40·4	48·4	48 57·1	5 48 40·36	− 0·26	− 37·70	− 37·70	− 4·09
Dec. 23	1420	α Tauri	....	73 45	42·8	51·2	0·0	8·1	29 17·1	4 28 59·84	− 0·24	− 37·85	− 37·80	− 4·28
	1520	ι Aurigæ	....	57 2	43·6	53·3	3·2	12·7	49 23·0	4 49 3·16	− 0·16	− 37·90	− 37·80	− 4·96
	1623	β Orionis	....	98 21	34·0	42·2	50·6	58·5	9 7·4	5 8 50·54	− 0·31	− 37·69	− 37·79	− 3·76
	1656	....	....	81 42	54·9	3·0	11·2	19·4	15 28·1	5 15 11·32	− 0·26	....	− 37·79	− 4·14
	1681	β Tauri	....	61 30	17·4	26·2	36·0	45·0	18 55·0	5 18 35·92	− 0·21	− 37·72	− 37·78	− 4·80
	1696	....	....	87 11	59·2	7·5	16·0	24·0	20 32·7	5 20 15·88	− 0·27	....	− 37·78	− 4·01
	1883	α Orionis	....	82 37	23·9	32·1	40·4	48·5	48 57·2	5 48 40·42	− 0·26	− 37·72	− 37·78	− 4·13
	2060	....	....	85 20	9·0	17·0	25·4	33·3	17 42·0	6 17 25·34	− 0·27	....	− 37·78	− 4·07
	2101	....	....	67 22	44·7	53·6	2·5	11·0	23 20·5	6 23 2·46	− 0·22	....	− 37·77	− 4·54
	2163	γ Geminorum	....	73 29	26·9	35·5	44·1	52·5	31 1·4	6 30 44·08	− 0·24	− 37·84	− 37·77	− 4·33
Dec. 24	1623	β Orionis	....	98 21	34·0	42·2	50·5	58·5	9 7·1	5 8 50·16	− 0·32	− 37·59	− 37·66	− 3·77
	1681	β Tauri	....	61 30	17·0	26·4	36·0	45·0	18 55·0	5 18 35·68	− 0·21	− 37·67	− 37·66	− 4·81
	1765	ε Orionis	....	91 17	53·2	1·4	9·7	17·9	30 26·1	5 30 9·66	− 0·30	− 37·54	− 37·65	− 3·94
	1826	....	....	80 31	59·5	8·0	16·3	24·4	40 33·2	5 40 16·28	− 0·26	....	− 37·65	− 4·19
	1958	ν Orionis	....	75 13	24·0	32·4	41·0	49·3	0 58·1	6 0 40·96	− 0·24	− 37·70	− 37·65	− 4·33
	2002	....	4·0	67 27	15·6	24·7	33·5	42·0	7 51·4	6 7 33·44	− 0·23	....	− 37·64	− 4·57
	2022	....	....	80 0	12·0	20·4	29·0	37·0	10 45·9	6 10 28·86	− 0·26	....	− 37·64	− 4·20
	6281	δ Ursæ Minoris S. P.	....	3 24	......	59·5	13·0	33·0	19 53·0	6 15 14·90	− 1·35	....	− 37·64	+ 38·90
	2163	γ Geminorum	....	73 29	26·9	35·5	44·0	52·4	31 1·3	6 30 44·02	− 0·24	− 37·76	− 37·65	− 4·35
Dec. 30	1166	(a) η Tauri	....	66 17	57·5	6·6	15·8	24·3	40 34·0	3 40 15·64	− 0·19	− 36·18	− 36·14	− 4·33
	1376	ε Tauri	....	71 6	14·6	23·2	32·0	40·1	21 49·5	4 21 31·88	− 0·21	− 36·17	− 36·13	− 4·35
	1420	α Tauri	....	73 45	41·0	49·8	58·1	6·4	29 15·3	4 28 58·12	− 0·22	− 36·15	− 36·13	− 4·28
	6281	δ Ursæ Minoris S. P.	....	3 24	30·5	57·0	11·5	32·5	19 51·0	6 15 12·50	− 0·94	....	− 36·12	+ 39·18
	2410	δ Geminorum	....	67 46	33·6	42·6	51·7	0·0	13 9·4	7 12 51·46	− 0·22	− 36·03	− 36·11	− 4·51

(a) Bad definition.

ROYAL OBSERVATORY, EDINBURGH.

Individual Observations of Mean Right Ascensions of Stars observed at the Royal Observatory, Edinburgh, in the Year 1867, reduced to January 1, 1867.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
			° ′	h. m. s.
B.A.C. 4, α Andromedæ.				
Feb. 6	0·10	(a)(1·0)	61 39	0 1 31·04
Sept. 12	0·70			30·96
16	0·71			31·03
23	0·73			31·00
30	0·74			31·12
Oct. 2	0·75			31·01
3	0·75			31·03
7	0·76			31·09
8	0·77			31·04
9	0·77			30·99
11	0·77			31·02
17	0·79			30·91
22	0·80			31·00
25	0·81			30·98
B.A.C. 18.				
Oct. 3	0·75	7·5	31 4	0 3 36·86
7	0·76	7·5		36·75
8	0·77	7·5		36·84
B.A.C. 26, γ Pegasi.				
Feb. 6	0·10	(2·0)	75 33	0 6 23·34
Sept. 12	0·70			23·42
16	0·71			23·35
23	0·73			23·42
30	0·74			23·45
Oct. 2	0·75			23·42
7	0·76			23·45
9	0·77			23·31
11	0·77			23·26
17	0·79			23·37
22	0·80			23·38
B.A.C. 28.				
Oct. 3	0·75	6·5	49 42	0 6 37·11
8	0·77	6·0		36·95
25	0·81	6·0		36·97
B.A.C. 42.				
Oct. 7	0·76	8·0	86 29	0 9 7·73
8	0·77	8·0		7·77
9	0·77			7·67
B.A.C. 48.				
Oct. 3	0·75	8·0	76 49	0 9 54·26
11	0·77			54·16
B.A.C. 57.				
Oct. 7	0·76	7·0	89 3	0 10 57·91
8	0·77	7·0		57·96
9	0·77			57·81
B.A.C. 68.				
Oct. 7	0·76	7·0	22 55	0 14 20·81
8	0·77	7·0		20·84
11	0·77	6·5		20·97
B.A.C. 83.				
Sept. 23	0·73	6·0	37 41	0 17 55·69
Oct. 2	0·75	6·5		55·55
3	0·75	6·0		55·73
B.A.C. 98.				
Oct. 2	0·75	6·5	74 43	0 20 36·44
3	0·75			36·46
7	0·76	7·0		36·38
B.A.C. 105.				
Oct. 8	0·77	6·0	13 43	0 22 26·62
25	0·81	6·5		26·71
B.A.C. 112, 12 Ceti.				
Sept. 16	0·71	(6·0)	94 42	0 23 15·00
Oct. 3	0·75			15·12
7	0·76			15·04
9	0·77			15·00
11	0·77			15·10
29	0·82			15·13
B.A.C. 113.				
Sept. 23	0·73	7·0	85 52	0 23 18·49
Oct. 2	0·75	7·5		18·51
B.A.C. 133.				
Oct. 2	0·75	8·0	70 18	0 26 42·40
8	0·77			42·17
9	0·77			42·28
B.A.C. 149.				
Oct. 2	0·75	7·0	77 31	0 29 1·63
9	0·77			1·56
11	0·77	6·0		1·54

(a) Magnitudes in parenthesis are the tabular ones of the British Association Catalogue.

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
B.A.C. 164, ι Andromedæ.				
			° ′	h. m. s.
Oct. 2	0·75	6·0	61 25	0 31 31·96
9	0·77			31·95
11	0·77			31·87
25	0·81	4·0		32·02
B.A.C. 177.				
Oct. 11	0·77	7·0	81 22	0 34 19·69
B.A.C. 182.				
Oct. 25	0·81	6·5	31 59	0 34 53·46
B.A.C. 197.				
Oct. 11	0·77		42 [illegible]	0 37 3·84
25	0·81	6·0		3·72
B.A.C. 218, η Cassiopeæ.				
Oct. 7	0·76	3·0	32 53	0 41 4·34
9	0·77			4·49
11	0·77	4·0		4·42
25	0·81	3·0		4·29
B.A.C. 237.				
Oct. 7	0·76	7·0	87 20	0 44 27·42
9	0·77			27·43
11	0·77	7·0		27·42
25	0·81	8·0		27·48
B.A.C. 259, μ Andromedæ.				
Oct. 7	0·76	4·0	52 13	0 49 22·82
9	0·77			22·85
25	0·81	4·0		22·76
B.A.C. 288, ε Piscium.				
Sept. 30	0·73	(4·0)	82 50	0 56 2·47
Oct. 3	0·75			2·54
17	0·79			2·59
[illegible]	0·80			2·51
[illegible]	0·81			2·57

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
B.A.C. 288, ε Piscium.				
			° ′	h. m. s.
Oct. 29	0·82	(4·0)	82 50	0 56 2·49
Nov. 4	0·84			2·57
11	0·86			2·58
17	0·88			2·[illegible]
Dec. 18	0·96			2·55
19	0·96			2·53
B.A.C. 290.				
Oct. 7	0·76	8·0	36 30	0 56 26·84
9	0·77			26·81
11	0·77	7·5		26·80
B.A.C. 314, μ Cassiopeæ.				
Oct. 7	0·76	4·0	35 44	0 59 27·00
B.A.C. 376.				
Oct. 3	0·75	7·0	17 49	1 8 54·23
11	0·77	7·0		54·08
25	0·81	7·5		54·29
Nov. 4	0·84	7·0		54·31
6	0·85	7·0		54·00
B.A.C. 379.				
Nov. 11	0·86	7·0	22 53	1 9 14·91
Dec. 18	0·96			14·67
19	0·96	7·0		14·94
B.A.C. 403.				
Oct. 7	0·76	8·0	17 51	1 14 9·10
Nov. 11	0·86	8·0		9·15
26	0·90			9·11
B.A.C. 420, θ Ceti.				
Sept. 30	0·74	(3·0)	98 52	1 17 22·44
B.A.C. 453, η Piscium.				
Oct. 2	0·75	(4·0)	75 20	1 24 22·28
7	0·76			22·26
8	0·77			22·19

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
B.A.C. 453, η Piscium.				
			° ′	h. m. s.
Oct. 9	0·77	(4·0)	75 20	1 24 22·2[illegible]
11	0·77			22·18
29	0·82			22·11
Nov. 1	0·83			22·27
4	0·84			22·30
6	0·85			22·18
11	0·86			22·16
17	0·88			22·19
19	0·88			22·1[illegible]
26	0·90			22·15
Dec. 17	0·96			22·26
18	0·96			22·33
19	0·96			22·22
B.A.C. 472.				
Oct. 9	0·77		89 44	1 27 57·57
25	0·81	8·0		57·61
Nov. 1	0·83	7·0		57·54
B.A.C. 482.				
Oct. 29	0·82	6·0	32 43	1 29 27·22
Nov. 4	0·84	6·0		27·29
6	0·85	6·0		27·20
B.A.C. 514.				
Oct. 7	0·76	7·0	60 37	1 34 8·67
9	0·77			8·66
11	0·77			8·65
25	0·81	6·5		8·74
29	0·82	7·0		8·58
B.A.C. 516.				
Nov. 1	0·83	6·0	55 26	1 34 22·73
4	0·84	6·0		22·72
6	0·85	5·5		22·82
B.A.C. 518, ν Piscium.				
Nov. 17	0·88	(5·0)	85 11	1 34 [illegible]·70

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
B.A.C. 525.				
Nov. 11	0·86	8·0	33° 8'	1h 35m 32s·16
19	0·88	7·0		32·17
26	0·90	7·0		32·16
B.A.C. 538.				
Oct. 7	0·76	7·0	73 15	1 39 22·44
8	0·77			22·46
9	0·77			22·53
B.A.C. 547.				
Oct. 11	0·77	(6·0)	42 46	1 41 0·99
Nov. 1	0·83			0·88
6	0·85			0·95
19	0·88			0·97
B.A.C. 562.				
Oct. 7	0·76	7·0	39 11	1 44 21·65
8	0·77			21·70
9	0·77			21·70
B.A.C. 577, β Arietis.				
Oct. 7	0·76	(3·0)	69 51	1 47 17·63
8	0·77			17·92
9	0·77			17·85
11	0·77			17·87
17	0·79			17·83
29	0·82			17·82
Nov. 1	0·83			17·80
4	0·84			17·77
6	0·85			17·78
8	0·85			17·82
11	0·86			17·80
17	0·88			17·78
19	0·88			17·81
22	0·89			17·70
26	0·90			17·74
B.A.C. 588.				
Oct. 11	0·77	6·0	26 2	1 49 51·40
25	0·81			51·86
29	0·82	6·0		51·51
Nov. 1	0·83	7·0		51·29
B.A.C. 620.				
Oct. 11	0·77	6·0	25° 32'	1h 54m 42s·13
25	0·81	6·5		42·32
29	0·82	7·0		42·09
Nov. 1	0·83	7·0		42·21
B.A.C. 626.				
Nov. 6	0·85	7·0	7 4	1 56 44·08
8	0·85	7·0		44·23
B.A.C. 645.				
Oct. 11	0·77	7·0	64 48	1 59 10·65
Nov. 19	0·88	8·0		10·65
22	0·89	6·0		10·61
B.A.C. 648, α Arietis.				
Oct. 17	0·79	(2·0)	67 10	1 59 40·79
25	0·81			40·97
29	0·82			40·80
Nov. 1	0·83			40·80
4	0·84			40·77
11	0·86			40·77
17	0·88			40·80
B.A.C. 694.				
Oct. 25	0·81	8·0	26 12	2 8 34·60
Nov. 1	0·83	7·5		34·31
B.A.C. 702.				
Oct. 25	0·81	8·0	26 17	2 10 2·08
Nov. 1	0·83	7·5		1·86
6	0·85	7·0		1·92
B.A.C. 704, 67 Ceti.				
Nov. 4	0·84	(6·0)	97 2	2 10 21·03
8	0·85			21·02
9	0·85			21·03
18	0·88			21·02
B.A.C. 718.				
Nov. 1	0·83	7·0	33 22	2 12 32·91
4	0·84	7·0		32·91
B.A.C. 721.				
Nov. 19	0·88	5·5	34° 46'	2h 13m 6s·41
22	0·89	5·0		6·39
26	0·90	6·0		6·34
B.A.C. 738.				
Nov. 1	0·83	8·0	80 20	2 17 3·37
4	0·84	8·0		3·44
6	0·85	8·0		3·46
B.A.C. 760, ξ² Ceti.				
Oct. 25	0·81	(4·0)	82 8	2 21 5·39
Nov. 1	0·83			5·36
8	0·85			5·38
9	0·85			5·36
18	0·88			5·31
22	0·89			5·40
B.A.C. 764.				
Oct. 29	0·82	6·5	81 1	2 22 29·40
Nov. 4	0·84	6·5		29·46
6	0·85	6·5		29·45
B.A.C. 776.				
Oct. 25	0·81	7·0	88 19	2 24 37·42
29	0·82	6·0		37·47
Nov. 1	0·83	6·0		37·52
B.A.C. 793.				
Oct. 25	0·81	7·5	83 45	2 28 47·53
29	0·82	6·0		47·47
Nov. 1	0·83	7·0		47·51
B.A.C. 834.				
Nov. 4	0·84	6·5	64 56	2 36 8·61
26	0·90			8·46
B.A.C. 837, γ Ceti.				
Oct. 29	0·82	(3·0)	67 20	2 36 24·71
Nov. 6	0·85			24·67

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
B.A.C. 837, γ Ceti.				
			° ′	h. m. s.
Nov. 8	0·85	(3·0)	87 20	2 36 24·62
9	0·85			24·69
18	0·88			24·64
19	0·88			24·60
22	0·89			24·57
B.A.C. 881, ε Arietis.				
Oct. 29	0·82	6·0	75 28	2 44 9·27
Nov. 1	0·83			9·24
4	0·84	6·0		9·21
B.A.C. 891.				
Oct. 29	0·82	(8·0)	84 4	2 45 37·69
Nov. 1	0·83			37·85
4	0·84			37·69
B.A.C. 920.				
Oct. 25	0·81		68 55	2 51 15·98
29	0·82	7·5		16·00
Nov. 1	0·83	7·0		15·95
B.A.C. 949, α Ceti.				
Oct. 25	0·81	(2·5)	86 26	2 55 19·71
29	0·82			19·72
Nov. 1	0·83			19·71
4	0·84			19·65
6	0·85			19·70
8	0·85			19·64
9	0·85			19·73
18	0·88			19·68
19	0·88			19·75
22	0·89			19·75
26	0·90			19·66
Dec. 12	0·94			19·69
B.A.C. 962, ι Persei.				
Oct. 29	0·82	3·0	40 54	2 59 29·04
Nov. 1	0·83	4·0		29·08
4	0·84	4·0		29·08
B.A.C. 965.				
Nov. 8	0·85	8·0	6 58	3 2 1·34
18	0·88	8·0		2·01
19	0·88	8·0		1·32

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
B.A.C. 980.				
			° ′	h. m. s.
Oct. 29	0·82	7·0	63 37	3 2 33·53
Nov. 1	0·83	6·0		33·49
4	0·84	7·0		33·54
B.A.C. 986, δ Arietis.				
Nov. 9	0·85	(4·0)	70 47	3 4 1·66
27	0·90			1·59
B.A.C. 985.				
Nov. 26	0·90	8·0	15 15	3 4 54·77
Dec. 12	0·94			55·05
B.A.C. 1055.				
Nov. 18	0·88	8·0	65 26	3 16 51·08
19	0·88	8·0		50·99
22	0·89	7·0		51·06
B.A.C. 1057, ο Tauri.				
Nov. 4	0·84	4·5	81 26	3 17 39·53
8	0·85			39·50
26	0·90	4·0		39·43
B.A.C. 1087, f Tauri.				
Nov. 8	0·85	(5·5)	77 31	3 23 31·97
18	0·88			32·03
19	0·88			32·01
B.A.C. 1101.				
Nov. 8	0·85	8·0	58 46	3 27 21·91
18	0·88	7·0		21·97
19	0·88			21·90
B.A.C. 1126, 11 Tauri.				
Nov. 8	0·85	7·0	65 6	3 32 49·98
18	0·88	6·0		50·13
19	0·88			49·95

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
B.A.C. 1166, η Tauri.				
			° ′	h. m. s.
Nov. 8	0·85	(3·0)	66 19	3 39 34·95
18	0·88			35·00
19	0·88			34·89
22	0·89			35·00
26	0·90			34·87
27	0·90			34·95
Dec. 10	0·94			35·04
17	0·96			34·97
19	0·96			34·97
30	0·99			34·98
B.A.C. 1282.				
Nov. 22	0·89		41 15	4 3 51·90
26	0·90	8·5		52·18
27	0·90			51·98
B.A.C. 1318.				
Nov. 22	0·89	6·0	33 49	4 11 3·25
26	0·90	6·0		3·30
Dec. 11	0·94			3·45
B.A.C. 1347.				
Nov. 22	0·89		65 54	4 15 28·39
26	0·90	8·0		28·43
27	0·90			28·24
Dec. 11	0·94			28·36
B.A.C. 1351.				
Jan. 3	0·01	(6·5)	73 41	4 15 50·82
B.A.C. 1361.				
Nov. 22	0·89		71 16	4 17 12·31
26	0·90	6·0		12·27
27	0·90			12·15
Dec. 11	0·94			12·26
B.A.C. 1376, ι Tauri.				
Jan. 3	0·01	(3·5)	71 7	4 20 51·20
Nov. 22	0·89			51·21
26	0·90			51·13
27	0·90			51·06

B.A.C. 1376, ι Tauri.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Dec. 11	0·94	(3·5)	71° 7′	4h 20m 51s·11
12	0·94			51·14
19	0·96			51·11
30	0·99			51·19

B.A.C. 1420, α Tauri.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Jan. 3	0·01	(1·0)	73 46	4 28 17·49
Nov. 22	0·89			17·42
26	0·90			17·39
27	0·90			17·33
Dec. 4	0·92			17·38
6	0·93			17·46
9	0·94			17·53
11	0·94			17·37
12	0·94			17·42
19	0·96			17·37
23	0·97			17·52
30	0·99			17·49

B.A.C. 1434.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Jan. 3	0·01		77 45	4 30 43·69
Nov. 27	0·90			43·37
Dec. 11	0·94			43·53
12	0·94	5·0		43·69

B.A.C. 1459.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Nov. 27	0·90		34 38	4 37 13·36
Dec. 11	0·94			13·43
19	0·96	7·0		13·26

B.A.C. 1491.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Jan. 3	0·01	(5·0)	81 20	4 43 21·93
Nov. 27	0·90			21·84
Dec. 11	0·94			21·83
12	0·94			21·90

B.A.C. 1501.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Nov. 27	0·90	(6·0)	34 24	4 45 51·89
Dec. 11	0·94			52·02
12	0·94			52·02

B.A.C. 1520, ι Aurigæ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Nov. 27	0·90	(4·0)	57° 3′	4h 46m 20s·20
Dec. 4	0·92			20·23
6	0·93			20·29
9	0·94			20·25
11	0·94			20·21
12	0·94			20·19
18	0·96			20·18
19	0·96			20·08
23	0·97			20·22

B.A.C. 1623, β Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Dec. 4	0·92	(1·0)	98 21	5 8 8·74
6	0·93			8·70
9	0·94			8·71
10	0·94			8·75
17	0·96			8·70
23	0·97			8·68
24	0·98			8·71

B.A.C. 1626.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Dec. 11	0·94	(7·5)	49 41	5 9 23·49

B.A.C. 1656.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Jan. 3	0·01	(6·0)	81 42	5 14 29·34
Dec. 11	0·94			29·23
23	0·97			29·13

B.A.C. 1681, β Tauri.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Jan. 3	0·01	(2·0)	61 30	5 17 53·23
15	0·04			53·17
Dec. 4	0·92			53·21
6	0·93			53·26
9	0·94			53·11
10	0·94			53·18
11	0·94			53·16
17	0·96			53·23
18	0·96			53·11
23	0·97			53·13
24	0·98			53·20

B.A.C. 1696.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Dec. 17	0·96	(7·5)	87° 11′	5h 19m 33s·58
18	0·96			33·90
23	0·97			33·82

B.A.C. 1730, δ Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Jan. 3	0·01	(2·0)	90 24	5 25 12·65
15	0·04			12·79
Dec. 4	0·92			12·74
6	0·93			12·65
9	0·94			12·75
10	0·94			12·69
11	0·94			12·85
12	0·94			12·81
17	0·96			12·68
18	0·96			12·70

B.A.C. 1765, ι Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Jan. 3	0·01	(2·5)	91 17	5 29 27·84
Dec. 4	0·92			27·92
6	0·93			27·83
9	0·94			27·85
10	0·94			27·89
11	0·94			27·91
17	0·96			27·88
18	0·96			27·88
24	0·98			27·77

B.A.C. 1766.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Jan. 15	0·04	(4·5)	80 47	5 29 36·03

B.A.C. 1826.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Dec. 18	0·96	6·0	80 31	5 39 34·00
24	0·98			34·18

B.A.C. 1883, α Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Jan. 3	0·01	(1·0)	82 37	5 47 58·34
8	0·02			58·22
11	0·03			58·30
15	0·04			58·27
Nov. 13	0·86			58·27
Dec. 10	0·94			58·30
12	0·94			58·27

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Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1867
B.A.C. 1883, α Orionis.				
Dec. 17	0·96	(1·0)	82 37	h. m. s. 5 47 58·26
18	0·96			58·26
19	0·96			58·31
23	0·97			58·25
B.A.C. 1958, ν Orionis.				
Jan. 4	0·01	(4·5)	75 13	5 59 58·72
8	0·02			58·75
11	0·03			58·61
Nov. 13	0·86			58·83
Dec. 24	0·98			58·74
B.A.C. 2002, η Geminorum.				
Jan. 11	0·03		67 27	6 6 50·95
Dec. 24	0·98	4·0		51·00
B.A.C. 2022.				
Dec. 24	0·98	(6·0)	80 0	6 9 46·76
B.A.C. 2047, μ Geminorum.				
Nov. 13	0·86	(3·0)	67 25	6 14 54·82
B.A.C. 2060.				
Dec. 23	0·97	(8·0)	65 20	6 16 43·22
B.A.C. 2101.				
Dec. 23	0·97	(7·5)	67 22	6 22 19·93
B.A.C. 2163, γ Geminorum.				
Jan. 4	0·01	(2·5)	73 29	6 30 1·57
8	0·02			1·73
11	0·03			1·62
14	0·04			1·67
15	0·04			1·73
Feb. 6	0·10			1·72
Nov. 13	0·86			1·60
Dec. 23	0·97			1·74
24	0·98			1·78

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1867
B.A.C. 2238.				
Feb. 6	0·10	6·0	66 15	h. m. s. 6 43 55·65
B.A.C. 2410, δ Geminorum.				
Jan. 4	0·01	(3·0)	67 47	7 12 10·67
8	0·02			10·67
11	0·03			10·70
14	0·04			10·75
15	0·04			10·64
25	0·07			10·69
28	0·07			10·73
30	0·08			10·65
Feb. 6	0·10			10·70
8	0·10			10·70
13	0·12			10·69
Dec. 30	0·99			10·62
B.A.C. 2485, α² Geminorum.				
Jan. 4	0·01	(1·5)	57 49	7 26 6·73
8	0·02			6·65
11	0·03			6·68
28	0·07			6·67
30	0·08			6·65
Feb. 6	0·10			6·52
8	0·10			6·63
13	0·12			6·70
B.A.C. 2522, α Canis Minoris.				
Jan. 4	0·01	(1·0)	84 26	7 32 20·31
11	0·03			20·21
14	0·04			20·27
25	0·07			20·23
28	0·07			20·29
30	0·08			20·25
Feb. 6	0·10			20·26
13	0·12			20·30
B.A.C. 2555, β Geminorum.				
Jan. 4	0·01	(2·0)	61 39	7 37 10·49
11	0·03			10·58
14	0·04			10·41
25	0·07			10·37
28	0·07			10·47

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1867
B.A.C. 2555, β Geminorum.				
Jan. 30	0·08	(2·0)	61 39	h. m. s. 7 37 10·46
Feb. 6	0·10			10·48
8	0·10			10·36
13	0·12			10·43
26	0·15			10·33
B.A.C. 2672, 6 Cancri.				
Jan. 25	0·07	(5·5)	61 50	7 55 20·80
28	0·07			20·72
30	0·08			20·81
Feb. 26	0·15			20·82
B.A.C. 2862, η Cancri.				
Jan. 25	0·07	(6·0)	69 7	8 25 0·93
Feb. 4	0·09			0·87
Mar. 2	0·16			0·84
B.A.C. 2971, ε Hydræ.				
Jan. 25	0·07	(4·0)	83 6	8 39 43·84
30	0·08			43·90
Feb. 4	0·09			43·82
6	0·10			43·91
8	0·10			43·82
21	0·14			43·82
26	0·15			43·93
27	0·16			43·86
Mar. 2	0·16			43·83
B.A.C. 3171, 83 Cancri.				
Feb. 4	0·09	(6·0)	71 44	9 11 33·39
21	0·14			33·25
25	0·15			33·27
28	0·16			33·29
Mar. 1	0·16			33·34
2	0·16			33·33
24	0·22			33·29
B.A.C. 3223, α Hydræ.				
Feb. 4	0·09	(2·0)	98 5	9 21 3·04
Mar. 24	0·22			3·01

B.A.C. 3331, ε Leonis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
			° ′	h. m. s.
Feb. 4	0·09	(3·0)	65 37	9 38 17·78
6	0·10			17·89
8	0·10			17·94
21	0·14			17·86
25	0·15			17·83
26	0·15			17·94
27	0·16			17·86
28	0·16			17·86
Mar. 1	0·16			17·87
2	0·16			17·86
4	0·17			17·92
18	0·21			17·87
24	0·22			17·85
29	0·24			17·80
May 7	0·34			17·90
13	0·36			17·81
21	0·38			17·96
22	0·39			17·92

B.A.C. 3415, π Leonis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Feb. 21	0·14	(4·5)	81 19	9 53 11·07
25	0·15			11·01
26	0·15			10·94
27	0·16			11·01
28	0·16			10·92
Mar. 1	0·16			10·94
4	0·17			11·00
18	0·21			10·94
24	0·22			11·02
April 15	0·28			11·03

B.A.C. 3459, α Leonis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Feb. 21	0·14	(1·0)	77 23	10 1 17·16
25	0·15			17·18
26	0·15			17·24
27	0·16			17·10
28	0·16			17·26
Mar. 1	0·16			17·20
4	0·17			17·18
15	0·20			17·14
18	0·21			17·19
20	0·21			17·16
24	0·22			17·18
29	0·24			17·22
April 15	0·28			17·10

B.A.C. 3459, α Leonis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
			° ′	h. m. s.
May 7	0·34	(1·0)	77 23	10 1 17·15
13	0·36			17·20
21	0·38			17·17
22	0·39			17·21

B.A.C. 3523, γ¹ Leonis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Feb. 25	0·15	(2·0)	69 29	10 12 38·18
26	0·15			38·10
27	0·16			38·26
28	0·16			38·16
Mar. 1	0·16			38·13
4	0·17			38·18
15	0·20			38·21
18	0·21			38·20
20	0·21			38·10

B.A.C. 3609, ρ Leonis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Feb. 28	0·16	(4·0)	80 1	10 25 48·41
Mar. 1	0·16			48·43
4	0·17			48·32
15	0·20			48·38
18	0·21			48·41
20	0·21			48·33
27	0·23			48·41

B.A.C. 3662.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Mar. 27	0·23	8·0	78 34	10 34 40·60
29	0·24	8·0		40·56

B.A.C. 3667, 34 Sextantis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
April 2	0·25	6·0	85 43	10 35 45·41

B.A.C. 3708, l Leonis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Mar. 16	0·20	(6·0)	78 45	10 42 15·92
25	0·23			15·91
26	0·23			15·88
28	0·24			15·89
April 2	0·25			15·77

B.A.C. 3726.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Mar. 27	0·23	6·0	88 16	10 45 23·72
28	0·24	6·0		23·57

B.A.C. 3768, d Leonis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
			° ′	h. m. s.
Mar. 26	0·23		85 40	10 53 41·48
27	0·23	5·0		41·51
28	0·24	5·0		41·48

B.A.C. 3780.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Mar. 26	0·23	8·0	81 42	10 56 46·33
27	0·23	7·0		46·10
28	0·24	8·0		46·33

B.A.C. 3788, χ Leonis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Mar. 16	0·20	(4·5)	81 57	10 58 9·28
20	0·21			9·35
26	0·23			9·32
27	0·23			9·34
28	0·24			9·31
29	0·24			9·26
April 2	0·25			9·25
5	0·26			9·31

B.A.C. 3821.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Mar. 28	0·24	6·0	21 0	11 3 39·38
29	0·24	6·0		39·50
April 2	0·25	6·0		39·43

B.A.C. 3834, δ Leonis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Mar. 15	0·20	(2·5)	68 45	11 7 1·98
16	0·20			1·95
20	0·21			1·98
25	0·23			1·83
26	0·23			1·86
27	0·23			1·89
28	0·24			1·87
April 2	0·25			1·85
5	0·26			1·88
15	0·28			1·92
16	0·29			1·85
May 13	0·36			1·90

B.A.C. 3836.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
Mar. 29	0·24	6·0	87 1	11 7 3·37

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
B.A.C. 3869.				
Mar. 26	0·23	6·5	71 50	11 15 31·27
27	0·23	7·5		31·23
28	0·24	7·5		31·17
B.A.C. 3900, τ Leonis.				
Mar. 27	0·23	4·0	86 25	11 21 5·63
28	0·24	6·0		5·73
29	0·24	5·0		5·99
B.A.C. 3946, υ Leonis.				
Mar. 15	0·20	(4·5)	90 5	11 30 8·34
16	0·20			8·21
25	0·23			8·26
27	0·23			8·36
28	0·24			8·26
April 5	0·26			8·21
15	0·28			8·36
16	0·29			8·33
B.A.C. 3995, β Leonis.				
Mar. 15	0·20	(2·5)	74 41	11 42 16·42
16	0·20			16·46
20	0·21			16·51
25	0·23			16·54
27	0·23			16·39
28	0·24			16·36
29	0·24			16·40
April 2	0·25			16·47
5	0·26			16·52
15	0·28			16·46
16	0·29			16·40
May 13	0·36			16·52
B.A.C. 4006.				
Mar. 28	0·24	6·5	77 0	11 44 5·86
29	0·24	6·0		5·85
B.A.C. 4052, π Virginis.				
Mar. 27	0·23	5·0	82 39	11 54 3·45
28	0·24			3·44
29	0·24			3·43
B.A.C. 4145, η Virginis.				
Mar. 26	0·23	(3·5)	89 56	12 13 6·09
27	0·23			6·07
29	0·24			6·11
April 2	0·25			6·05
16	0·29			6·12
B.A.C. 4199.				
Mar. 27	0·23	7·0	63 21	12 20 59·20
28	0·24	7·0		59·01
B.A.C. 4231.				
Mar. 27	0·23	7·0	64 49	12 26 54·59
28	0·24	7·0		54·33
B.A.C. 4244.				
Mar. 27	0·23	(Neb.)	52 53	12 28 41·09
28	0·24			40·75
B.A.C. 4268, γ¹ Virginis.				
Mar. 27	0·23	(4·0)	90 43	12 34 55·35
28	0·24			55·25
B.A.C. 4340, δ Virginis.				
Mar. 28	0·24	3·0	85 53	12 48 54·30
B.A.C. 4364.				
Mar. 28	0·24	(6·0)	68 1	12 55 4·44
B.A.C. 4401, θ Virginis.				
Mar. 28	0·24	(4·5)	94 50	13 3 4·06
29	0·24			4·00
April 2	0·25			4·09
16	0·29			3·98
B.A.C. 4480, α Virginis.				
May 28	0·40	(1·0)	100 28	13 18 11·33
June 12	0·44			11·24
B.A.C. 4532, ζ Virginis.				
April 2	0·25	(4·0)	89 55	13 27 55·09
16	0·29			55·06
May 7	0·34			55·05
21	0·38			55·04
June 12	0·44			55·02
13	0·45			55·11
B.A.C. 4648, η Bootis.				
May 7	0·34	(3·0)	70 56	13 48 21·12
21	0·38			21·17
22	0·39			21·09
June 2	0·42			21·06
B.A.C. 4672, τ Virginis.				
June 2	0·42	(4·5)	87 49	13 54 52·84
B.A.C. 4729, α Bootis.				
May 7	0·34	(1·0)	70 7	14 9 35·76
22	0·39			35·74
28	0·40			35·72
June 2	0·42			35·77
B.A.C. 4808, ρ Bootis.				
May 28	0·40	(4·0)	59 3	14 26 5·90
B.A.C. 4876, ε Bootis.				
May 7	0·34	(3·0)	62 22	14 39 10·75
22	0·39			10·74
June 2	0·42			10·71
11	0·44			10·72
B.A.C. 4934.				
May 22	0·39	6·0	48 20	14 50 58·98
B.A.C. 4942.				
May 22	0·39	6·0	49 50	14 54 20·04
B.A.C. 4965.				
May 22	0·39	6·0	44 50	14 58 24·72

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate North Polar Distance	Mean Right Ascension, January 1, 1867
B.A.C. 4969, ϑ Bootis.				
June 11	0·44	(5·0)	62° 32'	14h 58m 44s·87
B.A.C. 4992.				
May 22	0·39	5·5	34 56	15 2 28·61
B.A.C. 5000.				
May 21	0·38	6·5	56 25	15 5 15·67
B.A.C. 5001.				
May 22	0·39	7·0	60 16	15 5 18·43
B.A.C. 5034, β Libræ.				
June 4	0·42	(2·5)	98 53	15 9 51·06
8	0·43			51·14
B.A.C. 5071.				
May 21	0·38	6·0	37 36	15 16 10·69
22	0·39	6·0		10·75
B.A.C. 5091.				
May 21	0·38	6·0	26 11	15 20 25·77
22	0·39	6·0		25·83
B.A.C. 5143, α Coronæ Borealis.				
May 21	0·38	(2·5)	62 50	15 29 3·48
22	0·39			3·39
June 4	0·42			3·45
8	0·43			3·42
11	0·44			3·45
25	0·48			3·55
26	0·48			3·43
28	0·49			3·51
July 4	0·50			3·47
B.A.C. 5196, α Serpentis.				
May 21	0·38	(2·5)	83 9	15 37 43·06
22	0·39			43·06
June 4	0·42			43·08
B.A.C. 5196, α Serpentis.				
June 8	0·43	(2·5)	83 9	15 37 43·07
25	0·48			43·08
26	0·48			43·05
28	0·49			43·06
July 4	0·50			43·07
B.A.C. 5245, ι Serpentis.				
May 21	0·38	(3·0)	86 7	15 44 11·39
22	0·39			11·23
B.A.C. 5284, γ Serpentis.				
May 21	0·38	(3·0)	73 54	15 50 18·72
22	0·39			18·70
B.A.C. 5414, δ Ophiuchi.				
May 21	0·38	(3·0)	93 21	16 7 22·59
22	0·39			22·67
June 4	0·42			22·70
8	0·43			22·68
11	0·44			22·60
26	0·48			22·63
July 8	0·51			22·53
B.A.C. 5452.				
May 21	0·38	6·5	68 33	16 14 18·33
22	0·39	6·0		18·21
B.A.C. 5466, γ Herculis.				
May 21	0·38	3·5	70 32	16 16 3·27
B.A.C. 5493.				
May 21	0·38	7·0	87 21	16 20 8·31
22	0·39	6·5		8·18
B.A.C. 5504.				
May 21	0·38	8·0	74 21	16 22 1·80
22	0·39	7·0		1·92
B.A.C. 5527.				
May 21	0·38	5·0	69° 14'	16h 24m 47s·28
22	0·39			47·30
B.A.C. 5537.				
May 21	0·38	7·0	79 21	16 27 15·70
22	0·39	7·0		15·66
B.A.C. 5597.				
May 22	0·39	(6·0)	64 53	16 35 29·91
B.A.C. 5604, ζ Herculis.				
June 4	0·42	(3·0)	58 9	16 36 16·37
12	0·44			16·41
13	0·45			16·33
18	0·46			16·39
B.A.C. 5708, κ Ophiuchi.				
June 12	0·44	(4·0)	80 25	16 51 22·47
13	0·45			22·47
18	0·46			22·44
19	0·46			22·42
B.A.C. 5821, α Herculis.				
June 12	0·44	(3·5)	75 27	17 8 35·04
13	0·45			35·04
18	0·46			34·95
19	0·46			35·08
24	0·48			35·16
25	0·48			35·00
26	0·48			35·11
July 8	0·51			35·02
10	0·52			35·03
B.A.C. 5941, α Ophiuchi.				
June 13	0·45	(2·0)	77 20	17 28 45·63
19	0·46			45·65
24	0·48			45·60
25	0·48			45·67
26	0·48			45·64
28	0·49			45·74

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B.A.C. 5941, α Ophiuchi.				
July 4	0·50	(2·0)	° ′ 77 20	h. m. s. 17 28 45·68
5	0·51			45·63
8	0·51			45·71
10	0·52			45·58
Sept. 2	0·67			45·66
B.A.C. 6021, μ Herculis.				
June 13	0·45	(4·0)	62 12	17 41 15·24
18	0·46			15·25
19	0·46			15·23
24	0·48			15·22
28	0·49			15·23
July 5	0·51			15·22
8	0·51			15·22
B.A.C. 6355, α Lyræ.				
June [illegible]	0·48	(1·0)	51 20	18 32 26·13
July 5	0·51			26·05
Nov. 22	0·89			26·16
26	0·90			26·09
27	0·90			26·13
B.A.C. 6429, β Lyræ.				
June 18	0·46	(3·0)	56 47	18 45 10·23
24	0·48			10·17
25	0·48			10·17
26	0·48			10·22
28	0·49			10·19
July 5	0·51			10·31
8	0·51			10·20
10	0·52			10·15
Sept. 10	0·69			10·18
Nov. 22	0·89			10·18
26	0·90			10·24
27	0·90			10·24
B.A.C. 6528, ζ Aquilæ.				
July 4	0·50	(3·0)	76 20	18 59 17·80
5	0·51			17·76
8	0·51			17·88
10	0·52			17·85
B.A.C. 6595, ω Aquilæ.				
July 10	0·52	(5·0)	78 39	19 11 34·49
B.A.C. 6646, δ Aquilæ.				
July 5	0·51	(3·5)	87 9	19 18 47·53
10	0·52			47·46
20	0·55			47·50
B.A.C. 6772, γ Aquilæ.				
July 20	0·55	(3·0)	79 43	19 39 56·15
B.A.C. 6802, α Aquilæ.				
July 20	0·55	(1·5)	81 29	19 44 17·58
B.A.C. 6833, β Aquilæ.				
July 20	0·55	(3·5)	83 55	19 48 46·63
B.A.C. 7256, 32 Vulpeculæ.				
Sept. 7	0·68	(4·5)	62 27	20 48 53·58
B.A.C. 7369, ζ Cygni.				
Jan. 14	0·04	(3·0)	60 19	21 7 16·62
Sept. 2	0·67			16·57
7	0·68			16·59
B.A.C. 7478, β Aquarii.				
Sept. 7	0·68	(3·0)	96 9	21 24 33·34
B.A.C. 7561, ε Pegasi.				
Jan. 3	0·01	(2·5)	80 44	21 37 39·24
14	0·04			39·26
Sept. 7	0·68			39·[illegible]
B.A.C. 7627, 16 Pegasi.				
Sept. 7	0·68	(5·5)	64 42	21 47 0·70
B.A.C. 7688, α Aquarii.				
Sept. 2	0·67	(3·0)	90 58	21 58 57·03
10	0·69			57·06
[illegible]	0·70			57·12
B.A.C. 7759.				
Sept. 10	0·69		° ′ 29 54	h. m. s. 22 7 38·11
Oct. 2	0·75	6·0		38·[illegible]
B.A.C. 7779.				
Sept. 10	0·69	7·0	17 21	22 10 28·[illegible]
Oct. 2	0·75	6·0		27·96
B.A.C. 7795, γ Aquarii.				
Sept. 10	0·69	3·0	92 3	22 14 47·11
Oct. 2	0·75	3·0		47·13
3	0·75			47·21
B.A.C. 7908, ζ Pegasi.				
Sept. 2	0·67	(3·0)	79 52	22 34 49·72
10	0·69			49·74
23	0·73			49·79
Oct. 2	0·75			49·74
3	0·75			49·86
B.A.C. 7958, μ Pegasi.				
Sept. [illegible]	0·69	3·5	60 6	22 43 35·21
Oct. 2	0·75	4·0		35·09
3	0·75			35·15
B.A.C. 7970, λ Aquarii.				
Oct. 3	0·75	(4·0)	98 17	22 45 40·32
B.A.C. 7977.				
Sept. 10	0·69	7·0	88 52	22 47 4·64
23	0·73	7·0		4·61
Oct. 2	0·75	8·0		4·65
B.A.C. 7996.				
Sept. [illegible]	0·69	7·5	86 54	22 50 46·47
23	0·73	7·0		46·42
Oct. 2	0·75	8·0		46·40
B.A.C. 8024.				
Sept. 10	0·69	7·0	33 37	22 55 53·81
23	0·73	6·0		54·46
Oct. 2	0·75	6·0		53·81
3	0·75	7·0		53·97

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
B.A.C. 8034, α Pegasi.				
			° ′	h. m. s.
Sept. 2	0·67	(2·0)	75 31	22 58 8·23
10	0·69			8·22
23	0·73			8·19
Oct. 2	0·75			8·20
3	0·75			8·13
B.A.C. 8065.				
Sept. 10	0·69	8·0	88 35	23 2 34·81
23	0·73	8·0		34·88
Oct. 2	0·75	7·5		34·81
B.A.C. 8083.				
Sept. 10	0·69	6·0	33 34	23 6 53·62
23	0·73	5·5		53·62
Oct. 3	0·75	7·0		53·80
B.A.C. 8105, γ Piscium.				
Sept. 10	0·69	(4·5)	87 27	23 10 16·22
23	0·73			16·22
B.A.C. 8137.				
Sept. 10	0·69	7·0	28 46	23 14 26·48
23	0·73	6·0		26·68
B.A.C. 8147.				
Oct. 3	0·75	7·0	70 10	23 16 8·68
8	0·77	7·0		8·48
B.A.C. 8169, κ Piscium.				
Oct. 8	0·77	(5·5)	89 28	23 20 6·76
B.A.C. 8204.				
			° ′	h. m. s.
Sept. 23	0·73	8·0	18 44	23 26 51·90
Oct. 3	0·75	7·0		52·18
8	0·77	7·0		52·00
B.A.C. 8233, ι Piscium.				
Sept. 10	0·69	(4·5)	85 6	23 33 6·61
12	0·70			6·53
16	0·71			6·58
23	0·73			6·51
Oct. 2	0·75			6·42
3	0·75			6·48
7	0·76			6·53
8	0·77			6·47
B.A.C. 8247.				
Sept. 23	0·73	8·0	72 4	23 35 47·84
Oct. 2	0·75	8·0		47·92
3	0·75	7·5		47·91
B.A.C. 8252.				
Oct. 7	0·76		37 35	23 36 37·58
8	0·77	7·0		37·61
B.A.C. 8269.				
Sept. 23	0·73	8·0	86 30	23 40 57·02
Oct. 2	0·75	8·0		57·07
3	0·75	8·0		57·17
B.A.C. 8270.				
Oct. 7	0·76	8·5	86 34	23 41 1·27
B.A.C. 8298.				
			° ′	h. m. s.
Sept. 23	0·73	6·5	13 8	23 45 37·03
Oct. 2	0·75	7·0		36·88
3	0·75	7·0		37·12
7	0·76	7·0		37·04
B.A.C. 8315.				
Oct. 7	0·76	8·0	82 31	23 48 49·75
8	0·77	7·5		49·78
B.A.C. 8331, ω Piscium.				
Sept. 16	0·71	(4·5)	83 52	23 52 29·01
30	0·74			28·88
Oct. 7	0·76			28·87
9	0·77			28·93
11	0·77			28·87
17	0·79			28·98
22	0·80			28·99
B.A.C. 8338.				
Sept. 23	0·73	7·0	26 34	23 53 57·93
Oct. 2	0·75			58·00
3	0·75	7·0		58·21
8	0·77	7·5		58·01
B.A.C. 8350, 85 Pegasi.				
Oct. 9	0·77	(6·0)	63 36	23 55 13·79
B.A.C. 8364.				
Oct. 2	0·75	6·0	32 13	23 58 4·46
3	0·75	7·0		4·66
7	0·76	7·0		4·36
B.A.C. 8372.				
Sept. 23	0·73	6·0	32 18	23 59 19·54
Oct. 2	0·75			19·35
3	0·75	6·5		19·51

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EXPLANATION OF THE EDINBURGH TRANSIT OBSERVATIONS FOR 1867; AND THE METHODS OF THEIR REDUCTION.

Pages 560 to 579 contain the Transit Observations of stars for 1867, similarly with those for 1849, where the methods of reduction are more fully described; the variable data for the present year being as below.

The star observations were taken almost wholly by Mr Alexander Wallace, M.A., the First Assistant Astronomer. They were actually more numerous than here recorded, because, with a view chiefly to economy in printing, all days of observation with less than four standard stars have been struck out; also parts of a day far removed from the chief observing hours of the night; also those periods of the year when either the Instrumental corrections were uncertain, or the Clock going badly. The said observations, however, had been already computed in our MS. books, and have often served useful temporary purposes, as for approximate clock-corrections and instrumental errors.

The Micrometer observations for instrumental corrections have, on the other hand, always been taken by the Astronomer, and he has also decided on the quantities for computation to be adopted for each day of star observation.

Intervals of the Wires.

From 20 observations of α Ursæ Minoris, above and below the Pole, in the year 1867, the intervals of the wires and their Equatorial distances from their Mean or Middle point were found to be, the star being above the Pole,—

		s	
Wire	I.	+ 16·506	Equatorial
...	II.	+ 8·222	
...	III.	– 0·064	
...	IV.	– 7·962	
...	V.	– 16·682	

These values, immaterially different from those of the latter end of 1866, have been employed in the reductions throughout the year; using for Polaris (whose Declination varied between 88° 35′ 47″ and 88° 36′ 36″) the following quantities or those adapted to a declination of 88° 35′, with the amount of alteration due to each additional second of Declination added under the term of n'',—

		m	s		"		s	
Wire	I.	+ 11	7·89	+	n	×	·133	Declination 88° 35′
...	II.	+ 5	32·61	+	n	×	·065	
...	III.	– 0	2·60					
...	IV.	– 5	22·90	–	n	×	·065	
...	V.	– 11	15·02	–	n	×	·133	

and for δ Ursæ Minoris (whose Declination varied between 86° 36′ 7″ and 86° 36′ 45″) the following quantities or those adapted to a declination of 86° 36′,

with the amount of alteration due to each additional second of Declination added under the term of n'',—

		m. s.	s.	
Wire	I.	+ 4 38·34	+ n × ·023	Declination 86° 36′
...	II.	+ 2 18·64	+ n × ·012	
...	III.	− 0 1·08		
...	IV.	− 2 14·59	− n × ·012	
...	V.	− 4 41·30	− n × ·023	

The correction generally for the imperfect transit of a star, whose North Polar Distance is not very small, being

$$= \frac{\text{Sum of Equatorial intervals for Wires observed}}{\text{Number of Wires}} \times \text{cosecant of Star's N. P. D.},$$

this quantity being applied to the mean of whatever wires were observed.

With close Polar stars, the *Sine* is used in place of the *Arc*.

The signs and order of the Wires are to be changed when the star is below the Pole.

In the column entitled "Reduction to the Mean of the Wires," either the simple arithmetical mean of the Wires—if 5 were observed—is entered; or, if a less number, the reduced mean according to the method already explained and the quantities above given.

CORRECTIONS FOR INSTRUMENTAL DEVIATIONS.

These deviations are three in number, and are severally termed, Collimation error, Level error, and Azimuth error.

The Collimation error is the deviation of the line joining the optical centre of the object-glass and the Mean of the Wires, from the plane perpendicular to the axis of rotation; and is *mechanically* positive, or is positive as a correction for all objects at all altitudes both above and below the horizon, when the object-glass deviates to the east of the said plane:—0^s·012, the diurnal aberration, is included, for practical convenience, in the sum representing the collimation.

The Level error is the angle of inclination of the axis of rotation to the horizon, measured in a vertical plane; and is *mechanically* positive, as a correction, for all objects above the horizon, negative for those below, when the Western end is higher than the other.

The Azimuthal error is the angle of deviation of the axis of rotation (presumed approximately horizontal) from the East and West line, measured in a horizontal plane; and is *mechanically* positive as a correction for all objects South of the Zenith, or Nadir, and negative for those North of the same, when the Western end of said axis deviates towards the South.

COLLIMATION AND LEVEL ERRORS.

These are determined, as explained in former years, by special observations made from time to time with the collimating eye-piece, and by measuring micrometrically the distance between the Middle wire and its reflected image in reversed positions of the transit-instrument's axis.

For dates between the epochs of observation, the errors have been assumed to vary as the time, except where the readings of the earth-thermometers, as noticed in the Introduction, have indicated a modification thereof to be probably desirable.

AZIMUTHAL ERROR.

Of the three usual methods for determining the azimuthal position of a transit-instrument; viz. by a Polar star combined with an Equatorial star, by two successive transits of a Polar star above and below the Pole, or by three consecutive transits of a Polar star, the first plan has alone been adopted; for although the two latter have the advantage of being independent of the Right Ascension assumed for the stars, yet they can only be employed with safety when the stability of the instrument can be depended on through the twelve or twenty-four hours during which the observations extend.

Now grave doubts had long existed on this head; and, as set forth both in the Introduction to this volume and the Report to the Board of Visitors for 1870, towards the end of the volume, see pp. R 50 to R 57, they have since been proved to be only too well founded. The following therefore is the formula which has always been adopted, enabling, for each transit of a Polar star observed, a comparatively instantaneous determination of the Azimuthal error then to be made:—

$$\text{Azimuthal error} = \frac{\text{R.A. 1st} \ast - \text{R.A. 2d} \ast - (\text{obs. tr. 1st} \ast - \text{obs. tr. 2d} \ast) - \text{clock's loss in the interval}}{\left(\frac{\sin \text{Z.D. South}}{\sin \text{N.P.D.}} \text{ 1st} \ast\right) - \left(\frac{\sin \text{Z.D. South}}{\sin \text{N.P.D.}} \text{ 2d} \ast\right)}$$

In the course of the year 46 combinations of either α, or δ, Ursæ Minoris and a Clock star were obtained, from which the Azimuth error at these epochs was computed, and for dates between them the error was made to vary nearly as the time, modified in some cases by the temperature and the annual curve shown in Plate III.

TABLE I.

ADOPTED INSTRUMENTAL CORRECTIONS, EXPRESSED IN SECONDS OF TIME FOR CONVENIENCE OF APPLICATION TO TIME OBSERVATIONS.

Date.	Collimation.	Level.	Azimuth.
1867.	s.	s.	s.
Jan. 1	−0·27	+0·06	0·00
3	−0·27	+0·06	+0·05
4	−0·27	+0·07	+0·10
8	−0·27	+0·07	+0·21
10	−0·27	+0·08	+0·12
11	−0·27	+0·08	+0·04
14	−0·27	+0·08	+0·18
15	−0·27	+0·09	+0·20
16	−0·27	+0·09	+0·18
24	−0·27	+0·10	+0·17
25	−0·27	+0·11	+0·16
28	−0·06	+0·13	+0·14
29	−0·07	+0·13	+0·12
30	−0·07	+0·12	+0·10
Feb. 4	−0·08	+0·12	+0·09
6	−0·08	+0·11	+0·08
7	−0·08	+0·11	+0·06
8	−0·08	+0·11	+0·04
13	−0·09	+0·10	+0·03
21	−0·10	+0·09	+0·01
25	−0·10	+0·09	0·00
26	−0·10	+0·09	−0·01
27	−0·10	+0·08	−0·02
28	−0·10	+0·08	−0·04
Mar. 1	−0·10	+0·08	−0·05
2	−0·10	+0·08	−0·06
4	−0·10	+0·08	−0·07
11	−0·10	+0·07	−0·09
15	−0·10	+0·07	−0·10
16	−0·10	+0·07	−0·12
18	−0·10	+0·07	−0·13
20	−0·10	+0·07	−0·14
21	−0·10	+0·07	−0·15
24	−0·10	+0·06	−0·16
25	−0·10	+0·06	−0·18
26	−0·10	+0·06	−0·19
27	−0·10	+0·06	−0·22
28	−0·10	+0·06	−0·24
29	−0·10	+0·06	−0·24
April 2	−0·10	+0·06	−0·25
5	−0·10	+0·06	−0·25
9	−0·10	+0·05	−0·26

Date.	Collimation.	Level.	Azimuth.
1867.	s.	s.	s.
April 13	−0·10	+0·05	−0·27
15	−0·10	+0·05	−0·28
16	−0·10	+0·04	−0·28
28	−0·10	+0·02	−0·30
29	−0·10	+0·02	−0·32
May 7	−0·10	+0·01	−0·37
13	−0·10	0·00	−0·40
21	−0·10	−0·02	−0·45
22	−0·10	−0·02	−0·32
24	−0·10	−0·02	−0·34
28	−0·10	−0·03	−0·35
June 2	−0·10	−0·04	−0·36
4	−0·10	−0·04	−0·38
8	−0·10	−0·05	−0·39
11	−0·10	−0·06	−0·40
12	−0·10	−0·05	−0·41
13	−0·10	−0·07	−0·36
18	−0·10	−0·07	−0·54
19	−0·10	−0·07	−0·40
22	−0·10	−0·07	−0·41
24	−0·10	−0·07	−0·42
25	−0·10	−0·07	−0·58
26	−0·10	−0·07	−0·48
27	−0·10	−0·07	−0·48
28	−0·10	−0·07	−0·47
30	−0·10	−0·07	−0·47
July 1	−0·10	−0·08	−0·46
4	−0·11	−0·08	−0·46
5	−0·11	−0·08	−0·53
8	−0·12	−0·08	−0·51
10	−0·12	−0·08	−0·37
12	−0·13	−0·08	−0·38
14	−0·13	−0·08	−0·39
20	−0·15	−0·08	−0·39
27	−0·16	−0·09	−0·40
Aug. 1	−0·12	−0·09	−0·40
3	−0·12	−0·09	−0·40
6	−0·12	−0·09	−0·41
9	−0·12	−0·10	−0·41
16	−0·12	−0·10	−0·42

Date.	Collimation.	Level.	Azimuth.
1867.	s.	s.	s.
Aug. 20	−0·12	−0·10	−0·42
26	−0·12	−0·10	−0·43
Sept. 2	−0·12	−0·09	−0·43
5	−0·12	−0·09	−0·44
7	−0·12	−0·09	−0·44
10	−0·12	−0·09	−0·45
12	−0·12	−0·09	−0·45
15	−0·12	−0·08	−0·46
16	−0·12	−0·08	−0·46
17	−0·12	−0·08	−0·47
18	−0·12	−0·08	−0·47
20	−0·12	−0·07	−0·47
23	−0·12	−0·07	−0·48
30	−0·12	−0·05	−0·49
Oct. 1	−0·12	−0·05	−0·46
2	−0·12	−0·04	−0·43
3	−0·12	−0·04	−0·51
7	−0·12	−0·03	−0·38
8	−0·12	−0·02	−0·43
9	−0·12	−0·02	−0·45
11	−0·12	−0·02	−0·39
17	−0·12	−0·02	−0·46
19	−0·12	−0·02	−0·47
22	−0·12	−0·02	−0·48
25	−0·12	−0·03	−0·47
27	−0·12	−0·03	−0·45
29	−0·12	−0·02	−0·42
30	−0·12	−0·02	−0·40
31	−0·12	−0·02	−0·39
Nov. 1	−0·12	−0·02	−0·41
4	−0·12	−0·01	−0·43
6	−0·12	−0·01	−0·32
8	−0·12	0·00	−0·34
9	−0·12	0·00	−0·38
11	−0·12	+0·01	−0·42
13	−0·12	+0·01	−0·40
17	−0·12	+0·03	−0·38
18	−0·12	+0·03	−0·34
19	−0·12	+0·03	−0·30
22	−0·12	+0·04	−0·30
23	−0·12	+0·04	−0·30
26	−0·12	+0·05	−0·30

Date.	Collimation.	Level.	Azimuth.	Date.	Collimation.	Level.	Azimuth.	Date.	Collimation.	Level.	Azimuth.
1867.	s.	s.	s.	1867.	s.	s.		1867.	s.	s.	s.
Nov. 27	− 0·12	+ 0·06	− 0·31	Dec. 7	− 0·12	+ 0·06	− 0·32	Dec. 18	− 0·12	+ 0·03	− 0·24
				9	− 0·12	+ 0·06	− 0·33	19	− 0·12	+ 0·04	− 0·22
Dec. 3	− 0·12	+ 0·09	− 0·31	10	− 0·12	+ 0·06	− 0·33	23	− 0·12	+ 0·06	− 0·24
4	− 0·12	+ 0·07	− 0·31	11	− 0·12	+ 0·06	− 0·33	24	− 0·12	+ 0·06	− 0·25
5	− 0·12	+ 0·06	− 0·32	12	− 0·12	+ 0·06	− 0·34	28	− 0·12	+ 0·06	− 0·23
6	− 0·12	+ 0·06	− 0·32	17	− 0·12	+ 0·04	− 0·34	30	− 0·12	+ 0·06	− 0·21

The correction to the star observations of times of Transit, for each of the above three instrumental deviations successively, is,

$$\text{Collimation correction} \times \frac{1}{\text{sin Star's North Polar Distance}},$$

the sign being positive for a star above the Pole, and negative when it crosses the Meridian below the Pole.

$$\text{Level correction} \times \frac{\text{cos Star's Zenith Distance South}}{\text{sin Star's North Polar Distance}}.$$

the sign being positive for a star above the Pole, and negative when it crosses the Meridian below the Pole. And

$$\text{Azimuthal correction} = \frac{\text{sin Star's Zenith Distance South}}{\text{sin Star's North Polar Distance}},$$

the sign being positive for a star above the Pole *and* to the South of the Zenith, also for a star below the Pole and North of the Zenith; but negative when above the Pole and to the North of the Zenith.

CORRECTION OF THE CLOCK.

For computing the errors of the Clock and the Azimuthal errors of the Transit Instrument, the following Table of the Mean Right Ascensions of the principal stars for January 1, 1867, has been employed, and was kindly communicated at the time by G. B. Airy, Esq., Astronomer Royal, as being the same employed by him for reducing the Greenwich Observations of 1867.

TABLE II.

MEAN RIGHT ASCENSIONS ADOPTED OF STANDARD STARS.

Star's Name.	Assumed Mean Right Ascension, January 1, 1867.	Correction to Nautical Almanac.	Star's Name.	Assumed Mean Right Ascension, January 1, 1867.	Correction to Nautical Almanac.
	h. m. s.	s.		h. m. s.	s.
α Andromedæ	0 1 31·04	+0·06	η Geminorum	6 6 50·99	....
γ Pegasi	0 6 23·36	+0·06	μ Geminorum	6 14 54·85	+0·01
ι Ceti	0 12 35·99	....	β Canis Majoris	6 16 50·66	....
12 Ceti	0 23 15·05	−0·04	ν Geminorum	6	....
δ Andromedæ	0 31 31·95	....	γ Geminorum	6 30 1·67	−0·03
β Ceti	0 36 54·68	....	Cephei 51	6 37 12·79	....
μ Andromedæ	0 49 22·72	....	Sirius	6 39 ...	....
ε Piscium	0 56 2·56	−0·02	θ Canis Majoris	6 48 0·64	....
β Andromedæ	1 2 17·56	....	ε Canis Majoris	6 53 23·95	....
Polaris	1 10 17·36	+0·11	γ Canis Majoris	6 57 44·49	....
θ Ceti	1 17 22·50	+0·02	51 Geminorum	7 5 43·94	....
η Piscium	1 24 22·16	+0·05	δ Geminorum	7 12 10·70	0·00
ν Piscium	1 34 30·66	0·00	β Canis Minoris	7 19 56·21	....
β Arietis	1 47 17·78	+0·01	Castor	7 26 6·63	0·00
α Arietis	1 59 40·83	+0·01	Procyon	7 32 20·35	+0·10
67 Ceti	2 10 21·00	+0·04	Pollux	7 37 10·45	+0·03
ξ² Ceti	2 21 5·38	0·00	ξ Navis	7 43 42·05	....
δ Ceti	2 32 40·06	....	6 Cancri	7 55 20·73	−0·08
γ Ceti	2 36 24·65	+0·04	15 Argûs	8 1 52·82	....
σ Arietis	2 44 9·15	....	β Cancri	8 9 18·07	....
α Ceti	2 55 19·72	+0·06	d² Cancri	8 15 44·73	....
δ Arietis	3 4 1·65	+0·01	η Cancri	8 25 0·84	+0·03
ε¹ Arietis	3 13 33·12	....	γ Cancri	8 35 35·13	....
ο Tauri	3 17 39·53	....	ε Hydræ	8 39 43·86	−0·02
f Tauri	3 23 32·01	....	α Cancri	8 51 12·64	....
ε Eridani	3 26 39·92	....	κ Cancri	9 0 32·49	....
11 Tauri	3 32 49·93	....	83 Cancri	9 11 33·27	+0·10
δ Eridani	3 36 52·69	....	α Hydræ	9 21 3·07	+0·03
η Tauri	3 39 34·94	+0·05	ξ Leonis	9 24 46·42	....
γ¹ Eridani	3 51 49·46	....	ο Leonis	9 34 2·99	....
ω¹ Tauri	4 1 25·27	....	ε Leonis	9 38 17·87	+0·05
ο¹ Eridani	4 5 22·41	....	μ Leonis	9 45 11·68	....
γ Tauri	4 12 13·64	....	π Leonis	9 53 10·99	0·00
ε Tauri	4 20 51·15	+0·01	Regulus	10 1 17·19	+0·02
Aldebaran	4 28 17·47	−0·01	γ¹ Leonis	10 12 38·18	+0·01
μ Eridani	4 38 51·26	....	μ Hydræ	10	....
ι Aurigæ	4 48 20·12	−0·01	ρ Leonis	10 26 48·39	0·00
ε Leporis	4 59 49·65	....	34 Sextantis	10 35 45·33	....
Rigel	5 8 8·78	+0·01	l Leonis	10 42 15·85	+0·03
β Tauri	5 17 53·19	+0·07	d Leonis	10 53 41·44	....
δ Orionis	5 25 12·75	−0·03	χ Leonis	10 58 9·29	−0·01
α Leporis	5 26 51·88	....	δ Leonis	11 7 1·92	+0·02
ε Orionis	5 29 27·88	−0·01	δ Crateris	11 12 41·57	....
α Columbæ	5 34 50·04	....	τ Leonis	11 21 5·80	....
κ Orionis	5 41 26·91	....	υ Leonis	11 30 8·32	−0·03
α Orionis	5 47 58·31	+0·02	β Leonis	11 42 10·44	+0·05
1 Geminorum	5 56 2·18	....	π Virginis	11 54 3·43	....
ν Orionis	5 59 59·69	−0·02	ε Corvi	12 3 17·31	....

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Star's Name.	Assumed Mean Right Ascension, January 1, 1867.	Correction to Nautical Almanac.	Star's Name.	Assumed Mean Right Ascension, January 1, 1867.	Correction to Nautical Almanac.
	h. m. s.	s.		h. m. s.	s.
η Virginis	12 13 8·10	+0·05	α Lyræ	18 32 26·13	+0·07
δ² Corvi	12 22 59·22	....	2 Aquilæ	18	....
β Corvi	12 27 24·25	....	β Lyræ	18 45 10·19	+0·11
35 Virginis	12 41 5·08	....	ε Aquilæ	18 53 36·14	....
δ Virginis	12 48 54·31	....	ζ Aquilæ	18 59 17·78	+0·13
ε Virginis	12 55 33·36	....	ψ Sagittarii	19 7 22·06	....
θ Virginis	13 3 3·92	+0·03	ω Aquilæ	19 11 34·39	+0·04
Spica	13 18 11·31	+0·02	δ Aquilæ	19 18 47·48	+0·03
ζ Virginis	13 27 55·06	−0·02	α Vulpeculæ	19 23 10·29	....
m Virginis	13 34 37·99	....	μ Aquilæ	19 27 35·51	....
τ Bootis	13 40 56·52	....	h² Sagittarii	19 28 36·61	....
η Bootis	13 48 21·14	+0·01	γ Aquilæ	19 39 56·19	+0·09
τ Virginis	13 54 52·76	+0·06	α Aquilæ	19 44 17·62	+0·06
κ Virginis	14 5 48·25	....	β Aquilæ	19 48 46·78	+0·07
Arcturus	14 9 35·76	+0·06	ι Sagittarii	19 54 25·53	....
f Bootis	14 20 16·23	....	λ Ursæ Minoris	19 57 13·73	−0·23
ρ Bootis	14 26 5·89	0·00	θ Aquilæ	20 4 26·47	....
ε Bootis	14 39 10·72	+0·08	α² Capricorni	20 10 40·36	....
α² Libræ	14 43 31·46	+0·04	β Capricorni	20 13 32·15	....
ξ² Libræ	14 49 33·26	....	ρ Capricorni	20 21 16·25	....
ψ Bootis	14 58 44·84	−0·03	ε Delphini	20 26 51·48	....
β Libræ	15 9 51·13	+0·03	α Delphini	20 33 27·64	....
ι¹ Libræ	15 15 36·87	....	ε Aquarii	20 40 28·40	....
ζ Libræ	15 20 45·58	....	32 Vulpeculæ	20 48 53·53	+0·04
α Coronæ	15 29 3·46	+0·08	θ Capricorni	20 58 28·01	....
α Serpentis	15 37 43·09	+0·08	ζ Cygni	21 7 16·58	+0·07
ε Serpentis	15 44 11·26	....	α Equulei	21 9 10·43	....
γ Serpentis	15 50 18·69	....	ι Capricorni	21 14 50·23	....
β¹ Scorpii	15 57 42·41	....	β Aquarii	21 24 33·28	+0·02
δ Ophiuchi	16 7 22·03	+0·05	ξ Aquarii	21 30 40·14	....
γ Herculis	16 16 3·25	....	ε Pegasi	21 37 39·24	+0·04
Antares	16 21 15·36	....	δ Capricorni	21 39 41·76	....
λ Ophiuchi	16 24 12·43	....	16 Pegasi	21 47 0·71	+0·02
ζ Ophiuchi	16 29 50·22	....	α Aquarii	21 58 57·07	+0·04
ζ Herculis	16 36 16·39	+0·02	ι Pegasi	22 0 49·22	....
κ Ophiuchi	16 51 22·39	−0·05	θ Aquarii	22 9 48·79	+0·01
ε Herculis	16 55 12·14	....	γ Aquarii	22 14 47·15	....
η Ophiuchi	17 2 45·11	....	π Aquarii	22 23 36·36	....
α Herculis	17 8 35·04	+0·10	η Aquarii	22 28 31·23	+0·01
θ Ophiuchi	17 13 50·59	+0·06	ζ Pegasi	22 34 43·71	+0·07
ν Ophiuchi	17 19 54·97	....	μ Pegasi	22 43 35·15	....
α Ophiuchi	17 28 45·67	+0·06	λ Aquarii	22 45 40·38	....
β Ophiuchi	17 36 54·13	....	Fomalhaut	22 50 17·69	....
μ Herculis	17 41 15·26	+0·07	α Pegasi	22 58 8·21	+0·02
89 Herculis	17 50 3·31	....	γ Piscium	23 10 16·21	0·00
72 Ophiuchi	18 1 2·64	....	κ Piscium	23 20 6·84	−0·02
μ Sagittarii	18 5 48·53	....	ι Piscium	23 33 6·58	−0·03
η Serpentis	18 14 25·67	....	δ Sculptoris	23 41 59·58	....
δ Ursæ Minoris	18 15 14·75	−0·09	ω Piscium	23 52 28·93	−0·03
λ Sagittarii	18 19 45·75	....	2 Ceti	23 56 55·43	....

The Mean Right Ascensions are converted into Apparent for any day of observation, by the application of the reductions of mean to apparent places taken from the Nautical Almanac. The Correction of the Clock is determined from the observed transits of the stars in the foregoing Table (excepting the

close Polar stars), the corrections of the instrument being previously applied, compared with the Apparent Right Ascensions computed.

The Corrections of the Clock thus determined are contained in the column entitled "Correction of Clock observed."

The sign + prefixed to the Correction of the Clock denotes that the clock is slow: the sign − that it is fa[illegible]

On account partly of the [illegible] of the Clock-rate, and still [illegible] frequently of swerving in the azimuthal position of the Transit Instrument as produced by changes of temperature acting on its supporting stone piers during the observations, the "Adopted Clock Corrections" have been generally obtained by gradual[illegible] [illegible] of each night have been used [illegible] more by themselves [illegible] those of preceding and following nights.

At the same time, [illegible] tabular [illegible] in the usual manner, of the [illegible] of the Clock, its daily errors at [illegible] Sidereal Time, is given more or less [illegible] approximately by the [illegible] contained in the following Table.

TABLE III.

CORRECTION TO TRANSIT C[illegible] [illegible] SIDEREAL TIME.

Date.	Clock Correction.	Date.	Clock Correction.	Date.	Clock Correction.	Date.	Clock Correction.	Date.	Clock Correction.
1867		1867		1867				1867	
Jan. 3	47·75	Mar. 4	− 50·[illegible]	[illegible] 3	− 47·7[illegible]		− 46·21	[illegible] 9	41·57
4	− 47·00	15	[illegible]	[illegible]	[illegible]		− 45·19	11	− 41·00
8	− 50·04	16	− 51·12	8	− 47[illegible]	[illegible]	− 44·88	13	− 40·68
11	− 50·60	18	− 51·71	11	[illegible]		− 44·02	17	− 40·40
14	− 51·48	20	− 51·80	12	[illegible]		− 43·18	18	40·21
15	− 51·67	24	[illegible]	14	[illegible]			19	40·11
25	− 51·93	25	− 53·27	18	[illegible]	[illegible] 4	− 43·32	22	− 39·29
28	− 55·18	26	− 53·46	19	[illegible]	5	− 43·20	26	− 35·71
30	− 54·59	27	− 53·76	21	[illegible]	7	− 43·27	27	− 35·50
Feb. 4	− 54·37	28	− 53·86	25	− 43·8[illegible]	8	− 43·36		
6	− 54·53	29	− 53·95	26	− 43·[illegible]	9	− 43·34	Dec. 4	− 35·22
8	− 55·35	April 2	− 53·52	28	[illegible]	11	− 43·26	6	− 35·20
13	− 55·20	5	− 53·23			17	− 43·28	9	− 36·39
21	− 53·45	15	− 53·33	July 4	− 43·15	22	− 43·20	10	− 39·33
25	− 52·73	16	− 53·17	5	− 43·20	25	42·55	11	− 35·26
26	− 52·45			8	42·94	29	− 43·12	12	− 36·00
27	− 52·28	May 7	− 51·90	10	− 42·66			17	− 37·81
28	− 52·02	13	− 51·35	20	− 44·16			18	− 37·75
Mar. 1	− 51·86	21	− 49·98			Nov. 1	− 43·45	19	− 37·70
2	− 51·55	22	− 49·77	Sept. 2	− 44·93	4	− 42·86	23	− 37·80
		28	− 48·83	7	− 45·21	6	− 42·40	24	− 37·68
						8	− 41·95	30	− 36·18

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ROYAL OBSERVATORY, EDINBURGH.

OBSERVATIONS

MADE WITH

THE MURAL CIRCLE,

AND

CALCULATION

OF

APPARENT NORTH POLAR DISTANCES.

1867.

Digitized by

Date.	Star or other Object Observed. No. in British Assn. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer. Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Corr. to Mean N. P. Dist., Jan. 1, 1867.
1867.				h. m. s.				revs.	inches.	°	°				° ′ ″	″
Jan. 4	......	Nadir ‖ ¦	......	6 25 0	254 [illegible]	1 52·3	63·1	0·500	29·77	34·5	31·7	....	......	......	....	......
	......	Nadir ¦ ‖	......	....	254 0	1 64·0	72·1	0·500	......	......	......	....	......	......	....	......
	2334	....	......	....	79 56	3 6·1	9·6	0·830	29·77	......	31·7	....	......	5	+ 5 56 15·2	− 11·3
	......	Nadir ‖ ¦	......	7 19 0	251 0	1 51·9	62·5	0·500	......	......	......	....	......	......	....	......
	......	Nadir ¦ ‖	......	....	251 0	1 62·9	73·3	0·500	......	......	......	....	......	......	....	......
Jan. 7	......	Nadir ‖ ¦	......	5 55 0	251 0	1 54·0	62·7	0·500	29·17	37·0	42·5	....	......	......	....	......
	......	Nadir ¦ ‖	......	....	251 0	1 64·8	72·4	0·500	......	......	......	....	......	......	....	......
Jan. 11	......	Nadir ‖ ¦	......	4 46 0	251 0	1 54·4	61·4	0·500	29·48	33·1	26·0	....	......	......	....	......
	......	Nadir ¦ ‖	......	....	254 0	1 66·4	72·8	0·500	......	......	......	....	......	......	....	......
	1628	....	......	5 10 15	89 40	0 9·0	8·1	0·500	29·48	......	28·0	3. N.W.	0	6	+ 15 38 5·9	− 4·5
	1683	....	......	5 18 52	95 10	2 52·0	52·6	0·496	29·48	......	28·0	....	......	8	+ 21 40 50·0	− 6·1
	1730	δ Orionis	......	5 26 5	130 20	2 5·5	7·1	0·500	29·46	......	26·0	....	......	7	+ 56 20 4·1	− 12·5
	1826	....	......	5 40 25	120 30	0 18·2	20·5	0·464	29·46	......	26·0	....	......	8	+ 46 28 16·1	− 11·1
	1863	α Orionis	2·0	5 48 19	122 35	0 44·0	44·7	0·500	29·48	......	26·0	....	......	9	+ 48 33 42·1	− 11·5
	1932	....	......	5 56 21	91 20	4 40·0	40·0	0·500	29·48	......	26·0	....	......	10	+ 17 22 38·0	− 7·5
	2238	(a)	......	6 14 46	106 10	3 38·4	36·6	0·437	29·48	......	25·7	....	......	5	+ 32 11 31·3	− 11·1
	2522	α Canis Minoris	......	7 33 12	121 20	4 10·3	39·4	0·330	29·48	......	25·5	....	......	7	+ 50 22 33·6	− 12·2
	......	Nadir ‖ ¦	......	7 47 0	254 0	1 53·8	61·2	0·500	29·45	29·0	25·4	....	......	......	....	......
	......	Nadir ¦ ‖	......	....	254 0	1 65·9	73·6	0·500	......	......	......	....	......	......	....	......
Jan. 14	......	Nadir ‖ ¦	......	5 22 0	254 0	1 55·0	61·0	0·500	29·70	30·8	24·0	....	......	......	....	......
	......	Nadir ¦ ‖	......	....	254 0	1 65·8	73·6	0·500	......	......	......	....	......	......	....	......
	1826	....	6·0	5 40 27	120 30	0 20·0	20·1	0·500	29·70	......	24·0	6, N.W.	0	6	+ 46 28 17·7	− 11·3
	2022	....	......	6 10 38	119 55	4 17·1	17·6	0·500	29·70	......	24·0	....	......	7	+ 45 57 15·9	− 11·8
	2238	....	......	6 14 18	106 10	3 35·1	34·0	0·500	29·70	......	24·0	....	......	7	+ 32 11 32·5	− 11·0
	2292	....	......	6 54 31	119 10	0 1·9	2·1	0·500	29·70	......	24·0	....	......	6	+ 15 7 59·5	− 12·3
	2329	....	7·5	7 1 16	111 10	4 15·0	16·4	0·500	29·70	......	24·0	....	......	7	+ 40 12 14·4	− 12·0
	2522	α Canis Minoris	1·0	7 33 12	124 20	4 10·7	11·1	0·397	29·73	......	24·0	....	......	7	+ 50 22 36·3	− 12·5
	2586	....	7·0	7 42 35	101 25	2 19·1	15·3	0·500	29·73	......	24·0	....	......	6	+ 27 25 16·4	− 12·4
	......	Nadir ‖ ¦	......	7 57 0	254 0	1 54·3	63·1	0·500	29·73	28·0	24·0	....	......	......	....	......
	......	Nadir ¦ ‖	......	....	254 0	1 65·0	72·2	0·500	......	......	......	....	......	......	....	......
Jan. 25	......	Nadir ‖ ¦	......	5 51 0	254 0	1 51·9	61·7	0·500	29·46	40·0	38·2	....	......	......	....	......
	......	Nadir ¦ ‖	......	....	254 0	1 66·0	74·2	0·500	......	......	......	....	......	......	....	......
	2046	....	7·0	6 15 7	73 35	3 27·3	20·7	0·500	29·46	......	38·2	10, W.	0	6	− 0 23 36·6	− 3·9
	2306	....	......	6 57 11	118 45	5 3·9	4·6	0·440	29·52	......	38·0	....	......	6	+ 44 46 1·3	− 12·9
	2379	....	......	7 9 21	80 15	2 35·3	35·7	0·500	29·52	......	38·[illegible]	....	......	7	+ 6 15 32·2	− 6·3
	2522	α Canis Minoris	......	7 33 17	124 20	4 41·8	42·4	0·440	29·52	......	38·0	....	......	8	+ 50 22 38·6	− 13·7
	2683	....	......	7 57 59	110 45	0 58·1	58·2	0·500	29·52	......	38·0	....	......	7	+ 36 43 56·0	− 12·4
	2867	....	......	8 26 20	119 25	2 45·0	47·4	0·500	29·52	......	37·9	....	......	6	+ 45 25 41·3	− 11·5
	......	Nadir ‖ ¦	......	8 33 0	254 0	1 52·3	61·8	0·500	29·52	38·4	37·9	....	......	......	....	......
	......	Nadir ¦ ‖	......	....	254 0	1 65·3	74·6	0·500	......	......	......	....	......	......	....	......
Jan. 28	......	Nadir ‖ ¦	......	6 43 0	254 0	1 53·0	65·0	0·500	29·30	43·6	43·0	....	......	......	....	......
	......	Nadir ¦ ‖	......	....	254 0	1 62·0	72·3	0·500	......	......	......	....	......	......	....	......
	2306	....	......	6 57 [illegible]	118 45	4 57·7	57·4	0·650	29·30	......	43·0	5, S.	0	7	+ 44 48 0·5	− 13·0
	2410	δ Geminorum	......	7 13 6	107 45	0 42·9	43·3	0·100	29·30	......	42·0	....	......	7	+ 33 43 29·8	− 11·6
	2463	....	......	7 21 20	102 10	0 0·0	0·0	0·150	29·30	......	42·9	....	......	7	+ 28 7 55·9	− 11·2
	2522	α Canis Minoris	......	7 33 16	124 20	4 39·8	40·6	0·500	29·30	......	42·9	....	......	6	+ 50 22 36·6	− 13·9

(a) Aurora in N.W.

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Date.	Star or other Object Observed: No. in British Asso. Catalogue.	Star or other Object Observed: Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1867.
1867.				h. m. s.	° ′	′ ″	″	revs.	inches	°	°				° ′ ″	″
Jan. 28	2867	......	......	8 26 21	119 25	2 46·0	48·0	0·500	29·35	......	42·7	......	......	8	+45 25 45·2	−13·5
	2971	ι Hydræ......	......	8 40 40	123 0	4 6·6	9·1	0·668	29·35	......	42·6	......	......	6	+49 2 11·0	−13·3
	3053	......	......	8 51 27	120 0	4 45·6	48·9	0·500	29·35	......	42·6	......	......	8	+46 2 45·9	−13·4
	......	Nadir ‖ |	......	8 56 0	254 0	1 54·6	61·5	0·500	29·35	43·1	42·6	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 66·0	72·5	0·500	......	......	......	......	......	......	......	......
Jan. 30	......	Nadir ‖ |	......	6 39 0	254 0	1 53·5	62·1	0·500	29·15	42·1	40·3	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 64·0	72·2	0·500	......	......	......	......	......	......	......	......
	2292	......	......	......	119 10	0 4·0	2·0	0·500	29·15	......	40·3	10, S.W.	0	7	+45 8 0·6	−13·1
	2410	δ Geminorum......	......	7 13 6	107 45	0 29·3	29·1	0·500	29·15	......	42·3	......	......	6	+33 43 26·9	−11·8
	2488	......	......	7 27 47	83 30	1 12·0	10·2	0·500	29·15	......	41·9	......	......	7	+ 9 29 7·9	− 8·8
	2586	......	......	7 42 37	101 25	2 22·0	20·2	0·500	29·15	......	39·7	......	......	7	+27 25 18·9	−11·7
	2683	......	......	7 57 59	110 45	0 54·1	52·9	0·710	29·1[illegible]	......	39·3	......	......	8	+36 43 57·2	−13·0
	2748	......	......	8 5 52	115 30	4 51·1	51·4	0·500	29·15	......	38·1	......	......	8	+41 32 50·2	−13·1
	2867	......	......	8 26 20	119 25	2 43·8	43·4	0·700	29·15	......	37·9	......	......	7	+45 25 47·3	−13·6
	2971	ι Hydræ......	......	8 40 39	123 0	4 13·9	16·3	0·500	29·15	......	37·6	......	......	7	+49 2 13·5	−13·5
	3053	......	6·0	......	120 0	4 48·9	48·9	0·500	29·15	......	37·5	......	......	5	+46 2 47·6	−13·5
	......	Nadir ‖ |	......	9 0 0	254 0	1 52·9	61·9	0·500	29·15	38·9	37·5	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 66·0	73·8	0·500	......	......	......	......	......	......	......	......
Feb. 6	......	Nadir ‖ |	......	6 30 0	254 0	1 52·9	64·8	0·500	28·55	40·0	36·3	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 65·4	73·9	0·500	......	......	......	......	......	......	......	......
	2292	......	......	6 54 33	119 10	0 8·8	8·9	0·500	28·55	......	35·3	7, S.W.	0	7	+45 8 6·7	−13·4
	2463	......	......	......	102 5	4 56·8	55·8	0·500	28·55	......	35·1	......	......	7	+28 7 55·1	−10·8
	2488	......	6·0	7 27 47	83 30	1 10·5	8·9	0·595	28·57	......	35·0	......	......	7	+ 9 29 9·5	− 7·7
	2683	......	......	7 57 59	110 45	0 53·9	52·3	0·760	28·60	......	34·9	......	......	8	+36 43 58·5	−12·9
	2748	......	......	8 5 51	115 30	4 52·0	50·5	0·587	28·61	......	34·8	......	......	6	+41 32 52·8	−13·6
	2867	......	......	8 26 21	119 25	2 47·7	46·0	0·543	28·61	......	34·7	......	......	8	+45 25 46·6	−14·0
	2988	......	......	8 44 3	74 30	2 44·4	44·2	0·600	28·61	......	34·6	......	......	7	+ 0 30 43·9	−10·4
	......	Nadir ‖ |	......	9 40 0	254 0	1 53·8	63·0	0·500	28·66	35·0	34·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 62·6	72·9	0·500	......	......	......	......	......	......	......	......
Feb. 8	......	Nadir ‖ |	......	7 28 0	254 0	1 52·4	60·0	0·500	28·75	40·7	39·2	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 65·0	72·2	0·500	......	......	......	......	......	......	......	......
	2586	......	......	7 42 39	101 25	2 18·0	17·0	0·604	28·75	......	39·1	8, W.	0	7	+27 25 18·7	−11·1
	2683	(a)	......	7 58 0	110 45	0 58·5	58·0	0·500	28·75	......	39·0	......	......	6	+36 43 56·6	−12·9
	2971	ι Hydræ......	......	8 40 40	123 0	4 11·7	13·1	0·630	28·80	......	39·8	......	......	8	+49 2 14·9	−14·2
	3053	(b)	......	8 51 27	120 0	4 40·0	40·6	0·617	28·80	......	40·0	......	......	8	+46 2 42·7	−14·0
	3083	......	6·5	8 56 52	78 35	3 23·0	23·0	0·595	28·80	......	40·0	......	......	7	+ 4 36 23·2	−11·0
	3133	......	......	9 6 13	125 30	3 46·1	47·5	0·500	28·80	......	40·0	......	......	7	+51 31 45·5	−14·0
	3242	θ Ursæ Majoris......	......	9 24 52	77 40	2 47·6	47·3	0·347	28·80	......	40·0	......	......	9	+ 3 40 40·4	−12·2
	......	Nadir ‖ |	......	9 40 0	254 0	1 52·6	61·2	0·500	28·80	40·7	40·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 64·4	73·0	0·500	......	......	......	......	......	......	......	......
Feb. 13	......	Nadir ‖ |	......	7 40 0	254 0	1 53·0	60·9	0·500	......	......	......	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 65·1	72·6	0·500	......	......	......	......	......	......	......	......
Feb. 21	......	Nadir ‖ |	......	7 36 0	254 0	1 53·2	64·2	0·500	30·00	47·9	47·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 66·1	72·5	0·500	......	......	......	......	......	......	......	......
	3013	......	......	......	124 5	3 20·5	24·0	0·200	30·00	......	47·0	5, W.	5	3	+50 6 12·2	−15·0
	3083	......	......	8 56 50	78 35	3 23·6	25·2	0·500	30·00	......	46·9	......	......	5	+ 4 36 21·6	− 8·4

(a) Occasional showers. (b) Aurora in N.W.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist. Jan. 1, 1867.
1867.				h m s	° ′	′ ″	″	r	inches	°	°				° ′ ″	″
Feb. 21	3242	θ Ursæ Majoris		9 24 50	77 10	2 31·1	33·1	0·664	30·00		46·8			6	+ 3 40 33·5	− 9·6
	3331	ι Leonis		9 39 11	105 30	5 52·6	53·9	0·500	30·00		46·8			7	+ 31 33 52·1	− 13·0
	3380			9 47 39	123 20	3 37·3	38·7	0·484	30·00		46·8			7	+ 49 21 27·7	− 14·2
	3427			9 57 6	96 40	1 54·0	56·9	0·558	30·00		46·8			8	+ 22 39 54·7	− 12·5
		Nadir ‖		10 31 0	254 0	1 52·9	64·0	0·500	30·00	47·7						
		Nadir ‖			254 0	1 63·1	73·0	0·500								
Feb. 22		Nadir ‖		7 10 0	254 0	1 53·9	62·9	0·500	29·84	47·8	46·4					
		Nadir ‖			254 0	1 65·2	75·0	0·500								
	2748			8 5 13	115 30	1 48·0	50·0	0·528	29·84		46·0			6	+ 41 32 49·2	− 13·7
	2867			8 26 19	119 25	2 49·7	49·8	0·500	29·84		46·0			7	+ 45 25 48·1	− 14·4
	3053			8 51 26	120 0	4 43·2	44·2	0·580	29·84		46·0			8	+ 46 2 44·5	− 14·5
Feb. 26		Nadir ‖		8 23 0	254 0	1 51·6	59·3	0·500	29·80	44·0	34·0					
		Nadir ‖			254 0	1 64·6	72·1	0·500								
	2971	ι Hydræ		8 10 37	123 0	4 9·4	11·9	0·560	29·78		34·0	1, W.	0	6	+ 49 2 11·9	− 15·1
	3053			8 51 24	120 0	4 39·0	40·6	0·538	29·78		34·0			7	+ 46 2 40·1	− 14·5
	3103			8 59 41	112 15	5 15·3	14·5	0·500	29·78		34·0			6	+ 38 18 14·5	− 13·3
	3242	θ Ursæ Majoris		9 24 49	77 40	2 36·2	36·0	0·500	29·78		34·0			8	+ 3 40 33·5	− 8·6
	3331	ι Leonis		9 39 11	105 35	0 51·6	51·4	0·630	29·78		34·0			8	+ 31 33 53·5	− 12·7
	3375			9 46 33	94 20	2 13·4	14·0	0·500	29·78		34·0			7	+ 20 20 42·0	− 11·5
	3420		7·0	9 55 13	97 45	3 54·6	56·4	0·500	29·77		34·0			6	+ 23 46 54·3	− 12·0
	3484		7·0	10 7 24	97 50	4 5·8	7·8	0·550	29·77		34·0			6	+ 23 52 7·0	− 12·2
	2529			10 14 27	122 50	2 28·8	30·2	0·619	29·77		34·0			8	+ 48 50 31·5	− 13·9
		Nadir ‖		10 40 0	254 0	1 53·4	62·1	0·500	29·77	35·0	33·8					
		Nadir ‖			254 0	1 64·0	71·3	0·500								
Feb. 27		Nadir ‖		8 21 0	254 0	1 52·0	60·0	0·500	29·93	38·9	33·0					
		Nadir ‖			254 0	1 65·7	72·7	0·500								
	3375			9 46 33	94 20	2 44·9	42·9	0·595	29·93		33·7			7	+ 20 20 43·7	− 11·3
	3438			9 58 41	124 15	4 35·7	36·9	0·500	29·93		33·6			8	+ 50 17 35·7	− 14·3
		Nadir ‖		10 19 0	254 0	1 52·0	60·0	0·500	29·93	34·0	33·4					
		Nadir ‖			254 0	1 64·7	72·7	0·500								
Feb. 28		Nadir ‖		8 42 0	254 0	1 52·9	64·8	0·500	30·16		34·0					
		Nadir ‖			254 0	1 62·4	72·6	0·500								
	3418			9 54 52	120 20	3 14·8	16·2	0·560	30·16		34·5			7	+ 46 21 14·7	− 14·1
	3529				122 50	2 27·8	31·2	0·500	30·17		34·0			7	+ 48 50 28·4	− 13·9
	3662			10 35 33	118 30	2 31·8	38·1	0·500	30·17		33·9			6	+ 44 30 34·1	− [illegible]
		Nadir ‖		10 52 0	254 0	1 53·4	63·9	0·500	30·17	35·1	33·9					
		Nadir ‖			254 0	1 61·9	73·3	0·500								
Mar. 1		Nadir ‖		8 38 0	254 0	1 53·2	62·8	0·500	30·32	39·0	37·0					
		Nadir ‖			254 0	1 65·0	73·2	0·500								
	3001			8 57 58	79 50	0 57·6	60·1	0·789	30·32		37·0			6	+ 5 49 3·9	− 7·1
	3242	θ Ursæ Majoris		9 24 49	77 40	2 34·9	37·1	0·500	30·32		37·0	1, W.	0	7	+ 3 40 33·1	− 7·9
	3331	ι Leonis		9 39 11	105 35	0 51·1	53·7	0·500	30·32		37·0			8	+ 31 33 50·7	− 12·3
	3438			9 58 43	124 15	4 34·4	36·4	0·500	30·32		37·0			8	+ 50 17 34·1	− 14·3
	3484		7·0	10 7 25	97 50	4 6·8	9·6	0·500	30·32		36·9			7	+ 23 52 6·6	− 11·9
	3529			10 14 28	122 50	2 31·8	35·0	0·500	30·32		36·9			8	+ 48 50 31·8	− 11·9
	3529			10 23 45	127 45	2 44·4	45·2	0·500	30·32		36·8			7	+ 53 45 43·0	− 13·9
		Nadir ‖		10 50 0	254 0	1 52·0	64·0	0·500	30·32		36·8					
		Nadir ‖			254 0	1 62·1	73·1	0·500								

Date.	Star or other Object Observed. No. in British Ass. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	B.	Micrometer.	Barometer	Interior Thermometer. Fahr.	Exterior Thermometer. Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1867.
1867				h. m. s.	° ′	r ″	″	revs.	inches	°	°				° ′ ″	″
Mar. 11	......	Nadir ‖ |	......	9 33 0	254 0	1 51·8	59·2	0·500	29·63	36·6	31·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 66·9	75·3	0·500	......	......	......	......	......	......	......	......
	3380	......	......	9 47 35	123 20	3 29·9	31·0	0·500	29·63	......	31·0	8, N.E.	2	6	+49 21 28·9	−14·6
	3427	......	......	9 57 5	96 40	1 49·7	51·4	0·500	29·63	......	31·0	......	......	7	+22 39 48·5	−10·2
	......	Nadir ‖ |	......	10 22 0	254 0	1 52·1	59·7	0·500	29·63	34·1	31·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 67·2	74·7	0·500	......	......	......	......	......	......	......	......
Mar. 15	......	Nadir ‖ |	......	9 51 0	254 0	1 51·4	58·0	0·500	29·60	35·0	29·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 67·8	75·6	0·500	......	......	......	......	......	......	......	......
	3529	......	......	10 14 27	122 50	2 39·0	39·0	0·500	29·60	......	29·0	0	1	6	+48 50 37·1	−14·1
	3662	......	......	......	118 30	2 40·1	42·0	0·500	29·60	......	28·9	......	......	4	+44 30 39·3	−13·2
	3726	......	......	10 46 17	128 10	4 26·6	28·2	0·448	29·60	......	28·7	......	......	6	+54 12 24·1	−14·0
	3834	δ Leonis	......	11 7 54	108 40	3 42·0	40·8	0·719	29·60	......	28·6	......	......	8	+34 41 46·1	−11·9
	3869	......	......	11 16 24	111 45	3 53·9	51·4	0·500	29·60	......	28·8	......	......	7	+37 46 52·8	−12·1
	......	Nadir ‖ |	......	11 50 0	254 0	1 51·8	59·1	0·500	29·60	33·1	28·6	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 67·4	75·8	0·500	......	......	......	......	......	......	......	......
Mar. 20	......	Nadir ‖ |	......	9 7 0	254 0	1 53·0	65·0	0·500	29·55	36·0	31·8	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 66·6	74·0	0·500	......	......	......	......	......	......	......	......
	3529	......	......	10 14 28	122 50	2 34·6	35·0	0·612	29·55	......	31·7	1, N.E.	5	6	+48 50 35·2	−14·2
	3662	......	......	10 35 33	118 30	2 39·2	39·8	0·528	29·55	......	31·6	......	......	7	+44 30 37·8	−13·1
	3726	......	......	10 46 15	128 10	4 25·0	25·6	0·526	29·55	......	31·4	......	......	7	+54 12 23·4	−14·1
	3780	......	......	10 57 39	121 35	5 37·7	38·4	0·500	29·55	......	31·3	......	......	6	+47 38 35·7	−13·1
	3834	δ Leonis	......	11 7 56	108 40	3 52·7	51·3	0·390	29·55	......	31·3	......	......	8	+34 41 46·7	−11·5
	3996	......	......	11 43 11	124 0	2 42·7	44·5	0·500	29·55	......	31·0	......	......	7	+50 0 40·8	−12·2
	......	Nadir ‖ |	......	11 55 0	254 0	1 52·8	64·6	0·500	29·55	34·4	30·8	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 67·0	73·9	0·500	......	......	......	......	......	......	......	......
Mar. 21	......	Nadir ‖ |	......	10 52 0	254 0	1 53·9	62·5	0·500	29·62	36·0	31·2	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 68·4	74·2	0·500	......	......	......	......	......	......	......	......
	3834	δ Leonis	......	11 7 55	108 40	3 49·6	47·8	0·500	29·62	......	31·2	......	......	6	+34 41 46·4	−11·4
	3869	......	......	11 16 25	111 45	3 48·7	48·9	0·500	29·62	......	31·1	......	......	7	+37 46 46·5	−11·7
	......	Nadir ‖ |	......	12 21 0	254 0	1 53·1	65·1	0·500	29·62	34·1	31·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 66·4	73·5	0·500	......	......	......	......	......	......	......	......
Mar. 26	......	Nadir ‖ |	......	9 22 0	254 0	1 54·8	61·4	0·500	28·72	44·4	44·4	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 65·8	72·5	0·500	......	......	......	......	......	......	......	......
	3375	......	......	9 46 35	94 20	2 42·8	42·2	0·500	28·72	......	44·4	8, W.	0	6	+20 20 39·9	− 7·4
	3439	......	......	9 58 53	94 20	0 20·0	20·4	0·500	28·72	......	44·0	......	......	7	+20 18 17·3	− 7·6
	3529	......	......	10 14 28	122 50	2 39·8	41·4	0·500	28·72	......	44·0	......	......	8	+48 50 38·4	−14·0
	3592	......	......	10 23 47	127 45	2 49·7	52·1	0·500	28·72	......	44·0	......	......	6	+53 45 48·5	−14·7
	3726	......	......	......	128 10	4 28·8	30·0	0·500	28·74	......	43·5	......	......	4	+54 12 27·3	−14·2
	3780	......	......	10 57 41	121 40	0 41·2	43·0	0·500	28·74	......	43·4	......	......	6	+47 38 39·6	−12·9
	3834	δ Leonis	......	11 7 56	108 40	3 53·0	53·0	0·418	28·75	......	43·4	......	......	7	+34 41 49·0	−10·9
	3869	(a)	......	11 16 25	111 45	3 51·1	51·9	0·600	28·75	......	43·4	......	......	8	+37 46 52·6	−11·2
	4153	......	......	12 14 32	102 35	2 19·1	19·7	0·500	28·75	......	43·6	......	......	7	+28 35 17·2	− 9·9
	4199	......	9·0	12 21 54	103 15	5 10·2	10·6	0·368	28·75	......	44·0	......	......	5	+29 18 4·9	−10·0
	4231	......	......	12 27 48	104 45	3 3·8	4·9	0·500	28·75	......	44·0	......	......	6	+30 46 2·4	−10·0
	......	Nadir ‖ |	......	12 40 0	254 0	1 52·8	57·8	0·500	28·75	44·0	44·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 68·0	76·2	0·500	......	......	......	......	......	......	......	......

(a) Sky getting cloudy.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1867.
1867.				h. m. s.	° ′	′ ″	″	revols.	inches	°	°				° ′ ″	″
Mar. 27	......	Nadir	......	9 42 0	254 0	1 55·0	61·8	0·500	28·86	43·7	40·0	......	......	......	......	......
	......	Nadir	......	....	254 0	1 64·3	73·1	0·500	......	......	......	......	......	......	......	......
	3529	......	......	10 14 27	122 50	2 36·8	37·5	0·500	28·86	......	40·0	7, W.	0	7	+48 50 35·2	−14·0
	3662	......	......	10 35 35	118 30	2 39·9	38·1	0·500	28·86	......	40·0	......	......	6	+44 30 37·2	−12·8
	3726	......	......	10 46 17	128 10	4 25·9	26·9	0·500	28·86	......	40·0	......	......	7	+54 12 24·5	−14·2
	3780	......	......	10 57 40	121 40	0 36·0	37·0	0·561	28·86	......	40·0	......	......	7	+47 38 35·9	−12·9
	3834	δ Leonis	......	11 7 56	108 40	3 51·8	50·8	0·470	28·86	......	40·0	......	......	8	+34 41 49·0	−10·8
	3869	......	......	11 16 26	111 45	3 53·1	53·9	0·500	28·86	......	40·0	......	......	6	+37 46 52·0	−11·2
	4153	......	......	12 14 31	102 35	2 26·6	25·4	0·265	28·88	......	39·0	......	......	7	+28 35 17·4	− 9·8
	4199	......	......	12 21 53	103 15	5 6·9	7·2	0·500	28·88	......	39·0	......	......	7	+29 18 5·4	− 9·8
	4231	......	......	12 27 48	104 45	3 3·4	4·0	0·500	28·88	......	38·8	......	......	6	+30 46 1·9	− 9·9
	......	Nadir	......	12 44 0	254 0	1 53·7	63·9	0·500	28·88	40·8	38·8	......	......	......	......	......
	......	Nadir	......	....	254 0	1 64·0	72·6	0·500	......	......	......	......	......	......	......	......
Mar. 28	......	Nadir	......	10 1 0	254 0	1 55·9	63·2	0·500	29·01	42·3	39·0	......	......	......	......	......
	......	Nadir	......	....	254 0	1 62·9	70·7	0·500	......	......	......	......	......	......	......	......
	3662	......	......	10 35 34	118 30	2 39·6	39·2	0·500	29·03	......	38·3	4, W.	0	6	+44 30 37·9	−12·7
	3780	......	......	10 57 37	121 35	5 39·7	40·5	0·500	29·03	......	38·2	......	......	7	+47 38 38·8	−12·9
	3834	δ Leonis	......	11 7 56	108 40	3 49·6	46·6	0·500	29·03	......	38·0	......	......	7	+34 41 47·9	−10·7
	3869	......	......	11 16 26	111 45	3 53·7	53·7	0·500	29·03	......	38·0	......	......	6	+37 46 52·5	−11·1
	3996	......	......	11 43 13	124 0	2 44·3	46·1	0·500	29·03	......	38·0	......	......	7	+50 0 43·4	−12·0
	......	Nadir	......	12 19 0	254 0	1 52·9	64·0	0·500	29·03	38·9	37·9	......	......	......	......	......
	......	Nadir	......	....	254 0	1 63·6	74·1	0·500	......	......	......	......	......	......	......	......
May 7	......	Nadir	......	12 54 0	254 0	1 51·8	60·8	0·500	29·77	55·0	55·0	......	......	......	......	......
	......	Nadir	......	....	254 0	1 64·9	74·0	0·500	......	......	......	......	......	......	......	......
	4421	β Comæ	......	13 6 31	101 25	0 33·9	32·7	0·812	29·77	......	55·0	2, W.	0	6	+27 23 39·6	− 2·3
	4575	......	6·0	13 38 18	106 35	1 25·8	28·8	0·581	29·77	......	54·1	......	......	6	+32 34 28·1	− 2·9
	4627	......	7·0	13 46 3	94 30	3 8·1	10·2	0·397	29·77	......	53·9	......	......	6	+20 31 4·6	− 0·7
	4729	α Bootis	......	14 10 28	110 5	1 9·9	11·8	0·520	29·77	......	53·7	......	......	7	+36 4 9·9	− 3·4
	4797	(a)	......	14 23 36	93 10	1 26·0	30·2	0·570	29·77	......	53·5	......	......	4	+19 9 27·8	− 0·4
	4876	ε Bootis	......	14 40 2	102 15	5 39·0	41·6	0·609	29·77	......	53·4	......	......	6	+28 18 42·3	− 1·6
	......	Nadir	......	14 45 0	254 0	1 55·5	63·3	0·500	29·77	53·4	53·4	......	......	......	......	......
	......	Nadir	......	....	254 0	1 64·0	72·0	0·500	......	......	......	......	......	......	......	......
May 13	......	Nadir	......	13 13 0	254 0	1 52·2	60·2	0·500	29·62	46·0	38·0	......	......	......	......	......
	......	Nadir	......	....	254 0	1 64·8	73·4	0·500	......	......	......	......	......	......	......	......
	4756	......	......	14 14 42	77 15	5 24·7	27·3	0·636	29·62	......	38·0	5, N.E.	5	7	+ 3 18 27·3	+ 1·3
	......	Nadir	......	15 23 0	254 0	1 51·8	61·9	0·500	29·62	41·3	37·8	......	......	......	......	......
	......	Nadir	......	....	254 0	1 65·1	72·9	0·500	......	......	......	......	......	......	......	......
May 21	......	Nadir	......	14 13 0	254 0	1 53·0	59·2	0·500	29·77	46·4	40·5	......	......	......	......	......
	......	Nadir	......	....	254 0	1 65·0	73·5	0·500	......	......	......	......	......	......	......	......
	4863	......	......	14 38 7	92 35	4 33·1	34·1	0·498	29·77	......	40·0	1, E.	0	6	+18 37 32·3	+ 2·9
	4934	......	......	14 51 48	86 15	3 40·4	42·4	0·500	29·77	......	40·0	......	......	7	+14 16 39·7	+ 3·5
	4992	......	......	15 3 18	74 55	0 3·9	7·1	0·630	29·77	......	40·0	......	......	7	+ 0 53 5·9	+ 5·0
	5071	......	......	15 17 0	77 30	2 56·9	59·5	0·533	29·77	......	39·7	......	......	8	+ 3 30 56·7	+ 4·3
	5284	γ Serpentis	......	15 51 9	113 50	2 41·7	42·3	0·500	29·77	......	39·0	......	......	8	+39 50 41·3	+ 1·3
	5452	......	6·0	16 15 7	108 30	1 19·9	21·3	0·487	29·77	......	38·9	......	......	7	+34 29 19·2	+ 1·5
	......	Nadir	......	16 27 0	254 0	1 53·2	61·8	0·500	29·77	43·4	38·9	......	......	......	......	......
	......	Nadir	......	....	254 0	1 65·3	74·9	0·500	......	......	......	......	......	......	......	......

(a) Scarcely visible.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1867.
1867.				h. m. s.	° ′	′ ″	″	revols.	inches	°	°				° ′ ″	″
May 22		Nadir ‖|		14 0 0	254 0	1 51·9	61·7	0·500	29·96	47·0	42·0					
		Nadir |‖			254 0	1 61·7	71·6	0·500								
	4756		6·0	14 14 42	77 15	5 27·2	30·4	0·500	29·96		41·9	2, N.N.E.	0	6	+ 3 18 27·4	+ 5·7
	4820				96 50	1 46·2	48·4	0·497	29·96		41·9			5	+22 49 46·2	+ 2·4
	4876	ι Bootis		14 40 1	102 15	5 39·3	39·5	0·500	29·96		41·1			7	+28 18 39·3	+ 1·5
	4934			14 51 29	88 15	3 41·8	44·4	0·500	29·95		41·0			6	+14 16 42·0	+ 3·7
	4992			15 3 18	74 55	0 5·5	9·0	0·637	29·95		41·0			8	+ 0 53 8·5	+ 5·3
	5071			15 17 1	77 30	2 54·7	57·9	0·557	29·95		41·0			7	+ 3 30 56·1	+ 4·7
	5415			16 7 16	71 40	2 16·8	18·0	0·579	29·95		40·7			6	− 2 19 42·9	+ 3·9
	5493			16 21 0	127 15	4 55·4	59·8	0·500	29·95		40·5			6	+53 17 57·5	+ 2·0
	5537			16 28 6	119 15	4 12·3	16·3	0·500	29·95		40·3			7	+45 17 14·3	+ 2·2
		Nadir ‖|		16 34 0	254 0	1 52·6	62·1	0·500	29·95	43·2	40·0					
		Nadir |‖			254 0	1 61·3	71·5	0·500								
May 24		Nadir ‖|		14 40 0	254 0	1 53·3	60·7	0·500	29·88	47·0	42·7					
		Nadir |‖			254 0	1 60·9	72·4	0·500								
July 31		(a) Nadir ‖|		17 40 0	254 0	1 52·4	60·4	0·500	29·79	58·0	53·0					
		Nadir |‖			254 0	1 63·3	71·9	0·500								
Aug. 6		Nadir ‖|		20 5 0	254 0	1 52·2	58·9	0·500	29·32	58·7	54·0					
		Nadir |‖			254 0	1 65·0	72·2	0·500								
	7014			20 17 20	125 0	2 40·8	43·0	0·500	29·32		53·9	4, W.	0	6	+51 0 41·1	+19·4
	7086			20 26 53	74 20	1 43·6	46·0	0·500	29·32		53·9			7	+ 0 19 42·2	+18·3
	7268			20 52 5	83 0	4 24·4	25·3	0·574	29·32		53·4	8, W.	0	7	+ 9 2 25·7	+17·6
	7336	61² Cygni		21 1 41	91 50	3 0·0	2·5	0·380	29·32		53·0			8	+17 50 56·9	+19·6
	7410			21 15 49	106 40	0 40·8	42·8	0·500	29·32		52·9			7	+32 38 40·7	+18·3
		Nadir ‖|		21 21 0	254 0	1 52·0	60·7	0·500	29·32	56·1	52·9					
		Nadir |‖			254 0	1 66·0	73·8	0·500								
Aug. 7		Nadir ‖|		19 6 0	254 0	1 51·7	60·2	0·500	29·35	58·3	54·9					
		Nadir |‖			254 0	1 64·0	73·0	0·500								
	6729		5·0	19 33 24	124 50	2 6·0	8·0	0·500	29·35		54·8	3, W.	1	6	+50 50 5·9	+18·8
	6791		8·0	19 43 22	118 35	1 49·8	51·4	0·498	29·34		54·7			5	+44 34 49·6	+19·6
	6852		5·5	19 51 56	70 35	2 40·6	40·2	0·500	29·34		54·6			7	− 3 24 22·4	+20·2
	7086			20 26 52	74 20	1 45·0	47·0	0·500	29·34		53·7			8	+ 0 19 43·3	+18·6
	7268			20 52 5	83 0	4 21·8	22·9	0·630	29·34		53·2			8	+ 9 2 24·7	+17·9
	7368	ζ Cygni		21 8 2	100 15	2 39·3	41·0	0·500	29·34		52·6			8	+26 15 39·1	+18·3
	7430			21 17 54	69 45	2 42·0	43·0	0·500	29·34		52·4			4	− 4 14 20·3	+15·0
		Nadir ‖|		21 27 0	254 0	1 51·8	61·9	0·500	29·34	56·1	52·4					
		Nadir |‖			254 0	1 65·7	73·9	0·500								
Aug. 9		Nadir ‖|		19 16 0	254 0	1 52·8	61·2	0·500	29·50	58·0	55·0					
		Nadir |‖			254 0	1 63·4	72·2	0·500								
	6852			19 51 56	70 35	2 40·3	41·3	0·454	29·50		55·0	7, S.W.	2	6	− 3 24 23·3	+20·9
	7006			20 15 34	93 15	0 48·7	50·9	0·440	29·50		55·0			7	+19 13 46·2	+20·5
	7086			20 26 52	74 20	1 42·7	44·7	0·500	29·50		55·0			8	+ 0 19 40·9	+19·3
	7157		8·0	20 35 8	114 45	2 53·1	55·7	0·545	29·50		54·7	10, W.		6	+40 45 55·3	+20·1
	7285		7·0	20 54 17	122 55	2 57·1	60·1	0·570	29·50		54·6			6	+48 55 59·8	+20·0
		Nadir ‖|		21 7 0	254 0	1 51·9	61·6	0·500	29·50	55·8	54·6					
		Nadir |‖			254 0	1 62·8	72·9	0·500								

(a) Clouds gathering.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Corr. to Mean N. Polar Dist. Jan. 1 1867.
1867.				h. m. s.	° ′	′	′	rev.	inches.	°	°				° ′ ″	″
Aug. 12	......	Nadir ‖	......	21 2 0	254 0	1 52.3	61.8	0.500	29.75	40.9	43.0	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 63.3	73.7	0.500	......	......	......	......	......	......	......	......
	7708	......	5.5	22 1 48	68 20	1 15.0	17.4	0.570	29.75	......	42.8	......	......	7	− 5 40 45.3	+13.2
	......	Nadir ‖	......	22 12 0	254 0	1 51.9	62.3	0.500	29.75	41.7	42.7	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 62.9	74.0	0.500	......	......	......	......	......	......	......	......
Aug. 13	......	Nadir ‖	......	19 50 0	254 0	1 53.8	60.9	0.500	29.75	62.8	61.0	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 64.9	73.3	0.500	......	......	......	......	......	......	......	......
	7336	61¹ Cygni	......	21 1 41	91 50	2 54.0	56.8	0.500	29.75	......	60.0	2, N.E.	5	7	+17 50 53.7	+21.7
Aug. 16	......	Nadir ‖	......	20 6 0	254 0	1 53.4	61.6	0.500	29.27	59.2	55.0	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 63.6	71.9	0.500	......	......	......	......	......	......	......	......
	7096	......	......	20 15 35	93 15	0 47.3	50.7	0.500	29.27	......	55.0	7, S.S.W.	5	6	+19 13 46.9	+22.3
	7086	......	......	20 26 52	74 20	1 32.9	36.5	0.793	29.27	......	54.8	......	......	7	+ 0 19 39.8	+22.6
	......	Nadir ‖	......	20 43 0	254 0	1 52.6	62.1	0.500	29.27	56.8	54.7	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 62.9	72.7	0.500	......	......	......	......	......	......	......	......
Aug. 21	......	Nadir ‖	......	17 16 0	254 0	1 53.6	62.2	0.500	29.65	59.0	57.3	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 64.2	72.0	0.500	......	......	......	......	......	......	......	......
	6123	70 Ophiuchi	......	17 59 30	127 25	0 18.7	52.2	0.558	29.65	......	57.2	5, W.S.W.	0	7	+53 23 51.0	+16.3
	6213	......	......	18 13 29	122 45	0 30.4	34.2	0.500	29.65	......	56.6	......	......	6	+48 43 30.5	+18.[illegible]
	6129	β Lyræ	......	......	96 45	1 3.3	6.9	0.500	29.65	......	56.0	......	......	5	+22 44 3.1	+21.0
	6527	......	8.0	18 59 48	111 0	1 35.4	37.4	0.520	29.65	......	56.0	......	......	7	+36 59 35.7	+22.0
	6574	......	......	19 7 39	108 35	3 24.7	27.4	0.544	29.63	......	55.8	......	......	8	+34 38 27.2	+22.5
	6644	δ Aquilæ	......	19 19 22	118 15	3 23.9	26.5	0.500	29.65	......	55.6	......	......	9	+44 16 24.5	+21.2
	......	Nadir ‖	......	19 30 0	254 0	1 52.6	62.0	0.500	29.65	56.7	55.7	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 63.8	72.0	0.500	......	......	......	......	......	......	......	......
	7450	......	6.0	21 21 2	111 10	0 14.8	17.9	0.550	29.65	......	54.9	......	......	6	+37 8 17.0	+21.6
	7561	ε Pegasi	......	21 38 25	120 40	2 4.4	7.8	0.430	29.65	......	54.8	......	......	8	+46 40 2.9	+21.4
Aug. 23	......	Nadir ‖	......	19 54 0	254 0	1 55.7	63.3	0.500	29.65	59.4	60.9	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 63.4	71.4	0.500	......	......	......	......	......	......	......	......
	6966	......	......	20 10 23	104 45	2 10.9	12.4	0.529	29.65	......	60.9	3. W.	0	10	+30 45 11.1	+23.5
	7014	......	6.0	20 17 20	125 0	2 39.6	42.1	0.500	29.66	......	60.5	......	......	7	+51 0 39.7	+21.4
	7086	......	......	20 26 53	74 20	1 38.6	41.0	0.532	29.66	......	60.7	......	......	8	+ 0 10 37.5	+21.7
	7336	(a) 61¹ Cygni	......	......	91 50	2 40.1	43.8	0.800	29.66	......	60.6	......	......	5	+17 50 45.5	+21.3
	......	Nadir ‖	......	21 10 0	254 0	1 54.9	63.0	0.500	29.66	60.8	60.6	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 64.0	72.0	0.500	......	......	......	......	......	......	......	......
Aug. 26	......	Nadir ‖	......	19 40 0	254 0	1 53.1	61.3	0.500	29.59	60.1	55.1	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 62.9	70.9	0.503	......	......	......	......	......	......	......	......
	6966	......	5.0	20 10 23	104 45	2 8.6	10.4	0.580	29.59	......	55.0	7. W.	0	6	+30 45 10.9	+[illegible]
	7086	......	6.0	20 26 53	74 20	1 36.3	38.9	0.583	29.59	......	55.0	......	......	7	+ 0 19 37.2	+21.6
	7161	......	......	20 35 39	84 45	1 55.1	57.4	0.535	29.59	......	54.3	......	......	8	+10 44 55.2	+21.4
	7285	......	......	20 54 17	122 55	2 56.8	60.2	0.500	29.59	......	54.1	......	......	8	+48 55 58.2	+21.3
	7336	61¹ Cygni	......	21 1 43	91 50	2 51.6	53.3	0.441	29.59	......	53.5	......	......	9	+17 50 49.5	+21.4
	7366	ζ Cygni	......	21 8 1	100 15	2 35.8	38.3	0.437	29.59	......	53.2	......	......	7	+26 15 34.3	+21.4
	7417	......	6.0	21 16 20	71 55	0 22.2	24.2	0.597	29.59	......	53.1	......	......	7	− 2 6 37.4	+21.5
	7496	......	7.5	21 28 14	82 5	2 23.7	26.0	0.652	29.59	......	53.1	......	......	8	+ 8 5 27.1	+21.7
	7561	ε Pegasi	......	21 38 25	120 40	2 0.4	4.8	0.500	29.59	......	53.0	......	......	7	+46 40 1.7	+22.[illegible]
	......	Nadir ‖	......	21 51 0	254 0	1 52.7	62.0	0.500	29.59	54.7	53.0	......	......	......	......	......
	......	Nadir ‖	......	......	254 0	1 63.3	71.2	0.500	......	......	......	......	......	......	......	......

(a) Very faint. Sky getting cloudy.

Date.	Star or other Object Observed. No. in British Ass. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1867.
1867.				h. m. s.	° '	' "	"	revols.	inches.	°	°				° ' "	"
Aug. 28	......	Nadir ||	......	20 41 0	254 0	1 53·7	62·8	0·500	29·69	58·6	54·9	....	......	......	....	......
	......	Nadir ||	......	....	254 0	1 63·3	72·8	0·500	......	......	......	....	......	......	....	......
	7336	61[1] Cygni	......	21 1 42	91 50	2 48·7	51·0	0·530	29·70	......	54·9	7, W.	5	7	+17 50 49·4	+25·9
Sept. 5	......	Nadir ||	......	21 17 0	254 0	1 51·0	60·6	0·500	29·38	57·0	52·0	....	......	......	....	......
	......	Nadir ||	......	....	254 0	1 62·7	71·2	0·500	......	......	......	....	......	......	....	......
	7501	....	7·0	21 29 5	84 40	2 50·8	53·4	0·614	29·38	......	52·0	1, S.E.	2	7	+10 40 53·9	+24·7
	7644	....	......	....	58 5	2 36·4	37·0	0·500	29·38	......	51·6	....	......	5	−15 54 26·4	+21·4
	7779	(a)	9·0	22 11 11	57 20	0 2·2	4·4	0·655	29·38	......	51·5	....	......	6	−16 41 56·0	+19·7
	7905	ζ Pegasi	......	22 35 37	119 45	4 45·0	49·0	0·500	29·36	......	51·4	....	......	7	+45 47 47·2	+22·1
	......	Nadir ||	......	23 25 0	254 0	1 52·1	61·1	0·500	29·36	56·1	51·2	....	......	......	....	......
	......	Nadir ||	......	....	254 0	1 63·0	70·5	0·500	......	......	......	....	......	......	....	......
Sept. 6	......	Nadir ||	......	21 6 0	254 0	1 53·3	61·1	0·500	29·20	56·9	54·0	....	......	......	....	......
	......	Nadir ||	......	....	254 [illegible]	1 61·8	70·4	0·500	......	......	......	....	......	......	....	......
Sept. 10	......	Nadir ||	......	20 39 0	254 0	1 52·0	61·4	0·500	29·45	58·0	53·8	....	......	......	....	......
	......	Nadir ||	......	....	254 0	1 62·8	72·8	0·500	......	......	......	....	......	......	....	......
	7354	....	......	21 5 19	108 0	3 27·6	29·1	0·509	29·47	......	53·7	6, S.S.W.	0	6	+[illegible] 1 28·0	+25·6
	7410	....	......	21 15 50	106 40	0 32·9	33·7	0·500	29·47	......	53·6	....	......	7	+32 38 32·0	+25·5
	7450	....	......	21 21 3	111 10	0 11·3	14·3	0·500	29·47	......	53·6	....	......	8	+37 8 11·6	+25·0
	7528	....	......	21 33 35	110 15	3 17·7	19·3	0·500	29·47	......	53·5	....	......	6	+36 16 17·8	+24·8
	7561	ι Pegasi	......	21 38 26	120 40	2 3·7	6·7	0·353	29·47	......	53·5	....	......	8	+46 40 0·0	+23·8
	7644	....	......	21 51 8	58 5	2 32·6	33·1	0·584	29·47	......	53·7	....	......	8	−15 54 28·7	+23·2
	7686	α Aquarii	......	21 59 44	130 55	0 26·8	29·8	0·500	29·47	......	53·7	....	......	8	+56 [illegible] 26·6	+22·7
	7759	....	......	22 9 25	69 50	2 54·7	55·9	0·750	29·47	......	53·7	....	......	......	−4 9 0·7	+22·9
	7908	....	......	22 35 37	119 45	4 44·6	47·3	0·500	29·47	......	53·1	....	......	9	+45 47 45·5	+22·7
	7977	....	......	22 47 51	128 45	4 27·1	28·0	0·500	29·47	......	53·0	....	......	6	+54 47 26·7	+22·2
	8024	....	......	22 56 41	73 35	0 38·0	39·6	0·500	29·47	......	53·0	....	......	7	−0 26 24·2	+19·3
	8083	....	......	23 7 40	73 30	2 59·0	61·4	0·650	29·47	......	52·9	....	......	8	−0 28 58·3	+18·3
	8247	....	......	23 36 34	112 0	2 30·7	32·3	0·559	29·47	......	52·9	....	......	7	+38 0 32·4	+19·9
	......	Nadir ||	......	23 44 0	254 [illegible]	1 53·8	62·8	0·500	29·47	53·9	52·8	....	......	......	....	......
	......	Nadir ||	......	....	254 0	1 64·0	73·2	0·500	......	......	......	....	......	......	....	......
Sept. 16	......	Nadir ||	......	23 27 0	254 0	1 53·6	63·1	0·500	30·11	54·4	49·0	....	......	......	....	......
	......	Nadir ||	......	....	254 0	1 65·2	74·0	0·500	......	......	......	....	......	......	....	......
	8269	(b)	6·0	23 41 43	126 25	3 18·8	20·0	0·500	30·11	......	49·0	....	......	5	+52 26 17·9	+21·1
	8315	....	7·0	23 49 36	122 25	3 52·0	55·6	0·650	30·11	......	48·2	....	......	7	+48 26 56·8	+20·6
	8364	....	......	23 58 52	72 10	1 39·2	41·8	0·668	30·11	......	48·0	....	......	8	−1 50 18·3	+15·1
	26	γ Pegasi	......	0 7 10	115 30	1 38·4	41·1	0·500	30·11	......	48·0	....	......	7	+41 29 38·5	+19·2
	......	Nadir ||	......	0 16 0	254 0	1 53·0	61·8	0·500	30·11	53·9	48·0	....	......	......	....	......
	......	Nadir ||	......	....	254 [illegible]	1 63·5	73·7	0·500	......	......	......	....	......	......	....	......
Sept. 17	......	Nadir ||	......	21 2 0	254 0	1 53·0	62·4	0·500	30·24	54·4	49·2	....	......	......	....	......
	......	Nadir ||	......	....	254 0	1 63·9	73·1	0·500	......	......	......	....	......	......	....	......
	7410	....	......	21 15 50	106 40	0 30·9	31·4	0·500	30·[illegible]	......	49·1	2, S.	0	7	+[illegible] 38 29·5	+26·6
	7476	β Aquarii	......	21 25 20	136 5	1 28·1	31·1	0·471	30·24	......	49·0	....	......	8	+62 4 26·5	−21·9
	7528	....	......	21 33 35	110 15	3 14·0	16·0	0·500	30·24	......	49·0	....	......	6	+36 16 13·9	+25·8
	7566	(c)	7·0	....	93 15	3 5·6	8·0	0·600	30·24	......	49·0	....	......	4	+18 [illegible] 4·9	+27·1
	7644	....	......	21 51 7	58 5	2 31·4	31·8	0·545	30·24	......	49·0	....	......	6	−15 54 31·3	+25·5
	7688	α Aquarii	......	21 59 43	130 55	0 21·4	24·8	0·526	30·24	......	49·0	....	......	7	+56 53 21·7	+23·0
	......	Nadir ||	......	22 9 0	254 0	1 52·9	63·0	0·500	30·24	53·1	49·0	....	......	......	....	......
	......	Nadir ||	......	....	254 0	1 64·0	72·7	0·500	......	......	......	....	......	......	....	......

(a) Smaller star observed. (b) { *b *a } a observed. (c) Seen rather late.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds.	Est. Value of Obs.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1867.
1867.				h. m. s.	° ′	′ ″		revols.	inches.	°	°		Max. = 10.	Max. = 10.	° ′ ″	″
Sept. 20	......	Nadir	......	22 8 0	254 0	1 53.8	61.4	0.500	29.88	54.9	51.0	......	......	......	......	......
	......	Nadir	......	....	254 0	1 67.0	75.0	0.500	......	......	......	......	......	......	......	......
	8360	85 Pegasi	......	23 56 1	103 35	0 53.0	55.2	0.448	29.88	......	50.8	......	......	7	+29 33 50.7	+19.6
	83	......	6.0	0 18 42	77 40	0 28.3	30.4	0.655	29.88	......	50.2	......	......	6	+ 3 38 30.4	+16.3
	......	Nadir	......	0 29 0	254 0	1 52.1	62.7	0.500	29.88	52.3	50.1	......	......	......	......	......
	......	Nadir	......	....	254 0	1 63.9	73.3	0.500	......	......	......	......	......	......	......	......
Sept. 23	......	Nadir	......	21 41 0	254 0	1 54.1	62.3	0.500	29.30	53.0	49.5	......	......	......	......	......
	......	Nadir	......	....	254 0	1 63.7	72.0	0.500	......	......	......	......	......	......	......	......
	7688	α Aquarii	......	21 59 43	130 55	0 24.4	26.9	0.593	29.30	......	49.4	15, W.	0	8	+56 53 25.8	+23.1
	7759	......	......	22 8 23	69 50	2 56.0	57.0	0.500	29.30	......	49.6	......	......	7	− 4 9 7.1	+26.9
	7977	(a)	......	22 47 50	128 45	4 25.0	26.4	0.570	29.30	......	49.6	20,	0	8	+54 47 25.9	+22.8
	8024	......	......	22 56 40	73 35	0 30.9	33.5	0.637	29.30	......	49.6	......	......	7	− 0 26 27.7	+23.4
	8065	......	7.5	23 3 21	128 30	2 16.3	18.1	0.500	29.30	......	49.6	......	......	9	+54 30 15.2	+22.5
	8083	......	......	23 7 39	73 30	2 58.3	60.9	0.500	29.30	......	49.6	35,	0	9	− 0 29 3.7	+22.5
	8137	......	......	23 15 13	68 45	0 27.7	26.7	0.500	29.30	......	49.4	......	......	6	− 5 16 35.9	+21.4
	8204	......	......	23 27 37	58 40	3 15.6	17.4	0.500	29.30	......	49.3	......	......	5	−15 16 47.9	+19.1
	8217	......	......	23 36 34	112 0	2 24.3	26.0	0.694	29.30	......	49.3	......	......	9	+38 0 29.0	+21.8
	8272	......	7.0	23 42 11	122 25	2 32.0	34.1	0.500	29.30	......	49.3	......	......	7	+48 25 31.1	+21.5
	8315	......	......	23 49 36	122 25	3 58.1	60.5	0.500	29.30	......	49.3	......	......	6	+48 26 57.6	+21.2
	8338	......	7.0	23 54 44	68 30	3 0.1	2.6	0.579	29.30	......	49.3	......	......	8	− 5 29 0.3	+17.4
	8372	......	......	23 59 60	72 15	2 28.9	31.4	0.500	29.30	......	49.1	......	......	6	− 1 44 33.5	+17.3
	28	......	......	0 7 3	89 40	0 47.7	49.8	0.500	29.30	......	49.4	......	......	8	+15 38 46.1	+18.4
	68	......	......	0 15 8	62 50	4 14.8	15.8	0.616	29.30	......	48.9	......	......	6	−11 7 45.3	+14.4
	98	......	......	0 21 21	114 40	0 56.1	57.5	0.574	29.30	......	48.8	......	......	8	+40 38 57.2	+19.3
	......	Nadir	......	0 40 0	254 0	1 55.0	63.9	0.500	29.30	48.8	48.8	......	......	......	......	......
	......	Nadir	......	....	254 0	1 66.0	73.7	0.500	......	......	......	......	......	......	......	......
Sept. 27	......	Nadir	......	23 7 0	254 0	1 53.2	61.8	0.500	29.68	54.0	53.5	......	......	......	......	......
	......	Nadir	......	....	254 0	1 63.7	72.5	0.500	......	......	......	......	......	......	......	......
Sept. 30	......	Nadir	......	22 11 0	254 0	1 52.9	61.9	0.500	29.82	52.9	47.0	......	......	......	......	......
	......	Nadir	......	....	254 0	1 64.3	73.2	0.500	......	......	......	......	......	......	......	......
	7908	ζ Pegasi	......	22 35 34	119 45	4 45.6	47.8	0.383	29.82	......	47.0	7, N.N.E.	0	6	+45 47 42.5	+24.5
	8063	......	6.0	23 7 39	73 30	2 57.8	58.8	0.500	29.82	......	47.0	......	......	7	− 0 29 4.7	+24.6
	8135	......	......	23 15 12	86 35	0 25.5	25.7	0.500	29.82	......	47.0	......	......	8	+12 33 23.0	+24.4
	8350	85 Pegasi	......	23 55 58	103 30	0 49.7	49.9	0.500	29.82	......	46.7	......	......	7	+29 33 48.0	+21.6
	18	......	......	0 4 2	71 0	3 10.0	10.7	0.500	29.82	......	46.7	......	......	7	− 2 58 52.9	+18.9
	83	......	......	0 16 42	77 40	0 25.0	27.7	0.654	29.82	......	46.6	......	......	7	+ 3 38 27.6	+18.1
	177	(b)	......	....	121 20	0 18.4	22.0	0.500	29.93	......	46.1	......	......	4	+47 18 18.5	+19.4
	224	......	......	0 43 0	101 55	3 54.9	57.3	0.500	29.93	......	46.0	......	......	4	+27 56 54.7	+17.9
	259	......	......	0 50 8	92 10	2 9.3	12.3	0.500	29.93	......	46.0	......	......	9	+18 10 8.8	+16.3
	290	......	......	0 57 11	76 25	4 35.8	37.0	0.650	29.93	......	45.9	......	......	9	+ 2 27 37.8	+13.7
	357	......	......	1 6 16	98 35	1 36.7	38.2	0.393	29.93	......	45.9	......	......	7	+24 34 32.6	+15.5
	......	Nadir	......	1 17 0	254 0	1 53.3	62.1	0.500	29.93	48.9	45.9	......	......	......	......	......
	......	Nadir	......	....	254 0	1 63.9	73.8	0.500	......	......	......	......	......	......	......	......
Oct. 2	......	Nadir	......	22 20 0	254 0	1 52.8	60.9	0.500	29.40	49.0	42.0	......	......	......	......	......
	......	Nadir	......	....	254 0	1 60.4	73.6	0.500	......	......	......	......	......	......	......	......
	7908	(c) ζ Pegasi	......	22 35 34	119 45	4 37.9	37.0	0.666	29.40	......	41.5	7, N.W.	0	7	+45 47 40.7	+24.6
	7996	......	6.0	22 51 32	126 50	1 47.5	46.9	0.500	29.40	......	41.3	......	......	8	+52 49 45.3	+23.3

(a) Wind rapidly increasing. (b) Seen rather late. (c) Aurora in N.W.

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Date.	Star or other Object Observed. No. in British Asso.Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1867.
1867.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Oct. 2	8024	......	......	....	73 35	0 35·0	35·0	0·500	29·40	......	41·3	......	......	7	– 0 26 28·6	+26·1
	8083	......	......	[illegible] 7 39	73 30	2 57·7	56·1	0·500	29·40	......	41·3	......	......	8	– [illegible] 29 5·3	+25·2
	8204	......	7·0	23 27 37	58 40	3 19·0	20·3	0·488	29·40	......	41·3	......	......	7	–15 18 44·9	+22·2
	8247	......	......	23 36 33	112 0	2 27·6	27·4	0·587	29·40	......	41·3	......	......	8	+38 0 28·5	+23·0
	8298	......	......	23 46 [illegible]	53 5	2 42·7	42·1	0·620	29·40	......	41·1	......	......	8	–20 54 18·7	+19·7
	8338	......	......	[illegible] 54 43	68 30	2 57·5	58·6	0·588	29·40	......	41·0	......	......	6	– 5 29 3·2	+20·4
	18	......	7·0	0 4 22	71 0	3 9·3	10·0	0·500	29·40	......	41·0	......	......	7	– 2 58 53·9	+19·6
	39	......	......	0 9 30	53 45	1 53·0	53·0	0·500	29·40	......	41·0	......	......	8	–20 15 11·6	+17·1
	83	......	6·0	[illegible] 18 41	77 40	0 29·5	31·3	0·551	29·40	......	41·0	......	......	10	+ 3 38 28·5	+18·7
	120	......	......	0 25 8	97 5	2 52·7	53·9	0·500	29·40	......	41·0	......	......	10	+23 5 51·4	+19·5
	177	......	......	0 35 0	121 20	0 18·0	20·8	0·500	29·40	......	41·0	......	......	6	+47 18 17·4	+19·6
	218	(a) η Cassiopeæ	......	....	72 50	2 38·8	40·2	0·500	29·40	......	41·0	......	......	5	– 1 9 23·9	+18·6
	290	......	......	0 57 13	76 25	4 36·4	37·1	0·616	29·40	......	41·0	......	......	9	+ 2 27 37·2	+14·3
	335	......	......	1 3 39	66 25	4 39·6	39·9	0·587	29·40	......	41·0	......	......	7	– 7 32 21·2	+12·2
	......	Nadir	......	1 19 0	254 0	1 53·7	61·5	0·500	29·40	42·0	41·0	......	......	......	......	......
	......	Nadir	......	....	254 0	1 64·9	74·3	0·500	......	......	......	......	......	......	......	......
Oct. 3	......	Nadir	......	22 36 0	254 0	1 54·8	63·4	0·500	29·79	45·0	38·0	......	......	......	......	......
	......	Nadir	......	....	254 [illegible]	1 65·0	74·0	0·500	......	......	......	......	......	......	......	......
	8024	......	......	22 56 35	73 35	0 34·0	34·4	0·463	29·79	......	37·9	......	......	7	– 0 26 30·7	+26·4
	8204	......	......	....	58 40	3 20·0	19·6	0·500	29·82	......	36·9	......	......	7	–15 18 44·6	+22·6
	8315	......	......	....	122 25	3 53·1	54·9	0·500	29·82	......	36·7	......	......	8	+48 20 52·3	+21·9
	18	......	......	0 4 22	71 0	3 9·8	9·9	0·500	29·82	......	36·7	......	......	7	– 2 58 53·9	+19·9
	48	......	......	0 10 39	116 45	2 26·8	28·0	0·500	29·82	......	36·6	......	......	8	+42 45 25·8	+21·0
	98	......	......	0 21 22	114 40	0 53·7	54·0	0·500	29·82	......	36·5	......	......	7	+40 38 52·1	+20·4
	314	μ Cassiopeæ	......	1 0 13	75 40	3 7·9	10·3	0·500	29·82	......	36·5	......	......	9	+ 1 41 5·8	+14·2
	379	......	......	1 10 2	62 50	2 36·0	35·4	0·547	29·82	......	36·3	......	......	6	–11 8 27·2	+11·3
	......	Nadir	......	1 29 [illegible]	254 0	1 54·0	62·8	0·500	29·82	40·8	36·3	......	......	......	......	......
	......	Nadir	......	....	254 0	1 63·7	75·1	0·500	......	......	......	......	......	......	......	......
Oct. 4	......	Nadir	......	22 44 [illegible]	254 0	1 53·9	61·1	0·500	29·85	46·1	39·3	......	......	......	......	......
	......	Nadir	......	....	254 [illegible]	1 65·8	73·7	0·500	......	......	......	......	......	......	......	......
	8065	......	......	....	128 30	2 11·3	13·7	0·500	29·85	......	39·3	......	......	6	+54 30 10·3	+22·5
	8204	......	......	23 27 36	58 40	3 18·9	19·0	0·453	29·85	......	39·0	......	......	8	–15 18 46·8	+22·9
	8247	......	......	23 36 30	112 0	2 26·7	28·6	0·500	29·85	......	39·0	......	......	7	+38 0 26·9	+23·2
	......	Nadir	......	0 22 [illegible]	254 0	1 53·[illegible]	60·8	0·500	29·85	44·6	39·0	......	......	......	......	......
	......	Nadir	......	....	254 0	1 66·1	72·9	0·500	......	......	......	......	......	......	......	......
Oct. 7	......	Nadir	......	23 10 [illegible]	254 0	1 54·3	62·1	0·500	29·07	45·0	39·3	......	......	......	......	......
	......	Nadir	......	....	254 0	1 64·7	72·7	0·500	......	......	......	......	......	......	......	......
	8269	......	......	23 41 42	126 25	3 19·0	19·8	0·500	29·07	......	39·2	4, W.	1	5	+52 26 17·3	+22·0
	8330	85 Pegasi	......	....	103 35	0 51·6	49·0	0·500	29·08	......	39·1	......	......	7	+29 33 47·9	+22·7
	83	......	......	0 18 42	77 40	0 29·9	29·9	0·500	29·08	......	38·8	......	......	8	+ 3 38 26·2	+20·1
	177	......	7·0	....	121 20	0 20·9	23·3	0·500	29·08	......	38·8	......	......	7	+47 18 19·8	+19·8
	259	......	......	0 50 10	92 10	2 11·8	12·2	0·500	29·08	......	38·8	......	......	8	+18 10 9·4	+17·9
	314	μ Cassiopeæ	......	1 0 16	75 40	3 12·4	13·4	0·500	29·08	......	38·7	......	......	7	+ 1 41 9·4	+15·4
	514	......	6·0	1 34 54	100 35	1 18·4	18·5	0·510	29·07	......	38·0	......	......	7	+26 34 16·2	+14·3
	562	......	6·5	1 45 8	79 10	0 12·4	13·0	0·537	29·07	......	38·0	......	......	8	+ 5 8 10·0	+12·7
	......	Nadir	......	1 57 0	254 [illegible]	1 55·[illegible]	63·0	0·500	29·09	39·2	38·0	......	......	......	......	......
	......	Nadir	......	....	254 [illegible]	1 65·7	74·8	0·500	......	......	......	......	......	......	......	......

(a) Seen rather late.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1867.
1867.				h m s	° ′	′ ″	″	revs	inches	°	°				° ′ ″	″
Oct. 8	......	Nadir	......	23 17 0	254 0	1 53·9	63·3	0·500	......	......	......	......	......	......	......	......
	......	Nadir	......	......	254 0	1 65·3	73·9	0·500	......	......	......	......	......	......	......	......
Oct. 9	516	......	......	......	95 20	4 24·0	23·8	0·500	29·45	......	40·1	......	......	7	+ 21 22 21·4	+ 14·1
	......	Nadir	......	1 49 0	254 0	1 54·2	62·9	0·500	29·45	......	40·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·9	74·1	0·500	......	......	......	......	......	......	......	......
Oct. 10	......	Nadir	......	1 42 0	254 0	1 53·9	63·0	0·500	29·36	45·0	40·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 65·1	74·3	0·500	......	......	......	......	......	......	......	......
Oct. 11	......	Nadir	......	0 25 0	254 0	1 53·5	62·3	0·500	29·67	51·3	53·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·1	73·7	0·500	......	......	......	......	......	......	......	......
	263	......	......	0 51 1	103 40	1 52·2	51·4	0·343	29·66	......	53·0	4, W.	1	5	+ 29 39 45·3	+ 19·1
	314	μ Cassiopeæ	......	0 0 13	75 40	3 7·7	8·2	0·500	29·66	......	52·9	......	......	7	+ 1 41 4·5	+ 16·5
	357	......	......	......	98 35	1 36·6	37·2	0·500	29·66	......	52·8	......	......	6	+ 24 34 34·4	+ 17·5
	455	......	......	1 25 39	113 40	2 13·7	14·1	0·500	29·66	......	52·1	......	......	8	+ 39 40 12·2	+ 16·6
	538	......	6·0	1 40 6	113 10	3 36·6	38·2	0·500	29·66	......	52·0	......	......	7	+ 39 11 35·9	+ 15·4
	568	......	......	1 50 36	66 0	1 2·9	3·1	0·600	29·66	......	52·0	......	......	9	− 8 0 58·6	+ 9·1
	......	Nadir	......	1 59 0	254 0	1 52·9	62·7	0·500	29·66	52·1	52·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·4	74·0	0·500	......	......	......	......	......	......	......	......
Oct. 17	......	Nadir	......	1 10 0	254 0	1 53·0	61·9	0·500	29·12	52·1	48·5	......	......	......	......	......
	......	Nadir	......	......	254 0	1 63·9	75·3	0·500	......	......	......	......	......	......	......	......
	588	......	......	1 50 37	66 0	1 6·1	6·9	0·411	29·12	......	48·3	3, S.W.	0	8	− 8 1 0·4	+ 11·0
	702	......	......	2 9 21	66 15	1 0·0	1·0	0·613	29·12	......	48·2	......	......	5	− 7 45 56·0	+ 8·3
	......	Nadir	......	2 22 0	254 0	1 53·3	62·9	0·500	29·12	51·0	48·1	......	......	......	......	......
	......	Nadir	......	......	254 0	1 63·9	75·2	0·500	......	......	......	......	......	......	......	......
Oct. 18	......	Nadir	......	1 2 0	254 0	1 53·7	61·3	0·500	29·12	52·0	50·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 66·0	75·2	0·500	......	......	......	......	......	......	......	......
Oct. 21	......	Nadir	......	23 15 0	254 0	1 54·0	63·0	0·500	29·62	52·0	51·1	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·5	72·8	0·500	......	......	......	......	......	......	......	......
	8252	......	7·0	......	77 34	0 0·6	3·1	0·500	29·62	......	51·2	......	......	5	+ 3 31 57·9	+ 27·7
	8364	......	7·0	23 58 50	72 10	1 31·8	32·8	0·580	29·62	......	51·1	......	......	6	− 1 50 29·7	+ 25·8
	......	Nadir	......	0 17 0	254 0	1 54·0	61·4	0·500	......	......	......	......	......	......	......	......
	......	Nadir	......	......	254 0	1 65·4	76·1	0·500	......	......	......	......	......	......	......	......
Oct. 25	......	Nadir	......	0 3 0	254 0	1 54·2	62·4	0·500	29·87	51·1	45·7	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·0	72·7	0·500	......	......	......	......	......	......	......	......
	68	......	......	0 15 6	62 50	4 6·7	6·9	0·590	29·87	......	45·6	1, W.	0	6	− 11 7 54·5	+ 25·0
	192	......	7·0	0 35 39	72 55	2 10·4	40·6	0·561	29·87	......	45·3	......	......	7	− 1 4 21·2	+ 23·1
	237	......	......	0 45 12	127 15	2 57·6	59·2	0·500	29·87	......	45·0	......	......	8	+ 53 15 56·7	+ 13·0
	290	......	......	0 57 13	76 25	4 31·4	31·4	0·550	29·85	......	44·8	......	......	7	+ 2 27 29·9	+ 19·3
	357	......	......	1 6 16	98 35	1 30·0	30·4	0·550	29·85	......	44·8	......	......	8	+ 24 34 29·5	+ 16·6
	455	......	......	1 25 38	113 40	2 11·9	12·7	0·500	29·85	......	44·8	......	......	7	+ 39 40 11·0	+ 17·6
	514	......	......	1 34 52	100 35	1 6·3	7·3	0·758	29·85	......	44·8	......	......	6	+ 26 34 11·8	+ 17·0
	562	......	......	1 45 7	79 10	0 8·5	10·0	0·430	29·83	......	44·7	......	......	7	+ 5 8 4·0	+ 15·2
	588	......	......	1 50 38	66 0	0 57·0	59·0	0·600	29·85	......	44·7	......	......	9	− 8 1 3·3	+ 13·5
	694	......	......	2 9 21	66 10	0 52·9	53·9	0·786	29·85	......	44·6	......	......	7	− 7 51 2·8	+ 10·9
	776	......	......	2 25 22	128 15	2 13·4	15·4	0·500	29·85	......	44·6	......	......	6	+ 54 15 12·5	+ 12·9

Date.	Star or other Object Observed. No. in British Assn. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer. Fahr.	Exterior Thermometer. Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1867.
1867.				h. m. s.	° ′	′ ″	″	revs.	inches	°	°				° ′ ″	″
Oct. 25	834	....	......	2 36 54	104 50	4 24·0	23·4	0·500	29·85	......	44·5	....	......	7	+30 52 22·4	+10·9
	......	Nadir ‖	......	2 51 0	254 0	1 53·7	61·3	0·500	29·85	47·3	44·5	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 65·0	72·1	0·500	......	......	......	....	......	......	....	......
Oct. 29	......	Nadir ‖	......	1 42 0	254 0	1 53·7	63·3	0·500	29·25	47·8	46·0	....	......	......	....	......
	......	Nadir |‖	......	....	254 [illegible]	1 65·9	74·6	0·500	......	......	......	....	......	......	....	......
	647	(a)	......	1 59 56	104 55	2 55·6	55·4	0·521	29·25	......	46·0	8, W.	0	7	+30 55 54·3	+15·0
	694	....	......	2 9 21	66 10	0 57·0	57·8	0·585	29·25	......	46·0	....	......	8	− 7 51 4·5	+12·2
	793	....	......	2 29 33	123 40	3 0·5	2·1	0·500	29·25	......	46·0	....	......	7	+49 40 59·1	+12·5
	891	....	6·0	2 46 3	124 0	2 24·9	27·8	0·500	29·25	......	46·0	....	......	8	+50 0 24·4	+11·2
	920	....	......	2 52 2	108 50	3 32·2	31·8	0·550	29·25	......	46·[illegible]	....	......	6	+34 51 32·0	+10·0
	962	ι Persei	......	3 0 15	80 50	3 3·0	3·9	0·500	29·25	......	45·1	....	......	7	+ 6 51 0·5	+ 6·6
	......	Nadir ‖	......	3 8 0	254 0	1 54·6	62·7	0·500	29·25	45·0	45·0	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 64·0	73·3	0·500	......	......	......	....	......	......	....	......
Oct. 30	......	Nadir ‖	......	0 40 0	254 0	1 53·4	61·1	0·500	29·50	48·3	47·1	....	......	......	....	......
	......	Nadir |‖	......	....	254 [illegible]	1 63·4	70·8	0·500	......	......	......	....	......	......	....	......
	514	....	......	1 34 54	100 35	1 16·0	17·0	0·377	29·49	......	46·0	....	......	6	+26 34 13·9	+17·7
	620	....	......	1 55 28	65 30	1 31·2	31·2	0·690	29·49	......	45·5	....	......	8	− 8 30 27·3	+14·3
	694	....	......	2 9 21	66 10	0 58·0	58·4	0·500	29·47	......	45·8	....	......	7	− 7 51 5·6	+12·5
	764	....	......	2 23 15	120 55	4 53·0	56·2	0·500	29·47	......	45·8	....	......	8	+46 57 53·6	+13·0
	962	ι Persei	......	3 0 15	80 50	3 3·0	3·7	0·500	29·47	......	45·6	....	......	8	+ 6 51 0·9	+ 6·8
	......	Nadir ‖	......	3 5 0	254 0	1 53·1	61·9	0·500	29·47	48·0	45·6	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 64·0	73·0	......	......	......	......	....	......	......	....	......
Oct. 31	......	Nadir ‖	......	0 2 0	254 0	1 54·7	62·4	0·500	29·35	48·1	47·0	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 64·5	73·4	0·500	......	......	......	....	......	......	....	......
	68	....	......	0 15 8	62 50	4 3·7	3·5	0·656	29·37	......	47·0	7, W.	1	7	−11 7 55·0	+26·7
	218	η Cassiopeæ	......	....	72 50	2 33·1	33·0	0·500	29·37	......	46·8	....	......	6	− 1 9 30·4	+21·0
	259	....	......	0 50 9	92 10	2 5·4	6·8	0·500	29·37	......	46·7	....	......	7	+18 10 3·8	+22·5
	290	....	......	0 57 13	76 25	4 30·0	30·0	0·618	29·37	......	46·4	....	......	8	+ 2 27 30·4	+22·3
	335	....	......	1 3 40	66 25	4 30·0	30·1	0·600	29·37	......	46·4	....	......	8	+ 7 32 30·7	+21·4
	462	....	......	1 30 15	72 40	1 15·1	15·9	0·544	29·37	......	46·0	....	......	9	− 1 20 46·9	+18·3
	588	....	......	1 50 40	66 0	0 57·0	56·8	0·658	29·37	......	46·[illegible]	....	......	7	− 8 1 2·7	+15·3
	......	Nadir ‖	......	2 7 0	254 0	1 53·9	62·2	0·500	29·37	47·6	45·9	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 64·1	74·0	0·500	......	......	......	....	......	......	....	......
Nov. 1	......	Nadir ‖	......	1 5 0	254 0	1 52·7	60·4	0·500	29·60	45·7	43·0	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 63·3	71·9	0·500	......	......	......	....	......	......	....	......
	455	....	......	1 25 39	113 40	2 12·2	12·6	0·500	29·60	......	43·0	5, W.	1	6	+39 40 11·6	+17·9
	588	....	......	1 50 40	66 0	0 57·9	57·8	0·587	29·60	......	42·3	....	......	7	− 8 1 3·3	+15·6
	702	....	......	2 9 21	66 15	0 53·7	52·1	0·713	29·60	......	42·3	....	......	6	− 7 46 4·8	+12·9
	728	....	......	2 16 52	119 40	4 25·7	25·3	0·500	29·60	......	42·3	....	......	7	+45 42 24·8	+13·6
	......	Nadir ‖	......	3 58 0	254 0	1 53·1	61·3	0·500	29·60	44·9	43·0	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 62·9	72·1	0·500	......	......	......	....	......	......	....	......
Nov. 4	......	Nadir ‖	......	0 38 0	254 0	1 54·0	62·1	0·500	30·05	47·1	40·1	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 66·7	74·3	0·500	......	......	......	....	......	......	....	......
	290	....	7·0	0 57 13	76 25	4 31·2	32·1	0·500	30·05	......	40·0	....	......	7	+ 2 27 28·3	+23·2
	562	....	......	1 45 7	79 10	0 1·8	2·4	0·622	30·05	......	39·1	....	......	6	+ 5 8 1·7	+17·6
	588	....	......	1 50 39	66 0	1 0·0	1·0	0·500	30·05	......	39·1	....	......	7	− 8 1 4·0	+16·5

(a) Aurora in N.W. near Horizon.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer	Interior Thermometer Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1867.
1867.				h. m. s.	° ′	′ ″	″	revols.	inches	°	°				° ′ ″	″
Nov. 4	626	......	......	1 57 37	47 0	3 44.6	44.4	0.661	30.05	......	39.1	......	......	6	− 26 58 15.7	+ 14.3
	694	......	......	2 9 22	66 10	0 52.4	52.6	0.713	30.05	......	39.0	......	......	7	− 7 51 6.2	+ 13.9
	764	......	......	2 23 15	120 55	4 49.4	52.2	0.578	30.05	......	39.0	......	......	6	+ 46 57 51.3	+ 12.9
	891	......	......	2 46 23	124 0	2 20.7	23.4	0.500	30.06	......	38.8	......	......	7	+ 50 0 19.7	+ 11.0
	920	......	......	2 52 1	108 50	3 31.3	31.1	0.500	30.06	......	38.8	......	......	8	+ 34 51 29.5	+ 10.4
	962	ι Persei	......	3 0 15	80 50	3 1.3	2.8	0.500	30.06	......	38.8	......	......	8	+ 6 50 58.8	+ 7.9
	1055	......	......	3 17 36	105 20	4 36.7	35.3	0.500	30.06	......	38.8	......	......	9	+ 34 22 34.4	+ 7.7
	......	Nadir	......	3 23 0	254 0	1 54.3	62.5	0.500	30.06	43.9	38.6	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64.6	73.8	0.500	......	......	......	......	......	......	......	......
Nov. 6	......	Nadir	......	1 22 0	254 0	1 51.6	59.9	0.500	30.12	44.1	42.0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 63.7	75.0	0.500	......	......	......	......	......	......	......	......
	625	......	......	......	73 5	2 12.7	12.5	0.500	30.13	......	41.1	3, W.S.W.	0	7	− 0 54 50.8	+ 19.1
	645	......	6.0	1 59 55	104 45	1 55.9	54.3	0.500	30.13	......	41.0	......	......	6	+ 30 44 53.5	+ 15.8
	725	......	......	......	73 10	2 38.9	38.7	0.500	30.13	......	41.0	......	......	7	− 0 49 24.6	+ 14.1
	776	......	......	2 25 22	128 15	2 13.1	13.9	0.607	30.13	......	40.9	......	......	8	+ 54 15 14.5	+ 12.3
	......	Nadir	......	2 39 0	254 0	1 52.9	62.7	0.500	30.13	41.8	40.9	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64.0	71.7	0.500	......	......	......	......	......	......	......	......
Nov. 8	......	Nadir	......	1 41 0	254 0	1 53.4	61.1	0.500	30.23	49.0	48.2	......	......	......	......	......
	......	Nadir	......	......	254 0	1 62.3	68.9	0.500	......	......	......	......	......	......	......	......
	694	......	......	2 9 19	66 10	0 57.8	57.8	0.500	30.23	......	48.0	8, W.	0	7	− 7 51 5.4	+ 15.1
	764	......	......	2 23 13	120 55	4 55.0	57.3	0.500	30.23	......	48.0	......	......	8	+ 46 57 55.9	+ 12.9
	834	......	......	2 36 53	104 50	4 25.7	23.1	0.500	30.23	......	47.9	......	......	7	+ 30 52 24.0	+ 12.2
	962	ι Persei	......	3 0 16	80 50	3 2.1	2.3	0.500	30.23	......	47.9	......	......	6	+ 6 51 0.3	+ 8.8
	1101	......	......	3 26 6	98 40	4 44.0	45.1	0.670	30.23	......	47.8	......	......	7	+ 24 42 48.7	+ 6.3
	......	Nadir	......	3 41 0	254 0	1 53.1	62.0	0.500	30.23	47.9	47.7	......	......	......	......	......
	......	Nadir	......	......	254 0	1 63.2	71.1	0.500	......	......	......	......	......	......	......	......
Nov. 18	......	Nadir	......	1 27 0	254 0	1 53.7	60.3	0.500	29.97	43.0	41.3	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64.7	71.2	0.500	......	......	......	......	......	......	......	......
	562	......	......	1 45 6	79 10	0 6.0	5.8	0.383	29.97	......	41.1	......	......	7	+ 5 7 59.8	+ 20.7
	721	......	......	2 13 50	74 45	0 1.5	0.6	0.658	29.97	......	41.1	......	......	8	+ 0 43 2.4	+ 17.2
	834	......	......	2 36 52	104 50	4 22.7	19.5	0.500	29.97	......	41.2	2, W.	0	7	+ 30 52 20.5	+ 12.9
	920	......	......	2 51 58	108 50	3 33.9	31.1	0.500	29.97	......	41.0	......	......	8	+ 34 51 31.9	+ 11.1
	980	......	......	3 3 17	103 35	0 37.8	35.0	0.500	29.97	......	41.0	......	......	6	+ 29 33 35.0	+ 10.1
	1056	......	......	3 17 34	108 20	4 36.1	34.4	0.500	29.97	......	41.0	......	......	7	+ 34 22 34.7	+ 8.4
	1101	......	......	3 28 5	98 40	4 47.7	46.7	0.580	29.97	......	41.0	......	......	8	+ 24 42 48.6	+ 7.3
	......	Nadir	......	3 45 0	254 0	1 54.0	61.0	0.500	29.97	41.1	41.0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 63.9	72.4	0.500	......	......	......	......	......	......	......	......
Nov. 22	......	Nadir	......	2 48 0	254 0	1 53.9	59.9	0.500	30.20	41.0	39.1	......	......	......	......	......
	......	Nadir	......	......	254 0	1 66.6	72.8	0.500	......	......	......	......	......	......	......	......
	962	ι Persei	4.0	3 0 13	80 50	3 0.6	0.4	0.500	30.20	......	39.1	3, W.	0	7	+ 6 50 58.0	+ 11.7
	1055	......	......	3 17 32	108 20	4 34.4	31.6	0.615	30.20	......	39.1	......	......	6	+ 34 22 35.2	+ 8.6
	1101	......	......	3 28 4	98 40	4 54.8	51.8	0.500	30.20	......	39.0	......	......	8	+ 24 42 52.1	+ 7.7
	1166	η Tauri	......	3 40 17	106 15	2 13.4	11.4	0.500	30.20	......	39.0	......	......	7	+ 32 15 11.0	+ 6.0
	1282	......	......	4 4 35	81 10	4 15.6	16.4	0.750	30.20	......	39.3	......	......	6	+ 7 12 20.7	+ 2.6
	1318	......	......	4 11 48	73 45	3 28.3	27.2	0.600	30.20	......	39.5	......	......	8	− 0 13 32.3	+ 1.2
	1434	......	......	4 31 20	117 40	3 58.4	57.8	0.500	30.20	......	39.5	......	......	8	+ 43 41 57.1	+ 1.0
	......	Nadir	......	4 37 0	254 0	1 53.8	60.0	0.500	30.20	40.7	39.6	......	......	......	......	......
	......	Nadir	......	......	254 0	1 65.9	72.1	0.500	......	......	......	......	......	......	......	......

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Date.	Star or other Object Observed. No. in British Assn. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1867.
1867.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Nov. 26	......	Nadir ‖│	......	1 40 0	254 0	1 54·0	60·7	0·500	29·74	41·9	38·9	....	......	......	....	......
	......	Nadir │‖	......	....	254 0	1 67·0	74·0	0·500	......	......	......	....	......	......	....	......
	620	....	......	1 55 24	65 30	1 27·8	27·5	0·610	29·74	......	38·8	....	......	7	− 8 30 33·3	+ 21·8
	694	....	......	2 9 20	66 10	0 53·2	52·6	0·500	29·74	......	38·8	....	......	......	− 7 51 11·1	+ 20·0
	776	....	......	2 25 19	128 15	2 17·6	18·1	0·500	29·74	......	38·0	....	......	8	+ 54 15 15·9	+ 10·9
	822	....	......	....	87 50	2 40·0	41·0	0·500	29·74	......	38·0	....	......	5	+ 13 50 38·1	+ 15·4
	920	....	......	2 51 58	108 50	3 31·0	30·0	0·500	29·74	......	38·0	....	......	8	+ 34 51 29·8	+ 11·3
	980	....	......	3 3 16	103 35	0 34·9	33·5	0·500	29·74	......	38·4	....	......	7	+ 29 33 32·2	+ 10·6
	1055	....	......	3 17 32	108 20	4 36·0	35·4	0·500	29·74	......	38·5	....	......	8	+ 34 22 34·7	+ 8·7
	1166	η Tauri	......	3 40 19	106 15	2 13·1	12·7	0·500	29·74	......	38·5	....	......	9	+ 32 15 11·3	+ 6·2
	1282	(a)	......	4 4 35	81 10	4 19·9	20·9	0·500	29·74	......	38·6	....	......	7	+ 7 12 18·0	+ 3·4
	1459	....	......	4 36 10	74 35	0 5·6	7·1	0·687	29·74	......	38·6	....	......	......	+ 0 33 7·9	− 1·8
	......	Nadir ‖│	......	4 45 0	254 0	1 53·9	59·7	0·500	29·74	40·1	38·2	....	......	......	....	......
	......	Nadir │‖	......	....	254 0	1 66·5	73·9	0·500	......	......	......	....	......	......	....	......
Nov. 27	......	Nadir ‖│	......	1 53 0	254 0	1 54·0	60·3	0·500	29·90	40·5	39·0	....	......	......	....	......
	......	Nadir │‖	......	....	254 0	1 65·5	73·3	0·500	......	......	......	....	......	......	....	......
	718	....	7·0	2 13 15	73 20	1 19·0	18·7	0·438	29·90	......	39·0	6, W.	0	7	− 0 40 46·8	+ 19·4
	776	....	......	2 25 17	128 15	2 17·2	17·5	0·500	29·90	......	39·0	....	......	8	+ 54 15 15·2	+ 10·8
	822	....	......	2 34 46	87 50	2 41·4	41·4	0·500	29·90	......	39·0	....	......	7	+ 13 50 38·7	+ 15·5
	920	....	......	2 51 58	108 50	3 32·2	30·6	0·500	29·87	......	39·0	....	......	7	+ 34 51 29·9	+ 11·4
	1055	....	......	3 17 32	108 20	4 38·0	36·0	0·500	29·87	......	38·9	....	......	8	+ 34 22 35·6	+ 8·7
	1101	....	......	3 28 3	98 40	4 55·2	54·6	0·350	29·87	......	38·9	....	......	7	+ 24 42 49·0	+ 8·2
	1166	η Tauri	......	3 40 16	106 15	2 11·2	10·2	0·600	29·87	......	38·9	....	......	6	+ 32 15 11·6	+ 6·2
	1282	....	......	4 4 35	81 10	4 20·0	20·4	0·500	29·87	......	38·8	....	......	8	+ 7 12 17·5	+ 3·6
	1361	....	......	4 17 54	111 10	4 37·4	35·0	0·500	29·87	......	38·8	....	......	6	+ 37 12 34·9	+ 2·1
	1434	....	5·0	4 31 26	117 40	3 58·4	58·2	0·500	29·87	......	38·8	....	......	7	+ 43 41 56·8	+ 0·8
	......	Nadir ‖│	......	4 57 0	254 0	1 53·7	61·1	0·500	29·87	37·7	38·7	....	......	......	....	......
	......	Nadir │‖	......	....	254 0	1 64·9	74·2	0·500	......	......	......	....	......	......	....	......
Dec. 8	......	Nadir ‖│	......	3 35 0	254 0	1 54·0	60·9	0·500	30·00	36·1	31·0	....	......	......	....	......
	......	Nadir │‖	......	....	254 0	1 65·1	74·9	0·500	......	......	......	....	......	......	....	......
	1434	....	......	4 31 21	117 40	3 54·0	53·9	0·504	30·00	......	31·0	3, N.W.	0	7	+ 43 41 55·0	+ 0·4
	1463	....	......	4 38 31	106 35	0 57·0	55·0	0·513	30·00	......	31·0	....	......	8	+ 32 33 54·3	0·0
	1501	....	......	4 46 35	74 20	3 12·6	10·6	0·239	30·00	......	31·0	....	......	6	+ 0 21 0·8	− 0·9
	1626	....	......	5 10 5	[illegible] 40	0 8·3	7·4	0·500	30·00	......	31·0	....	......	7	+ 15 38 4·8	− 4·0
	......	Nadir ‖│	......	5 [illegible] 0	254 0	1 53·7	61·4	0·500	30·00	34·1	31·0	....	......	......	....	......
	......	Nadir │‖	......	....	254 0	1 64·5	75·2	0·500	......	......	......	....	......	......	....	......
Dec. 10	......	Nadir ‖│	......	2 40 0	254 0	1 53·9	60·0	0·500	29·66	41·7	45·7	....	......	......	....	......
	......	Nadir │‖	......	....	254 0	1 65·0	74·3	0·500	......	......	......	....	......	......	....	......
	980	....	......	3 3 16	103 35	0 34·9	32·1	0·500	29·66	......	45·6	7, W.	1	7	+ 29 33 31·3	+ 11·4
	1055	....	......	3 17 33	108 20	4 36·7	35·4	0·500	29·66	......	45·6	....	......	8	+ 34 22 34·6	+ 9·0
	1101	....	......	3 28 2	98 40	4 52·9	53·7	0·387	29·66	......	45·6	....	......	7	+ 24 42 46·5	+ 9·2
	1626	....	......	5 10 5	89 40	0 6·5	6·8	0·528	29·66	......	45·5	....	......	7	+ 15 38 4·5	− 3·5
	1663	....	......	5 16 42	95 40	2 50·4	51·0	0·500	29·66	......	45·5	....	......	9	+ 21 40 48·4	− 4·6
	1730	(b) δ Orionis	......	....	130 20	1 56·2	58·2	0·500	29·66	......	45·5	....	......	5	+ 56 19 55·0	− 5·0
	......	Nadir ‖│	......	5 51 0	254 0	1 54·1	60·9	0·500	29·66	46·0	45·4	....	......	......	....	......
	......	Nadir │‖	......	....	254 0	1 64·7	74·9	0·500	......	......	......	....	......	......	....	......

(a) Good definition. (b) Seen rather late.

Date.	Star or other Object Observed. No. in British Ass. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1867.
1867.				h m s	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Dec. 12	......	Nadir	......	3 3 0	254 0	1 54·4	61·2	0·500	29·67	43·8	42·3	......	......	......	......	......
	......	Nadir	......	....	254 0	1 64·6	71·9	0·500	......	......	......	......	......	......	......	......
	1055	(a)	......	3 17 32	108 20	4 35·1	32·7	0·503	29·67	......	42·3	6, W.	3	7	+34 22 32·8	+ 9·0
	1361	(b)	......	....	111 10	4 38·0	36·4	0·500	29·67	......	43·0	......	......	6	+37 12 36·1	+ 2·1
	1434	......	......	4 31 23	117 40	3 55·3	54·4	0·761	29·67	......	43·0	......	......	7	+43 42 0·8	+ 0·1
	1501	......	......	....	74 20	3 4·7	4·9	0·500	29·68	......	43·0	......	......	6	+ 0 21 1·6	+ 0·3
	1623	β Orionis	......	5 8 49	138 15	3 55·4	57·4	0·500	29·69	......	43·0	......	......	7	+64 16 54·7	− 4·3
	1730	δ Orionis	......	5 25 53	130 20	2 3·0	5·2	[illegible]·500	29·69	......	43·0	......	......	8	+56 20 2·1	− 5·3
	1883	α Orionis	1·0	5 48 39	122 35	[illegible] 41·7	42·3	0·500	29·69	......	43·0	......	......	......	+48 33 40·0	− 7·3
	......	Nadir	......	5 50 [illegible]	254 [illegible]	1 53·9	61·9	0·500	29·69	43·[illegible]	43·0	......	......	......	......	......
	......	Nadir	......	....	254 0	1 64·9	72·0	0·500	......	......	......	......	......	......	......	......
Dec. 17	......	Nadir	......	3 17 0	254 0	1 54·3	62·3	[illegible]·500	29·00	41·7	37·0	......	......	......	......	......
	......	Nadir	......	....	254 0	1 65·1	71·9	0·500	......	......	......	......	......	......	......	......
	1166	η Tauri	......	3 40 16	106 15	2 14·8	13·4	0·500	29·00	......	37·0	15, W.	3	7	+32 15 12·3	+ 6·9
	1623	β Orionis	......	5 8 49	138 15	3 55·7	56·7	0·500	29·00	......	36·0	......	......	8	+64 16 54·3	− 5·2
	1656	......	......	5 15 9	121 40	0 48·9	48·9	0·537	29·00	......	35·8	......	......	7	+47 38 47·7	− 4·7
	1683	......	6·0	....	95 40	2 50·7	50·0	0·500	29·00	......	35·6	......	......	6	+21 40 48·1	− 4·1
	1730	δ Orionis	......	5 25 54	130 20	2 5·3	5·5	0·500	29·00	......	35·6	......	......	8	+56 20 3·2	− [illegible]
	1883	α Orionis	1·0	5 48 37	122 35	0 45·0	44·6	0·500	29·00	......	35·6	......	......	7	+48 33 42·6	− 7·8
	1930	......	......	5 55 51	112 15	4 3·2	2·4	0·523	29·00	......	35·5	......	......	8	+38 17 2·1	− 8·5
	......	Nadir	......	6 6 0	254 [illegible]	1 54·5	62·7	0·500	29·00	36·8	35·5	......	......	......	......	......
	......	Nadir	......	....	254 0	1 64·8	72·6	0·500	......	......	......	......	......	......	......	......
Dec. 18	......	Nadir	......	3 12 0	254 0	1 54·8	61·2	0·500	29·30	38·7	34·0	......	......	......	......	......
	......	Nadir	......	....	254 0	1 67·0	72·0	0·500	......	......	......	......	......	......	......	......
	1166	(a) η Tauri	......	3 40 16	106 15	2 15·0	13·4	0·500	29·33	......	34·0	2, W.	0	7	+32 15 12·3	+ 6·9
	1623	β Orionis	......	5 8 50	138 15	3 54·6	55·6	0·500	29·34	......	34·9	......	......	6	+[illegible] 1[illegible] 53·1	− 5·4
	1683	......	......	5 18 40	95 40	2 52·4	52·0	0·500	29·34	......	35·0	......	......	7	+21 40 49·8	− 4·0
	1730	(c) δ Orionis	......	5 25 53	130 20	2 7·7	8·2	0·500	29·34	......	35·0	......	......	6	+[illegible] 20 5·8	− 6·1
	1826	(d)	......	5 40 14	120 30	0 19·0	19·0	0·498	29·34	......	35·0	......	......	7	+46 28 16·6	− 7·0
	1907	......	......	5 52 5	117 10	1 9·6	8·0	0·500	29·34	......	35·0	......	......	8	+43 9 6·9	− 8·1
	2022	......	......	6 10 27	119 55	4 20·7	20·0	0·500	29·34	......	35·0	......	......	7	+45 57 18·6	− 9·7
	2060	(b)	7·0	....	125 15	3 54·8	53·2	0·501	29·34	......	35·0	......	......	8	+51 16 52·2	−10·1
	......	Nadir	......	6 21 0	254 0	1 65·1	62·2	0·500	29·34	36·7	35·0	......	......	......	......	......
	......	Nadir	......	....	254 0	1 65·0	72·1	0·500	......	......	......	......	......	......	......	......
Dec. 19	......	Nadir	......	3 17 [illegible]	254 0	1 54·8	61·8	0·500	29·50	37·8	32·8	......	......	......	......	......
	......	Nadir	......	....	254 0	1 66·1	74·0	0·500	......	......	......	......	......	......	......	......
	1463	......	......	4 38 22	106 35	1 2·4	0·0	0·500	29·50	......	32·0	1, W.	0	7	+32 33 59·1	+ 0·3
Dec. 23	......	Nadir	......	5 0 0	254 0	1 53·0	59·0	0·500	29·55	41·7	43·0	......	......	......	......	......
	......	Nadir	......	....	254 0	1 66·2	73·2	0·500	......	......	......	......	......	......	......	......
	1656	(e)	......	5 15 10	121 40	0 49·9	49·8	0·500	29·55	......	43·0	1, S.W.	5	6	+47 38 47·9	− 5·1
	1883	α Orionis	2·0	5 48 40	122 35	[illegible] 44·0	44·3	0·500	29·55	......	42·7	......	......	7	+48 33 42·3	− 8·3
	2022	......	......	6 10 27	119 55	4 21·1	21·7	0·450	29·55	......	42·7	......	......	7	+45 57 18·8	−10·1
	2101	......	......	6 23 [illegible]	107 20	1 9·8	9·2	0·500	29·55	......	42·7	......	......	8	+33 19 7·9	−11·5
	2184	......	......	6 34 22	113 25	2 41·4	41·3	0·500	29·55	......	42·7	......	......	......	+39 25 40·2	−13·4
	......	Nadir	......	6 39 0	254 0	1 54·0	60·2	0·500	29·55	43·9	42·7	......	......	......	......	......
	......	Nadir	......	....	254 0	1 66·1	72·7	0·500	......	......	......	......	......	......	......	......

(a) Sky getting cloudy. (b) Seen rather late. (c) Getting clear. (d) Good definition. (e) Occasionally cloudy and clear.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1867.
1867.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Dec. 24	......	Nadir |||	......	5 25 0	254 0	1 53·3	61·0	0·500	29·72	45·0	44·0	....	......	......	....	......
	......	Nadir |||	......	....	254 0	1 64·8	72·0	0·500	......	......	......	....	......	......	....	......
	1826	....	......	5 40 15	120 30	0 18·8	19·1	0·520	29·72	......	43·8	5, W.	0	7	+46 28 17·7	− 7·5
	1883	α Orionis	1·0	5 48 39	122 35	0 44·6	43·8	0·500	29·72	......	43·8	....	......	8	+48 33 42·4	− 8·4
	1932	....	......	5 56 12	91 20	4 44·6	44·4	0·498	29·72	......	43·7	....	......	7	+17 22 42·7	− 9·2
	2022	....	......	6 10 28	119 55	4 18·0	18·4	0·500	29·72	......	43·7	....	......	6	+45 57 17·1	−10·2
	2101	....	......	6 23 1	107 20	1 11·7	11·3	0·500	29·72	......	43·3	....	......	9	+33 19 10·0	−11·5
	2184	....	......	6 34 22	113 25	2 41·8	41·0	0·594	29·72	......	43·0	....	......	6	+39 25 42·9	−12·5
	......	Nadir |||	......	6 44 0	254 0	1 54·5	61·4	0·500	29·72	43·7	42·9	....	......	......	....	......
	......	Nadir |||	......	....	254 0	1 65·0	72·0	0·500	......	......	......	....	......	......	....	......
Dec. 30	......	Nadir |||	......	4 18 0	254 0	1 53·7	60·9	0·500	30·11	40·0	34·7	....	......	......	....	......
	......	Nadir |||	......	....	254 0	1 65·4	72·8	0·500	......	......	......	....	......	......	....	......
	2022	....	......	6 10 26	119 55	4 10·1	10·9	0·614	30·11	......	34·1	....	......	8	+45 57 12·5	−10·7
	2101	....	8·0	6 22 58	107 20	1 12·0	11·2	0·374	30·11	......	34·0	....	......	8	+33 19 6·6	−11·5
	2184	....	......	6 34 21	113 25	2 41·8	41·0	0·500	30·11	......	34·0	....	......	7	+39 25 40·3	−12·8
	2238	....	......	6 44 34	106 10	3 41·9	41·1	0·340	30·11	......	33·9	....	......	7	+32 11 35·9	−13·8
	2306	....	......	6 56 55	118 50	0 1·0	2·0	0·500	30·11	......	33·9	....	......	7	+44 47 59·8	−14·7
	......	Nadir |||	......	7 7 0	254 0	1 53·1	60·3	0·500	30·11	36·7	33·9	....	......	......	....	......
	......	Nadir |||	......	....	254 0	1 66·0	73·1	0·500	......	......	......	....	......	......	....	......

ROYAL OBSERVATORY, EDINBURGH.

Individual Observations of Mean North Polar Distances of Stars observed at the Royal Observatory, Edinburgh, in the Year 1867, reduced to January 1, 1867.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
B.A.C. 18.				
Sept. 30	0·74		h. m. 0 4	° ′ ″ 31 3 59·8
Oct. 2	0·75	7·0		59·5
3	0·75			59·7
B.A.C. 26, γ Pegasi.				
Sept. 16	0·71	(2·0) (a)	[illegible] 6	75 33 26·4
B.A.C. 28.				
Sept. 23	0·73	(6·0)	0 6	49 41 57·3
B.A.C. 39.				
Oct. 2	0·75	(6·0)	0 9	13 47 20·8
B.A.C. 48.				
Oct. 3	0·75	(7·0)	0 10	76 49 18·6
B.A.C. 66.				
Sept. 23	0·73	(7·0)	0 14	22 54 54·7
Oct. 25	0·81			55·8
31	0·83			56·3
B.A.C. 83.				
Sept. 20	0·72	6·0	0 18	37 41 27·2
30	0·74			26·2
Oct. 2	0·75	6·0		27·7
7	0·76			26·8

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1867.
B.A.C. 98.				
Sept. 23	0·73	(7·0)	h. m. 0 21	° ′ ″ 74 42 42·3
Oct. 3	0·75			40·4
B.A.C. 120.				
Oct. 2	0·75	(6·0)	[illegible] 24	57 9 12·5
B.A.C. 177.				
Sept. 30	0·74		0 [illegible]	81 22 18·3
Oct. 2	[illegible]·75			17·0
7	0·76	7·0		19·2
B.A.C. 218, η Cassiopeæ.				
Oct. 2	0·75	(4·0)	0 41	32 53 30·3
31	0·83			29·2
B.A.C. 224.				
Sept. 30	0·74	(6·0)	0 42	62 0 20·5
B.A.C. 237.				
Oct. 25	0·81	(7·5)	0 45	87 20 4·9
B.A.C. 259.				
Sept. 30	0·74	(4·0)	0 49	52 13 21·1
Oct. 7	0·76			23·1
31	0·83			22·0
B.A.C. 263.				
Oct. 11	0·77	(6·0)	0 50	63 43 13·8

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
B.A.C. 290.				
Sept. 30	0·74		h. m. 0 56	° ′ ″ 36 30 30·8
Oct. 2	0·75			30·6
25	[illegible]·81			29·0
31	0·83			32·0
Nov. 4	0·84	7·0		30·8
B.A.C. 314, μ Cassiopeæ.				
Oct. 3	0·75	(5·5)	0 59	35 43 59·6
7	0·76			63·3
11	0·77			59·5
B.A.C. 335.				
Oct. 2	0·75	(6·5)	1 3	26 30 20·1
31	0·83			19·9
B.A.C. 357.				
Sept. 30	0·74	(9·0)	1 5	58 37 51·7
Oct. 11	0·77			54·9
25	0·81			49·7
B.A.C. 455.				
Oct. 11	0·77	(8·0)	1 25	73 43 53·2
25	0·81			54·0
Nov. 1	0·83			54·7
B.A.C. 482.				
Oct. 31	0·83	(6·0)	1 [illegible]	32 42 6·8
B.A.C. 514.				
Oct. 7	0·76	6·0	1 34	60 37 36·3
25	0·81			34·9
30	0·83			37·3

(a) Magnitudes in parenthesis are the tabular ones of the British Association Catalogue.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
B.A.C. 516.				
			h. m.	° ′ ″
Oct. 9	0·77	(5·5)	1 34	55 25 35·1
B.A.C. 525.				
Nov. 6	0·85	(7·0)	1 35	33 8 4·2
B.A.C. 538.				
Oct. 11	0·77	6·0	1 39	73 15 14·9
B.A.C. 562.				
Oct. 7	0·76	6·5	1 44	39 11 4·7
25	0·81			1·3
Nov. 4	0·84			1·5
18	0·88			2·7
B.A.C. 588.				
Oct. 11	0·77	(6·5)	1 50	26 1 39·2
17	0·79			39·4
25	0·81			38·7
31	0·83			41·3
Nov. 1	0·83			40·9
4	0·84			40·9
B.A.C. 620.				
Oct. 30	0·83	(7·0)	1 55	25 32 15·2
Nov. 26	0·90			16·4
B.A.C. 626.				
Nov. 4	0·84	(7·0)	1 57	7 4 5·0
B.A.C. 645.				
Nov. 6	0·85	(6·0)	1 59	64 48 21·5
B.A.C. 694.				
Oct. 25	0·81	(7·5)	2 9	26 11 36·8
29	0·82			36·6
30	0·83			35·7
Nov. 4	0·84			36·3
8	0·85			38·4
26	0·90			37·6
B.A.C. 702.				
			h. m.	° ′ ″
Oct. 17	0·79	(7·5)	2 10	26 16 39·5
Nov. 1	0·83			36·8
B.A.C. 718.				
Nov. 27	0·90	(7·0)	2 13	33 22 8·7
B.A.C. 721.				
Nov. 18	0·88	(5·0)	2 13	34 45 57·1
B.A.C. 725.				
Nov. 6	0·85	(8·0)	2 14	33 13 25·5
B.A.C. 728.				
Nov. 1	0·83	(6·5)	2 15	79 46 15·0
B.A.C. 764.				
Oct. 30	0·83	(7·0)	2 22	81 1 45·4
Nov. 4	0·84			45·1
8	0·85			48·7
B.A.C. 776.				
Oct. 25	0·81	(6·0)	2 25	58 19 23·5
Nov. 6	0·85			26·3
26	0·90			25·7
27	0·90			25·2
B.A.C. 793.				
Oct. 29	0·82	(6·5)	2 29	83 44 56·1
B.A.C. 822.				
Nov. 26	0·90	7·0	2 34	47 53 44·9
27	0·90			45·6
B.A.C. 834.				
Oct. 25	0·81	(6·5)	2 36	64 55 45·1
Nov. 8	0·85			48·3
18	0·88			45·6
B.A.C. 891.				
			h. m.	° ′ ″
Oct. 29	0·82	8·0	2 46	84 4 20·6
Nov. 4	0·84			18·6
B.A.C. 920.				
Oct. 29	0·82	(7·0)	2 51	68 54 58·7
Nov. 4	0·84			58·3
18	0·88			61·1
26	0·90			59·1
27	0·90			59·4
B.A.C. 962, ε Persei.				
Oct. 29	0·82		2 59	40 53 50·8
30	0·83			51·4
Nov. 4	0·84			50·7
8	0·85			53·0
22	0·89	4·0		53·7
B.A.C. 980.				
Nov. 18	0·88		3 3	63 36 55·5
26	0·90	6·5		53·2
Dec. 10	0·94			52·5
B.A.C. 1055.				
Nov. 4	0·84	(7·5)	3 17	68 25 59·8
18	0·88			60·5
22	0·89			61·6
26	0·90			60·7
27	0·90			61·7
Dec. 10	0·94			60·2
12	0·94			58·7
B.A.C. 1101.				
Nov. 8	0·85	(6·5)	3 27	58 45 59·0
18	0·88			60·0
22	0·89			64·2
27	0·90			61·3
Dec. 10	0·94			61·3
B.A.C. 1166, η Tauri.				
Nov. 22	0·89	(3·0)	3 40	66 18 31·7
26	0·90			31·6
27	0·90			32·1
Dec. 17	0·96			32·5
18	0·96			33·2

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
B.A.C. 1282.				
Nov. 22	0·89	(6·0)	h. m. 4 4	° ′ ″ 41 15 7·7
26	0·90			5·7
27	0·90			5·4
B.A.C. 1318.				
Nov. 22	0·89	(6·0)	4 11	33 49 5·5
B.A.C. 1361.				
Nov. 27	0·90	(6·0)	4 17	71 15 58·9
Dec. 12	0·94			59·4
B.A.C. 1434.				
Nov. 22	0·89	5·0	4 31	77 45 32·2
27	0·90			31·1
Dec. 6	0·93			30·1
12	0·94			33·5
B.A.C. 1463.				
Dec. 6	0·93	(7·5)	4 38	66 37 9·8
19	0·96			14·2
B.A.C. 1501.				
Dec. 6	0·93	(6·0)	4 46	34 23 37·1
12	0·94			39·1
B.A.C. 1623, β Orionis.				
Dec. 12	0·94	(1·0)	5 8	98 21 28·2
17	0·96			25·8
18	0·96			26·0
B.A.C. 1626.				
Jan. 11	0·03	(7·5)	5 9	49 40 55·1
Dec. 6	0·93			54·6
10	0·94			54·1
B.A.C. 1656.				
Dec. 17	0·96	(6·0)	5 14	81 42 23·4
23	0·97			23·4
B.A.C. 1683.				
Jan. 11	0·03	6·0	h. m. 5 18	° ′ ″ 55 43 44·6
Dec. 10	0·94			43·7
17	0·96			43·9
18	0·96			46·0
B.A.C. 1730, δ Orionis.				
Jan. 11	0·03	(2·0)	5 25	90 23 58·6
Dec. 10	0·94			53·9
12	0·94			61·3
17	0·96			60·9
18	0·96			64·6
B.A.C. 1826.				
Jan. 11	0·03	6·0	5 40	80 31 45·1
14	0·04			47·3
Dec. 18	0·96			48·2
24	0·98			48·5
B.A.C. 1863, α Orionis.				
Jan. 11	0·03	(1·0)	5 48	82 37 15·5
Dec. 12	0·94			15·7
17	0·96			17·3
23	0·97			16·8
24	0·98			17·0
B.A.C. 1907.				
Dec. 18	0·96	(6·0)	5 52	77 12 30·7
B.A.C. 1930.				
Dec. 17	0·96	(6·5)	5 56	72 20 16·2
B.A.C. 1932.				
Jan. 11	0·03	(7·5)	5 55	51 25 26·2
Dec. 24	0·98			29·6
B.A.C. 2022.				
Jan. 14	0·04	6·0	6 10	80 0 43·8
Dec. 18	0·96			46·6
23	0·97			45·7
24	0·98			44·1
30	0·99			41·0
B.A.C. 2046.				
Jan. 25	0·07	7·0	h. m. 6 15	° ′ ″ 33 38 55·9
B.A.C. 2060.				
Dec. 18	0·96	7·0	6 17	85 20 32·1
B.A.C. 2101.				
Dec. 23	0·97	8·0	6 22	67 22 11·5
24	0·98			13·8
30	0·99			11·7
B.A.C. 2184.				
Dec. 23	0·97	(7·0)	6 34	73 28 52·5
24	0·98			55·4
30	0·99			54·0
B.A.C. 2238.				
Jan. 11	0·03	(6·0)	6 44	66 14 38·0
14	0·04			37·0
Dec. 30	0·99			37·0
B.A.C. 2292.				
Jan. 14	0·04	(6·0)	6 54	79 11 25·2
30	0·08			22·3
Feb. 6	0·10			27·5
B.A.C. 2306.				
Jan. 25	0·07	(6·0)	6 56	78 51 23·5
28	0·07			21·6
Dec. 30	0·99			21·9
B.A.C. 2329.				
Jan. 14	0·04	7·5	7 1	74 15 30·7
B.A.C. 2379.				
Jan. 25	0·07	(5·0)	7 9	40 18 7·3

B.A.C. 2410, δ Geminorum.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Jan. 28	0·07	(3·0)	h. m. 7 12	° ′ ″ 67 46 33·3
30	0·08			30·3

B.A.C. 2463.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Jan. 28	0·07	(7·0)	7 21	62 10 52·4
Feb. 6	0·10			51·7

B.A.C. 2488.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Jan. 30	0·08		7 27	43 31 45·5
Feb. 6	0·10	6·0		48·2

B.A.C. 2522, α Canis Minoris.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Jan. 11	0·03	(1·0)	7 32	84 26 10·9
14	0·04			14·2
25	0·07			12·6
28	0·07			11·2

B.A.C. 2586.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Jan. 14	0·04	7·0	7 42	61 28 12·4
30	0·08			14·0
Feb. 8	0·10			14·0

B.A.C. 2653.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Jan. 25	0·07	(6·0)	7 57	70 47 3·7
30	0·08			4·2
Feb. 6	0·10			5·2
8	0·10			3·1

B.A.C. 2748.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Jan. 30	0·08	(7·0)	8 5	75 36 5·0
Feb. 6	0·10			6·8
22	0·14			4·1

B.A.C. 2867.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Jan. 25	0·07	(6·5)	8 25	79 29 9·3
28	0·07			7·2
30	0·08			9·4
Feb. 6	0·10			7·6
22	0·14			9·8

B.A.C. 2971, ε Hydræ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Jan. 28	0·07	(4·0)	h. m. 8 40	° ′ ″ 83 5 41·1
30	0·08			43·6
Feb. 8	0·10			43·2
26	0·15			42·4

B.A.C. 2988.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Feb. 6	0·10	(7·5)	8 43	34 33 10·8

B.A.C. 3013.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Feb. 21	0·14	(6·0)	8 45	84 9 44·0

B.A.C. 3053.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Jan. 28	0·07		8 51	80 6 9·3
30	0·08	6·0		11·1
Feb. 8	0·10			4·7
22	0·14			7·4
26	0·15			4·4

B.A.C. 3083.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Feb. 8	0·10	6·5	8 56	38 38 53·6
21	0·14			54·7

B.A.C. 3091.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Mar. 1	0·16	(7·0)	8 57	39 51 39·8

B.A.C. 3103.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Feb. 26	0·15	(7·5)	8 59	72 21 25·2

B.A.C. 3133.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Feb. 8	0·10	(6·0)	9 5	85 35 20·1

B.A.C. 3242, θ Ursæ Majoris.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Feb. 8	0·10	(3·0)	9 24	37 43 8·7
21	0·14			4·5
26	0·15			5·5
Mar. 1	0·16			5·9

B.A.C. 3331, ε Leonis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Feb. 21	0·14	(3·0)	h. m. 9 38	° ′ ″ 65 36 51·9
26	0·15			54·4
Mar. 1	0·16			52·2

B.A.C. 3375.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Feb. 26	0·15	(6·5)	9 46	54 23 29·5
27	0·16			31·5
Mar. 26	0·23			30·2

B.A.C. 3380.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Feb. 21	0·14	(6·0)	9 47	83 24 58·5
Mar. 11	0·19			60·8

B.A.C. 3418.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Feb. 28	0·16	(8·0)	9 54	80 24 40·8

B.A.C. 3420.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Feb. 26	0·15	7·0	9 55	57 49 45·5

B.A.C. 3427.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Feb. 21	0·14	(7·0)	9 56	56 42 43·5
Mar. 11	0·19			40·1

B.A.C. 3438.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Feb. 27	0·16	(6·5)	9 58	84 21 10·6
Mar. 1	0·16			9·4

B.A.C. 3439.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Mar. 26	0·23	(7·0)	9 58	54 21 7·4

B.A.C. 3464.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
Feb. 26	0·15	7·0	10 7	57 54 58·1
Mar. 1	0·23	7·0		58·3

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
B.A.C. 3529.				
Feb. 26	0·15	(6·0)	h. m. 10 14	° ′ ″ 82 54 2·8
28	0·16			0·5
Mar. 1	0·16			3·8
15	0·20			8·5
20	0·21			6·0
26	0·23			5·8
27	0·23			3·4
B.A.C. 3592.				
Mar. 1	0·16	(6·0)	10 23	87 49 28·3
26	0·23			27·5
B.A.C. 3662.				
Feb. 28	0·16	(7·5)	10 35	78 33 57·1
Mar. 15	0·20			62·0
20	0·21			60·1
27	0·23			57·4
28	0·24			58·8
B.A.C. 3726.				
Mar. 15	0·20	(6·0)	10 45	68 16 10·1
20	0·21			8·7
26	0·23			8·2
27	0·23			6·3
B.A.C. 3780.				
Mar. 20	0·21	(7·5)	10 57	81 42 4·8
26	0·23			5·5
27	0·23			2·5
28	0·24			6·0
B.A.C. 3834, δ Leonis.				
Mar. 15	0·20	(2·5)	11 7	68 44 52·6
20	0·21			53·3
21	0·22			53·2
26	0·23			54·1
27	0·23			54·6
28	0·24			54·0
B.A.C. 3869.				
Mar. 15	0·20	(6·0)	11 15	71 49 64·1
21	0·22			58·0

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
B.A.C. 3899.				
Dec. 26	0·23	(6·0)	h. m. 11 15	° ′ ″ 71 49 62·1
27	0·23			61·9
28	0·24			63·0
B.A.C. 3996.				
Mar. 20	0·21	(6·0)	11 43	84 4 16·5
28	0·24			17·0
B.A.C. 4153.				
Mar. 26	0·23	(6·0)	12 14	62 38 14·9
27	0·23			15·7
B.A.C. 4199.				
Mar. 26	0·23	9·0	12 21	63 21 3·4
27	0·23			4·6
B.A.C. 4231.				
Mar. 26	0·23	(7·0)	12 27	64 49 2·9
27	0·23			3·0
B.A.C. 4421, β Comæ.				
May 7	0·34	(4·5)	13 5	61 26 44·0
B.A.C. 4575.				
May 7	0·34	6·0	13 37	66 37 38·6
B.A.C. 4627.				
May 7	0·34	7·0	13 45	54 34 2·2
B.A.C. 4729, α Bootis.				
May 7	0·34	(1·0)	14 9	70 7 25·1
B.A.C. 4756.				
May 13	0·36	6·0	14 14	37 21 10·8
22	0·39			13·3

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
B.A.C. 4797.				
May 7	0·34	(6·0)	h. m. 14 23	° ′ ″ 53 12 24·0
B.A.C. 4820.				
May 22	0·39	(6·0)	14 28	56 52 50·3
B.A.C. 4863.				
May 21	0·38	(6·0)	14 37	52 40 31·9
B.A.C. 4876, ι Bootis.				
May 7	0·34	(3·0)	14 39	62 21 48·5
22	0·39			49·6
B.A.C. 4934.				
May 21	0·38	(6·5)	14 51	48 19 35·0
22	0·39			37·6
B.A.C. 4992.				
May 21	0·38	(5·5)	15 3	34 55 48·6
22	0·39			50·7
B.A.C. 5071. (a)				
May 21	0·38	(6·0)	15 16	37 33 41·4
22	0·39			41·2
B.A.C. 5284, γ Serpentis.				
May 21	0·38	(3·0)	15 50	73 54 8·8
B.A.C. 5415. (b)				
May 22	0·39	(6·0)	16 7	31 42 55·4
B.A.C. 5452.				
May 21	0·38	6·0	16 14	68 32 38·1
B.A.C. 5537.				
May 22	0·39	6·0	16 27	79 20 53·2

(a) Differs from Tab. N. P. D. by 2′.

(b) Differs from Tab. by 7′ of N. P. D.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
B.A.C. 6123, 70 Ophiuchi.				
Aug. 21	0·38	(4·5)	h. m. 17 58	° ′ ″ 87 28 0·4
B.A.C. 6213. (a)				
Aug. 21	0·38	(6·0)	18 12	82 47 30·1
B.A.C. 6429, β Lyræ.				
Aug. 21	0·38	(3·0)	18 45	56 47 27·7
B.A.C. 6527.				
Aug. 21	0·38	8·0	18 59	71 3 17·4
B.A.C. 6574.				
Aug. 21	0·38	(6·0)	19 7	68 40 5·8
B.A.C. 6644, b Aquilæ.				
Aug. 21	0·38	(5·0)	19 18	78 20 18·0
B.A.C. 6729.				
Aug. 7	0·60	5·0	19 32	84 54 10·7
B.A.C. 6791.				
Aug. 7	0·60	8·0	19 42	78 38 41·6
B.A.C. 6852.				
Aug. 7	0·60	5·5	19 51	30 38 31·2
9	0·60			31·0
B.A.C. 6966.				
Aug. 23	0·64		20 10	64 48 44·9
26	0·65	6·0		45·6
B.A.C. 7006.				
Aug. 9	0·60	(7·0)	20 15	53 17 3·3
16	0·62			5·6
B.A.C. 7014.				
Aug. 6	0·59	6·0	h. m. 20 17	° ′ ″ 85 4 47·2
23	0·64			47·5
B.A.C. 7066.				
Aug. 6	0·59		20 26	34 22 37·6
7	0·60			39·0
9	0·60			37·3
16	0·62			38·5
23	0·64			38·3
26	0·65	6·0		38·9
B.A.C. 7157.				
Aug. 9	0·60	(8·0)	20 34	74 49 41·1
B.A.C. 7161.				
Aug. 26	0·65	(7·0)	20 35	44 48 7·2
B.A.C. 7268.				
Aug. 6	0·59	(6·5)	20 51	43 5 29·1
7	0·60			25·4
B.A.C. 7285.				
Aug. 9	0·60	(7·0)	20 54	83 0 1·7
26	0·65			2·6
B.A.C. 7336, 61¹ Cygni.				
Aug. 6	0·59	(5·5)	21 1	51 54 11·6
13	0·61			10·4
23	0·64			8·0
26	0·65			10·1
28	0·65			10·5
B.A.C. 7354.				
Sept. 10	0·69	(8·0)	21 4	68 5 8·8
B.A.C. 7368, ζ Cygni.				
Aug. 7	0·60	(3·0)	21 7	60 19 2·2
26	0·65			2·3
B.A.C. 7410.				
Aug. 6	0·59	(5·5)	h. m. 21 15	° ′ ″ 66 42 12·1
Sept. 10	0·69			10·7
17	0·71			10·6
B.A.C. 7417.				
Aug. 26	0·65	6·0	21 16	31 56 19·1
B.A.C. 7430.				
Aug. 7	0·60	(6·0)	21 17	29 48 27·3
B.A.C. 7450.				
Aug. 21	0·64	8·0	21 20	71 11 58·6
Sept. 10	0·69			56·4
B.A.C. 7478, β Aquarii.				
Sept. 17	0·71	(3·0)	21 24	96 9 16·1
B.A.C. 7496 (Nebula so-called).				
Aug. 26	0·65	7·5	21 27	42 8 33·7
B.A.C. 7501.				
Sept. 5	0·68	7·0	21 28	44 44 6·1
B.A.C. 7528.				
Sept. 10	0·69	(5·5)	21 33	70 19 61·1
17	0·71			59·7
B.A.C. 7561, ι Pegasi.				
Aug. 21	0·64	(2·5)	21 38	80 44 1·5
26	0·65			1·0
Sept. 10	0·69			0·8
B.A.C. 7566.				
Sept. 17	0·71	7·0	21 38	52 19 28·2

(a) Tab. N. P. D. is 1′ in error.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
B.A.C. 7644.				
			h. m.	° ′ ″
Sept. 5	0·68	(7·0)	21 50	18 8 15·6
10	0·69			15·1
17	0·71			14·2
B.A.C. 7686, α Aquarii.				
Sept. 10	0·69	(3·0)	21 59	90 57 53·0
17	0·71			51·5
23	0·73			52·6
B.A.C. 7708.				
Aug. 12	0·61	5·5	22 1	28 21 58·9
B.A.C. 7759.				
Sept. 10	0·69	(6·0)	22 8	29 53 54·9
23	0·73			52·5
B.A.C. 7779.				
Sept. 5	0·68	9·0	22 10	17 20 43·4
B.A.C. 7908, ζ Pegasi.				
Sept. 5	0·68	(3·0)	22 35	79 51 44·6
10	0·69			43·4
30	0·74			43·7
Oct. 2	0·75			41·8
B.A.C. 7977.				
Sept. 10	0·69	(7·5)	22 47	88 51 46·1
23	0·73			46·0
B.A.C. 7996.				
Oct. 2	0·75	6·0	22 50	86 54 2·0

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
B.A.C. 8024.				
			h. m.	° ′ ″
Sept. 10	0·69	(6·5)	22 56	33 36 31·5
23	0·73			32·1
Oct. 2	0·75			33·9
3	0·75			32·1
B.A.C. 8065.				
Sept. [illegible]	0·73	7·5	23 3	88 34 34·2
Oct. 4	0·76			32·8
B.A.C. 8083.				
Sept. 10	0·69		23 7	33 33 56·3
23	0·73	6·0		55·1
30	0·74			56·2
Oct. 2	0·75			56·2
B.A.C. 8135.				
Sept. 30	0·74	(6·0)	23 14	46 36 37·2
B.A.C. 8137.				
Sept. 23	0·73	(7·0)	23 14	28 46 17·0
B.A.C. 8204.				
Sept. 23	0·73	(7·0)	23 27	18 43 52·4
Oct. 2	0·75			58·2
3	0·75			58·5
4	0·76			56·7
B.A.C. 8247.				
Sept. 10	0·69	(7·5)	23 36	72 4 13·6
23	0·73			12·1
Oct. 2	0·75			13·7
4	0·76			13·2
B.A.C. 8252.				
Oct. 21	0·80	7·0	23 36	37 35 5·9

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1867.
B.A.C. 8269.				
			h. m.	° ′ ″
Sept. 16	0·71	8·0	23 41	86 30 31·9
Oct. 7	0·76			31·1
B.A.C. 8272.				
Sept. 23	0·73	(7·0)	23 41	82 29 33·6
B.A.C. 8298.				
Oct. 2	0·75	(7·0)	23 45	13 8 15·6
B.A.C. 8315.				
Sept. 16	0·71	7·0	23 49	82 30 60·4
23	0·73			59·6
Oct. 3	0·75			58·1
B.A.C. 8338.				
Sept. 23	0·73	7·0	23 54	28 33 48·3
Oct. 2	0·75			48·3
B.A.C. 8350, 85 Pegasi.				
Sept. 20	0·72	(6·0)	23 55	63 37 20·2
30	0·74			19·5
Oct. 7	0·76			20·1
B.A.C. 8364.				
Sept. 16	0·71	(7·0)	23 58	32 12 31·7
Oct. 21	0·80			31·1
B.A.C. 8372.				
Sept. 23	0·73	(6·5)	23 59	32 18 18·9

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EXPLANATIONS OF THE MURAL CIRCLE OBSERVATIONS IN 1867.

The observations with the Mural Circle in 1867 were taken by Mr Peter Williamson, Second Assistant Astronomer, under the supervision of the Astronomer.

The subjects observed were chiefly stars remarkable for proper motion. They are designated as far as possible by the number in the British Association Catalogue in col. 2, and by proper name or description in col. 3, assisted if necessary by notes at the foot of the page, as well as by approximate estimate of the magnitude in col. 4, and time of transit past centre of field (by an uncorrected sidereal journeyman clock, but showing fairly differences from star to star) in col. 5.

In Polar distance the star was always carefully bisected when crossing the centre of the field, either at the precise instant if its motion was steady, or in its mean path through several seconds if unsteady or undulatory, as was too often the case. Such bisection being performed by bringing the stellar image between two parallel lines about 7 seconds of space apart: the lines being illuminated in a dark field.

The same general principles of observation as in former years have been kept up with improved details described in 1860. The completion of every observation therefore in Polar distance still depends largely on the Telescope micrometer, whose numbers are a necessary addition to the readings both of the Pointer on the Limb of the Circle and of the two horizontal Microscopes A, B; all which numerical particulars are given in columns 6, 7, 8, and 9.

In columns 10 and 12, the readings of the Barometer and exterior thermometer are noted for refraction purposes: the interior thermometer being assumed to be practically the same as the exterior, for all star-observations when a thorough draught was kept up through the observing room, as was always the case during star observations. During observations for the Nadir-point, on the contrary, all shutters and windows were closed to prevent disturbance to the mercury, and then a sensible difference between the thermometers usually occurred, and is shown by the figures in the narrow column 11, compared with those in column 12.

Columns 13, 14, and 15 contain various points connected with the meteorologic and other circumstances of the observations, as they appeared to the observer at the time; and column 16 contains the reduction of the angular observations in columns 6 to 9, to the stage of "Apparent Zenith Distance South."

To this end, the readings of the Microscopes have been corrected for the error of their runs, as ascertained over 5′ spaces on the limb of the Circle, with the telescope directed first to the Zenith and then to the Nadir: also for the difference between the mean of two and the mean of six Microscopes as ascertained by examination in 1855 (see p. 76, vol. xii.); also for the Telescope micrometer readings converted into arc on the estimate of one revolution being equal to 27·704″, as ascertained by observations in the Mercury trough with the collimating eye-piece, combined with readings of all the six circumferential Microscopes. The Circle positions are then converted into Apparent Zenith Distances, by the application of a reading for the Zenith point derived from observation of the Nadir, as shown by making the bisecting wire cover its illuminated image in the Mercury trough, an observation made generally both at the beginning and conclusion of every series of star measures. The chief data of these several corrections are contained in the following Tables I., II., and III.

TABLE I.

CORRECTION FOR RUNS OF MICROSCOPES IN 1867.

Date.	Thermometer.		Runs Correction observed.				Adopted Runs Correction.	For Period.
	Interior.	Exterior.	Nadir.	Zenith.	Means of Obs.	Collected Means.		
1867.	° F.	° F.	″	″	″	″	″	1867.
Jan. 30	39·0	37·4	+0·8	+1·4	+1·1	+1·2	+1·2	Jan. 4 to Feb. 28.
			+0·8	+1·6	+1·2			
Mar. 15	33·1	28·6	+0·8	+0·6	+0·7	+0·7	+0·8	Mar. 1 to Mar. 28.
April 15	46·3	42·7	−0·9	+3·4	+1·2	+1·4	+1·3	April 15 to April 30.
			+1·8	+1·4	+1·6			
May 31	52·8	49·1	+0·6	+1·6	+1·1	+1·2	+1·1	May 15 to May 31.
			+0·9	+1·7	+1·3			
Aug. 21	57·1	55·4	+1·8	+2·4	+2·1	+1·8	+1·6	July 31 to Aug. 28.
			+0·7	+2·1	+1·4			
							+1·0	Sept. 5 to Sept. 17.
Sept. 30	48·9	46·0	+1·0	+0·7	+0·8	+0·8		
Oct. 4	44·6	39·0	+0·7	+0·8	+0·8		+0·8	Sept. 20 to Oct. 31.
						+0·8		
Nov. 8	47·9	47·6	+0·8	+1·0	+0·9	+0·9	+0·9	Nov. 1 to Nov. 27.
Dec. 31	36·6	34·0	+2·0	0·0	+1·0	+0·8	+0·8	Dec. 6 to Dec. 31.
			+0·7	+0·6	+0·6			

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TABLE II.

CORRECTION TO REDUCE THE MEAN OF THE TWO HORIZONTAL, TO THE MEAN OF THE WHOLE SIX, MICROSCOPES FOR THE YEAR 1867.

Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.
0° & 180°	+1″·0	30° & 210°	+0″·2	60° & 240°	+0″·5	90° & 270°	+2″·4	120° & 300°	+3″·1	150° & 330°	+2″·4
1 181	+0·9	31 211	+0·2	61 241	+0·6	91 271	+2·4	121 301	+3·1	151 331	+2·4
2 182	+0·8	32 212	+0·1	62 242	+0·7	92 272	+2·5	122 302	+3·0	152 332	+2·3
3 183	+0·8	33 213	+0·1	63 243	+0·7	93 273	+2·5	123 303	+3·0	153 333	+2·3
4 184	+0·7	34 214	0·0	64 244	+0·8	94 274	+2·6	124 304	+2·9	154 334	+2·2
5 185	+0·6	35 215	0·0	65 245	+0·9	95 275	+2·6	125 305	+2·9	155 335	+2·2
6 186	+0·6	36 216	0·0	66 246	+0·9	96 276	+2·6	126 306	+2·9	156 336	+2·1
7 187	+0·6	37 217	+0·1	67 247	+1·0	97 277	+2·7	127 307	+2·9	157 337	+2·1
8 188	+0·5	38 218	+0·1	68 248	+1·0	98 279	+2·7	128 308	+2·8	158 338	+2·0
9 189	+0·5	39 219	+0·2	69 249	+1·1	99 279	+2·8	129 309	+2·8	159 339	+2·0
10 190	+0·5	40 220	+0·2	70 250	+1·1	100 280	+2·8	130 310	+2·8	160 340	+1·9
11 191	+0·4	41 221	+0·2	71 251	+1·2	101 281	+2·9	131 311	+2·8	161 341	+1·9
12 192	+0·4	42 222	+0·2	72 252	+1·2	102 282	+2·9	132 312	+2·8	162 342	+1·9
13 193	+0·3	43 223	+0·1	73 253	+1·3	103 283	+3·0	133 313	+2·7	163 343	+1·8
14 194	+0·3	44 224	+0·1	74 254	+1·3	104 284	+3·0	134 314	+2·7	164 344	+1·8
15 195	+0·2	45 225	+0·1	75 255	+1·4	105 285	+3·1	135 315	+2·7	165 345	+1·8
16 196	+0·2	46 226	+0·2	76 256	+1·5	106 286	+3·1	136 316	+2·7	166 346	+1·7
17 197	+0·2	47 227	+0·2	77 257	+1·6	107 287	+3·2	137 317	+2·7	167 347	+1·6
18 198	+0·2	48 228	+0·3	78 258	+1·7	108 288	+3·2	138 318	+2·8	168 348	+1·6
19 199	+0·2	49 229	+0·3	79 259	+1·8	109 289	+3·3	139 319	+2·8	169 349	+1·5
20 200	+0·2	50 230	+0·4	80 260	+1·9	110 290	+3·3	140 320	+2·8	170 350	+1·4
21 201	+0·2	51 231	+0·4	81 261	+1·9	111 291	+3·3	141 321	+2·8	171 351	+1·4
22 202	+0·2	52 232	+0·3	82 262	+2·0	112 292	+3·3	142 322	+2·8	172 352	+1·3
23 203	+0·2	53 233	+0·3	83 263	+2·0	113 293	+3·4	143 323	+2·7	173 353	+1·3
24 204	+0·2	54 234	+0·2	84 264	+2·1	114 294	+3·4	144 324	+2·7	174 354	+1·2
25 205	+0·2	55 235	+0·2	85 265	+2·1	115 295	+3·4	145 325	+2·7	175 355	+1·2
26 206	+0·2	56 236	+0·3	86 266	+2·2	116 296	+3·3	146 326	+2·6	176 356	+1·2
27 207	+0·2	57 237	+0·3	87 267	+2·2	117 297	+3·3	147 327	+2·6	177 357	+1·1
28 208	+0·2	58 238	+0·4	88 268	+2·3	118 298	+3·2	148 329	+2·5	178 358	+1·1
29 209	+0·2	59 239	+0·4	89 269	+2·3	119 299	+3·2	149 329	+2·5	179 359	+1·0

TABLE III.

NADIR AND ZENITH POINTS ON MURAL CIRCLE IN 1867.

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.	Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1867.					1867.				
Jan. 4	34·5°	254° 2′ 18·6″ 18·4	74° 2′ 18·5″	18·5″	Mar. 11	35·4°	254° 2′ 19·0″ 19·1	74° 2′ 19·0″	19·0″
7	37·0	19·3	19·3	19·2	15	34·0	18·6 19·2	19·0	19·2
11	33·0	19·6 19·4	19·5	19·4	20	35·2	20·3 20·2	20·3	20·0
14	29·4	19·6 19·4	19·5	19·6	21	35·0	20·4 20·2	20·3	20·1
25	39·2	20·0 20·1	20·0	19·7	26	44·2	19·3 19·4	19·4	19·5
28	43·4	18·9 19·4	19·2	19·5	27	42·2	19·2 19·2	19·2	19·3
30	40·5	18·8 20·2	19·5	19·5	28	40·6	18·8 19·2	19·0	19·0
Feb. 6	37·5	20·0 18·9	19·4	19·2	May 7	54·2	18·6 19·4	19·0	18·9
8	40·7	18·2 18·6	18·4	19·0	13	43·6	18·4 18·6	18·5	18·8
13	......	18·7	18·7	19·0	21	44·9	18·4 19·6	19·0	18·6
21	47·8	19·8 19·0	19·4	19·3	22	45·1	17·4 17·6	17·5	18·0
22	47·8	20·0	20·0	19·5	24	47·0	17·6	17·6	18·0
26	38·0	17·7 18·5	18·1	18·8	July 31	58·0	18·0	18·0	18·0
27	36·4	18·4 18·2	18·3	18·5	Aug. 6	57·4	18·0 19·1	18·6	18·4
28	35·1	19·0 18·9	19·0	18·6	7	57·2	18·2 19·2	18·7	18·6
Mar. 1	39·0	19·2 18·6	18·9	18·9	9	56·9	18·4 18·2	18·3	18·6

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Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1867.				
Aug. 12	41·3 °	254 2 18·7 18·7	74 2 18·7	18·7
13	62·3	19·2	19·2	19·0
16	58·0	18·6 18·6	18·6	18·8
21	57·8	19·0 18·6	18·8	18·9
23	60·1	19·4 19·4	19·4	19·0
26	57·4	18·0 18·2	18·1	18·5
28	58·8	19·0	19·0	18·5
Sept. 5	56·6	17·1 17·4	17·2	17·8
6	56·9	17·4	17·4	17·7
10	56·0	18·0 19·2	18·6	18·5
16	54·2	19·7 18·7	19·2	18·9
17	53·8	18·8 18·9	18·8	18·9
20	53·6	20·0 18·6	19·3	19·0
23	50·9	18·6 20·0	19·3	19·1
27	54·0	18·4	18·4	18·8
30	50·9	18·8 18·9	18·8	18·8
Oct. 2	45·5	17·6 19·2	18·4	19·0
3	42·9	20·0 19·6	19·8	19·2
4	45·4	19·3 18·8	19·0	19·3
7	42·1	19·1 20·2	19·6	19·4
8	......	19·8	19·8	19·6
1867.				
Oct. 9	......	254 2 19·7	74 2 19·7	19·7
10	45·0	19·7	19·7	19·5
11	51·7	19·0 19·2	19·1	19·4
17	51·6	19·2 19·5	19·4	19·4
18	52·0	19·7	19·7	19·5
21	52·0	19·2 19·9	19·6	19·5
25	49·2	19·0 18·7	18·8	19·0
29	46·8	20·1 19·2	19·6	19·2
30	48·2	17·8 18·6	18·2	18·8
31	47·8	19·4 19·2	19·3	19·0
Nov. 1	45·3	17·8 18·0	17·9	18·5
4	45·5	20·0 19·5	19·8	19·5
6	43·0	18·3 19·3	18·8	19·0
8	48·4	17·1 18·1	17·6	18·2
18	42·0	18·2 18·6	18·4	18·4
22	40·8	19·0 18·6	18·8	18·8
26	41·2	19·6 19·2	19·4	19·0
27	39·1	19·0 19·2	19·1	19·3
Dec. 6	35·2	19·4 19·4	19·4	19·3
10	45·4	19·0 19·3	19·2	19·2

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.	Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1867.					1867.				
Dec. 12	43°·4	254° 2′ 18″·6 18·8	74° 2′ 18″·7	19″·0	Dec. 23	42°·8	254° 2′ 18″·5 18·9	74° 2′ 18″·7	18·9
17	39·2	19·0 19·3	19·2	19·2	24	41·4	16·4 18·9	18·6	18·8
18	37·7	19·4 19·2	19·3	19·3	30	38·4	18·8 18·8	18·8	18·8
19	37·8	19·8	19·8	19·4					

For the remaining reductions, the refractions have been computed by Bessel's Table, as represented in the Rev. R. Sheepshank's compendious forms; the Latitude of the Observatory has been assumed as in former years $=55° 57' 23''·2$; and the *Apparent* N. Polar Distances on the day of observation have been converted into *Mean* North Polar Distances for the beginning of the year of observation, by applying the corrections for precession, nutation, aberration, and proper motions, taken from the elements and subsidiary tables given in the Nautical Almanac and the British Association Catalogue; and whose sum is represented in the last column of each observation-page. The individual results for magnitude and place of each star are collected on pp. 616 to 621.

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ROYAL OBSERVATORY, EDINBURGH.

CATALOGUE

OF

THE MEAN PLACES OF ALL STARS

OBSERVED WITH

EITHER THE TRANSIT INSTRUMENT OR MURAL CIRCLE,

DURING

THE YEAR, AND

REDUCED TO JANUARY 1,

1867.

STARS.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
4	α Andromedæ	(1·0) (a)	......	0 1 31·02	0·71	61 39 ...	......	14	0
18	......	7·5	7·0	0 3 36·82	0·76	31 3 59·7	0·75	3	3
26	γ Pegasi	(2·0)	......	0 6 23·38	0·69	75 33 26·4	0·71	11	1
28	......	6·2	......	0 6 37·01	0·78	49 41 57·3	0·73	3	1
39	......	......	(6·0)	0 9 ...	......	13 47 20·8	0·75	0	1
42	......	8·0	......	0 9 7·72	0·77	86 29 ...	......	3	0
48	......	8·0	......	0 9 54·21	0·76	76 49 18·6	0·75	2	1
57	......	7·0	......	0 10 57·89	0·77	89 3 ...	......	3	0
68	......	6·8	......	0 14 20·87	0·77	22 54 55·6	0·79	3	3
83	......	6·2	6·0	0 17 55·66	0·74	37 41 27·0	0·74	3	4
98	......	6·8	......	0 20 36·43	0·75	74 42 41·4	0·74	3	2
105	......	6·2	......	0 22 26·66	0·79	13 43 ...	......	2	0
112	12 Ceti	(6·0)	......	0 23 15·06	0·76	94 42 ...	......	6	0
113	......	7·2	......	0 23 18·50	0·74	85 52 ...	......	2	0
120	......	......	(6·0)	0 24 ...	......	57 9 12·5	0·75	0	1
133	......	8·0	......	0 26 42·28	0·76	70 16 ...	......	3	0
149	......	6·5	......	0 29 1·58	0·76	77 31 ...	......	3	0
164	ε Andromedæ	5·0	......	0 31 31·95	0·78	61 25 ...	......	4	0
177	......	7·0	7·0	0 34 19·69	0·77	81 22 18·2	0·75	1	3
182	......	6·5	......	0 34 53·46	0·81	31 59 ...	......	1	0
197	......	6·0	......	0 37 3·78	0·79	42 52 ...	......	2	0
218	η Cassiopeæ	3·3	......	0 41 4·38	0·78	32 53 29·8	0·79	4	2
224	......	......	(6·0)	0 42 ...	......	62 0 20·5	0·74	0	1
237	......	7·3	......	0 44 27·44	0·78	87 20 4·9	0·81	4	1
259	μ Andromedæ	4·0	......	0 49 22·81	0·78	52 13 22·1	0·78	3	3
263	......	......	(6·0)	0 50 ...	......	63 43 13·8	0·77	0	1
288	ε Piscium	(4·0)	......	0 56 2·54	0·83	82 50 ...	......	11	0
290	......	7·8	7·0	0 56 26·82	0·77	36 30 30·7	0·79	3	5
314	μ Cassiopeæ	4·0	......	0 59 27·00	0·76	35 44 0·5	0·76	1	3
335	......	......	(6·5)	1 3 ...	......	26 30 20·0	0·79	0	2
357	......	......	(9·0)	1 5 ...	......	58 37 52·1	0·77	0	3
376	......	7·1	......	1 8 54·18	0·80	17 49 ...	......	5	0
379	......	7·0	......	1 9 14·84	0·93	22 53 ...	......	3	0
403	......	8·0	......	1 14 9·12	0·84	17 51 ...	......	3	0
420	θ Ceti	(3·0)	......	1 17 22·44	0·74	96 52 ...	......	1	0
453	η Piscium	(4·0)	......	1 24 22·22	0·55	75 20 ...	......	16	0
455	......	......	(8·0)	1 25 ...	......	73 43 54·0	0·80	0	3
472	......	7·5	......	1 27 57·57	0·80	80 44 ...	......	3	0
482	......	6·0	......	1 29 27·24	0·84	32 42 6·8	0·83	3	1
514	......	6·8	6·0	1 34 8·66	0·79	60 37 36·2	0·80	5	3
516	......	5·8	......	1 34 22·76	0·84	55 25 35·1	0·77	3	1
518	ν Piscium	(5·0)	......	1 34 30·70	0·88	85 11 ...	......	1	0
525	......	7·3	......	1 35 32·16	0·88	33 8 4·2	0·85	3	1
538	......	7·0	6·0	1 39 22·48	0·77	73 15 14·9	0·77	3	1
547	......	(6·0)	......	1 41 0·95	0·83	42 46 ...	......	4	0
562	......	7·0	6·5	1 44 21·68	0·77	39 11 2·6	0·82	3	4
577	β Arietis	(3·0)	......	1 47 17·79	0·83	69 51 ...	......	15	0
588	......	6·3	......	1 49 51·52	0·81	26 1 40·1	0·81	4	6
620	......	6·6	......	1 54 42·19	0·81	25 32 15·8	0·86	4	2
626	......	7·0	......	1 56 44·16	0·85	7 4 5·0	0·84	2	1
645	......	7·6	......	1 59 10·64	0·85	64 48 21·5	0·85	3	1

(a) Numbers in parenthesis are the magnitudes of the British Association Catalogue.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.			h. m. s.		° ′ ″		R. A.	N. P. D.
648	α Arietis	(2·0)	......	1 59 40·81	0·83	67 10 ...	......	7	0
694	......	7·8	......	2 8 34·46	0·82	26 11 36·9	0·84	2	6
702	......	7·5	......	2 10 1·95	0·83	26 16 38·2	0·81	3	2
704	67 Ceti	(6·0)	......	2 10 21·02	0·86	97 2 ...	......	4	0
718	......	7·0	......	2 12 32·91	0·84	[illegible] 22 8·7	0·90	2	1
721	......	5·5	......	2 13 6·38	0·89	34 45 57·1	0·88	3	1
725	......	......	(8·0)	2 14 ...	......	33 13 25·5	0·85	0	1
728	......	......	(6·5)	2 15 ...	......	79 46 15·0	0·83	0	1
738	......	8·0	......	2 17 3·42	0·84	80 20 ...	......	3	0
760	ξ^1 Ceti	(4·0)	......	2 21 5·37	0·85	82 8 ...	......	6	0
764	......	6·5	......	2 22 29·44	0·84	81 1 46·4	0·84	3	3
776	......	6·3	......	2 24 37·47	0·82	88 19 25·2	0·86	3	4
793	......	6·8	......	2 28 47·50	0·82	83 44 56·1	0·82	3	1
822	......	......	7·0	2 34 ...	......	47 53 45·2	0·90	0	2
834	......	6·5	......	2 36 8·54	0·87	64 55 46·3	0·85	2	3
837	γ Ceti	(3·0)	......	2 36 24·64	0·86	87 20 ...	......	7	0
881	ε Arietis	6·0	......	2 44 9·24	0·83	75 28 ...	......	3	0
891	......	......	8·0	2 45 37·74	0·83	84 4 19·6	0·83	3	2
920	......	7·2	......	2 51 15·98	0·82	68 54 59·3	0·87	3	5
949	α Ceti	(2·5)	......	2 55 19·70	0·86	86 26 ...	......	12	0
962	ι Persei	3·7	4·0	2 59 29·07	0·83	40 53 51·9	0·85	3	5
965	......	8·0	......	3 2 1·56	0·87	6 58 ...	......	3	0
980	......	6·7	6·5	3 2 33·52	0·83	63 36 53·7	[illegible]	3	3
966	δ Arietis	(4·0)	......	3 4 1·62	0·88	70 47 ...	......	2	0
985	......	8·0	......	3 4 54·91	0·92	15 15 ...	......	2	0
1055	......	7·7	......	3 16 51·04	0·88	68 26 0·5	0·90	3	7
1057	o Tauri	4·2	......	3 17 39·49	0·86	81 26 ...	......	3	0
1087	f Tauri	(5·5)	......	3 23 32·00	0·87	77 31 ...	......	3	0
1101	......	7·5	......	3 27 21·89	0·87	58 46 1·2	0·89	3	5
1126	11 Tauri	6·5	......	3 32 50·02	0·87	65 6 ...	......	3	0
1166	η Tauri	(3·0)	......	3 39 34·96	0·92	66 18 32·2	0·92	10	5
1282	......	8·5	......	4 3 52·02	0·90	41 15 6·3	0·90	3	3
1318	......	6·0	......	4 11 3·33	0·91	33 49 5·5	0·89	3	1
1347	......	8·0	......	4 15 28·36	0·91	65 54 ...	......	4	0
1351	......	(6·5)	......	4 15 50·82	0·01	73 41 ...	......	1	0
1361	......	6·0	......	4 17 12·23	0·91	71 15 59·2	0·92	4	2
1376	ε Tauri	(3·5)	......	4 20 51·15	0·82	71 7 ...	......	8	0
1420	α Tauri	(1·0)	......	4 28 17·43	0·86	73 46 ...	......	12	0
1434	......	5·0	5·0	4 30 43·62	0·70	77 45 31·7	0·92	4	4
1459	......	7·0	......	4 37 13·35	0·93	34 38 ...	......	3	0
1463	......	......	(7·5)	4 38 ...	......	66 37 12·0	0·94	0	2
1491	......	(5·0)	......	4 43 21·88	0·70	81 20 ...	......	4	0
1501	......	(6·0)	......	4 45 51·98	0·93	34 23 38·1	0·94	3	2
1520	ι Aurigæ	(4·0)	......	4 48 20·21	0·94	57 3 ...	......	9	0
1623	β Orionis	(1·0)	......	5 8 8·71	0·95	98 21 26·7	0·95	7	3
1626	......	(7·5)	......	5 9 23·49	0·94	49 40 54·6	0·63	1	3
1656	......	(6·0)	......	5 14 29·23	0·64	61 42 23·4	0·96	3	2
1681	β Tauri	(2·0)	......	5 17 53·18	0·78	61 30 ...	......	11	0
1683	......	......	6·0	5 18 ...	......	55 43 44·6	0·72	0	4
1696	......	(7·5)	......	5 19 33·77	0·96	87 11 ...	......	3	0
1730	δ Orionis	(2·0)	......	5 25 12·73	0·76	90 [illegible] 59·9	0·77	10	5

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
1765	ε Orionis	(2·5)	......	5 29 27·86	0·84	91 17 ...	......	9	0
1766	......	(4·5)	......	5 29 36·03	0·04	80 47 ...	......	1	0
1826	......	6·0	6·0	5 39 34·09	0·97	80 31 47·3	0·50	2	4
1883	α Orionis	(1·0)	......	5 47 58·28	0·61	82 37 16·5	0·78	11	6
1907	......	......	(6·0)	5 52 ...	......	77 12 30·7	0·96	0	1
1930	......	......	(6·5)	5 56 ...	......	72 20 16·2	0·96	0	1
1932	......	......	(7·5)	5 55 ...	......	51 25 27·9	0·50	0	2
1958	ν Orionis	(4·5)	......	5 59 58·73	0·38	75 13 ...	......	5	0
2002	η Geminorum	4·0	......	6 6 50·98	0·50	67 27 ...	......	2	0
2022	......	......	6·0	6 9 46·76	0·98	80 0 44·2	0·79	1	5
2046	......	......	7·0	6 15 ...	......	33 38 55·9	0·07	0	1
2047	μ Geminorum	(3·0)	......	6 14 54·82	0·86	67 25 ...	......	1	0
2060	......	......	7·0	6 16 43·22	0·97	85 20 32·1	0·96	1	1
2101	......	......	8·0	6 22 19·93	0·97	67 22 12·3	0·96	1	3
2163	γ Geminorum	(2·5)	......	6 30 1·68	0·34	73 29 ...	......	9	0
2184	......	......	(7·0)	6 34 ...	......	73 28 54·0	0·98	0	3
2238	......	6·0	......	6 43 55·65	0·10	66 14 37·3	0·35	1	3
2292	......	......	(6·0)	6 54 ...	......	79 11 25·0	0·07	0	3
2306	......	......	(6·0)	6 56 ...	......	78 51 22·3	0·38	0	3
2329	......	......	7·5	7 1 ...	......	74 15 30·7	0·04	0	1
2379	......	......	(5·0)	7 9 ...	......	40 18 7·3	0·07	0	1
2410	δ Geminorum	(3·0)	......	7 12 10·69	0·14	67 46 31·8	0·08	11	2
2463	......	......	(7·0)	7 21 ...	......	62 10 52·0	0·08	0	2
2485	α² Geminorum	(1·5)	......	7 26 8·65	0·07	57 49 ...	......	8	0
2488	......	......	6·0	7 27 ...	......	43 31 46·8	0·09	0	2
2522	α Canis Minoris	(1·0)	......	7 32 20·26	0·06	84 26 12·2	0·05	8	4
2555	β Geminorum	(2·0)	......	7 37 10·44	0·08	61 39 ...	......	10	0
2556	......	......	7·0	7 42 ...	......	61 28 13·5	0·07	0	3
2672	6 Cancri	(5·5)	......	7 55 20·79	0·09	61 30 ...	......	4	0
2683	......	......	(6·0)	7 57 ...	......	70 47 4·0	0·09	0	4
2748	......	......	(7·0)	8 5 ...	......	75 36 5·3	0·11	0	3
2862	η Cancri	(6·0)	......	8 25 0·88	0·11	69 7 ...	......	3	0
2867	......	......	(6·5)	8 25 ...	......	79 29 8·7	0·09	0	5
2971	ε Hydræ	(4·0)	......	8 39 43·86	0·12	83 5 42·6	0·10	9	4
2988	......	......	(7·5)	8 43 ...	......	34 33 10·8	0·10	0	1
3013	......	......	(6·0)	8 45 ...	......	84 9 44·0	0·14	0	1
3053	......	......	6·0	8 51 ...	......	80 6 7·4	0·11	0	5
3083	......	......	6·5	8 56 ...	......	38 38 54·2	0·12	0	2
3091	......	......	(7·0)	8 57 ...	......	39 51 39·8	0·16	0	1
3103	......	......	(7·5)	8 59 ...	......	72 21 25·2	0·15	0	1
3133	......	......	(6·0)	9 5 ...	......	85 35 20·1	0·10	0	1
3171	83 Cancri	(6·0)	......	9 11 33·31	0·15	71 44 ...	......	7	0
3223	α Hydræ	(2·0)	......	9 21 3·02	0·16	98 5 ...	......	2	0
3242	θ Ursæ Majoris	......	(3·0)	9 24 ...	......	37 43 6·2	0·14	0	4
3331	ε Leonis	(3·0)	......	9 38 17·87	0·23	65 36 52·8	0·15	18	3
3375	......	......	(6·5)	9 46 ...	......	54 23 30·4	0·18	0	3
3380	......	......	(6·0)	9 47 ...	......	83 24 59·6	0·16	0	2
3415	π Leonis	(4·5)	......	9 53 10·99	0·18	81 19 ...	......	10	0
3418	......	......	(8·0)	9 54 ...	......	80 24 40·8	0·16	0	1
3420	......	......	7·0	9 55 ...	......	57 49 45·5	0·15	0	1
3427	......	......	(7·0)	9 56 ...	......	56 42 41·8	0·16	0	2

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Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
3438	....	......	(6·5)	9 58 ...	......	84 21 10·0	0·16	0	2
3439	....	......	(7·0)	9 58 ...	......	54 21 7·4	0·23	0	1
3459	α Leonis................	(1·0)	......	10 1 17·18	0·23	77 23 ...	......	17	0
3484	....	......	7·0	10 7 ...	......	57 51 58·2	0·19	0	2
3523	γ¹ Leonis................	(2·0)	......	10 12 36·17	0·17	69 29 ...	......	9	0
3529	....	......	(6·0)	10 14 ...	......	82 51 4·4	0·19	0	7
3592	....	......	(6·0)	10 23 ...	......	87 49 27·9	0·20	0	2
3600	ρ Leonis................	(4·0)	......	10 25 48·38	0·19	80 1 ...	......	7	0
3662	....	8·0	......	10 34 40·58	0·24	78 33 59·1	0·21	2	5
3667	31 Sextantis................	6·0	......	10 35 45·41	0·25	85 43 ...	......	1	0
3708	l Leonis................	(6·0)	......	10 42 15·87	0·23	78 45 ...	......	5	0
3726	....	6·0	......	10 45 23·64	0·24	88 16 8·3	0·22	2	4
3768	d Leonis................	5·0	......	10 53 41·49	0·23	85 40 ...	......	3	0
3780	....	7·7	......	10 56 46·35	0·23	81 42 4·7	0·23	3	4
3788	χ Leonis................	(4·5)	......	10 58 9·30	0·23	81 57 ...	......	6	0
3821	....	6·0	......	11 3 39·44	0·24	21 8 ...	......	3	0
3834	δ Leonis................	(2·5)	......	11 7 1·90	0·25	68 44 53·6	0·22	12	6
3836	....	6·0	......	11 7 3·37	0·24	57 1 ...	......	1	0
3869	....	7·2	......	11 15 31·22	0·23	71 50 1·8	0·22	3	5
3900	σ Leonis................	5·0	......	11 21 5·78	0·24	86 25 ...	......	3	0
3946	υ Leonis................	(4·5)	......	11 30 8·30	0·24	90 5 ...	......	6	0
3995	β Leonis................	(2·5)	......	11 42 16·45	0·25	74 41 ...	......	12	0
3996	....	......	(6·0)	11 42 ...	......	84 4 16·8	0·22	0	2
4005	....	6·2	......	11 44 5·86	0·24	77 0 ...	......	2	0
4052	π Virginis................	5·0	......	11 54 3·44	0·24	82 39 ...	......	3	0
4145	η Virginis................	(3·5)	......	12 13 6·09	0·25	80 56 ...	......	5	0
4153	....	......	(6·0)	12 14 ...	......	62 38 15·3	0·23	0	2
4199	....	7·0	9·0	12 20 59·10	0·24	63 21 4·0	0·23	2	2
4231	....	7·0	......	12 26 54·46	0·24	64 49 3·0	0·23	2	2
4244	....	(Neb.)	......	12 28 40·92	0·24	52 53 ...	......	2	0
4268	γ¹ Virginis................	(4·0)	......	12 34 55·30	0·24	90 43 ...	......	2	0
4340	δ Virginis................	3·0	......	12 48 51·30	0·24	85 53 ...	......	1	0
4364	....	(6·0)	......	12 55 4·44	0·24	68 1 ...	......	1	0
4401	θ Virginis................	(4·5)	......	13 3 4·03	0·26	94 50 ...	......	4	0
4421	β Comæ................	......	(4·5)	13 5 ...	......	61 26 44·0	0·34	0	1
4460	α Virginis................	(1·0)	......	13 18 11·28	0·42	100 28 ...	......	2	0
4532	ζ Virginis................	(4·0)	......	13 27 55·06	0·36	89 55 ...	......	6	0
4575	....	......	6·0	13 37 ...	......	66 37 38·6	0·34	0	1
4627	....	......	7·0	13 45 ...	......	54 34 2·2	0·34	0	1
4648	η Bootis................	(3·0)	......	13 48 21·11	0·38	70 56 ...	......	4	0
4672	τ Virginis................	(4·5)	......	13 54 52·81	0·42	87 49 ...	......	1	0
4729	α Bootis................	(1·0)	......	14 9 35·75	0·39	70 7 25·1	0·34	4	1
4756	....	......	6·0	14 14 ...	......	37 21 12·0	0·38	0	2
4797	....	......	(6·0)	14 23 ...	......	53 12 24·0	0·34	0	1
4808	ρ Bootis................	(4·0)	......	14 26 5·90	0·40	59 3 ...	......	1	0
4820	....	......	(6·0)	14 28 ...	......	56 52 50·3	0·39	0	1
4863	....	......	(6·0)	14 37 ...	......	52 40 31·9	0·38	0	1
4876	ε Bootis................	(3·0)	......	14 39 10·73	0·40	62 21 49·0	0·36	4	2
4934	....	6·0	......	14 50 58·98	0·39	45 19 36·3	0·38	1	2
4942	....	6·0	......	14 54 20·01	0·39	49 50 ...	......	1	0
4965	....	6·0	......	14 58 21·72	0·39	44 50 ...	......	1	0

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
4969	ψ Bootis	(5·0)	......	14 58 44·87	0·44	62 32 ...	......	1	0
4992	......	5·5	......	15 2 28·81	0·39	34 55 49·6	0·38	1	2
5000	......	6·5	......	15 5 15·67	0·38	56 25 ...	......	1	0
5001	......	7·0	......	15 5 18·43	0·39	60 16 ...	......	1	0
5034	β Libræ	(2·5)	......	15 9 51·11	0·42	98 53 ...	......	2	0
5071	(a)	6·0	......	15 16 10·72	0·38	37 33 41·3	0·38	2	2
5091	......	6·0	......	15 20 25·60	0·38	26 11 ...	......	2	0
5143	α Coronæ Borealis	(2·5)	......	15 29 3·46	0·45	62 50 ...	......	9	0
5196	α Serpentis	(2·5)	......	15 37 43·07	0·45	83 9 ...	......	8	0
5245	ε Serpentis	(3·0)	......	15 44 11·31	0·38	85 7 ...	......	2	0
5284	γ Serpentis	(3·0)	......	15 50 18·71	0·38	73 54 8·8	0·38	2	1
5414	δ Ophiuchi	(3·0)	......	16 7 22·63	0·44	93 21 ...	......	7	0
5415	(b)	......	(6·0)	16 7 ...	......	31 42 55·4	0·39	0	1
5452	......	6·2	6·0	16 14 18·27	0·38	68 32 38·1	0·38	2	1
5466	γ Herculis	3·5	......	16 16 3·27	0·38	70 32 ...	......	1	0
5493	......	6·8	......	16 20 8·24	0·38	87 21 ...	......	2	0
5504	......	7·5	......	16 22 1·86	0·38	74 21 ...	......	2	0
5527	......	5·0	......	16 24 47·29	0·38	69 14 ...	......	2	0
5537	......	7·0	6·0	16 27 15·68	0·38	79 20 53·2	0·39	2	1
5597	......	(6·0)	......	16 35 29·91	0·39	64 53 ...	......	1	0
5604	ζ Herculis	(3·0)	......	16 36 16·38	0·44	59 9 ...	......	4	0
5708	κ Ophiuchi	(4·0)	......	16 51 22·45	0·45	80 25 ...	......	4	0
5821	α Herculis	(3·5)	......	17 8 35·05	0·48	75 27 ...	......	9	0
5911	α Ophiuchi	(2·0)	......	17 28 45·65	0·50	77 20 ...	......	11	0
6021	μ Herculis	(4·0)	......	17 41 15·23	0·48	62 12 ...	......	7	0
6123	70 Ophiuchi	......	(4·5)	17 58 ...	......	87 28 0·4	0·38	0	1
6213	(c)	......	(6·0)	18 12 ...	......	82 47 30·1	0·38	0	1
6355	α Lyræ	(1·0)	......	18 32 26·11	0·74	51 20 ...	......	5	0
6429	β Lyræ	(3·0)	......	18 45 10·21	0·61	56 47 27·7	0·38	12	1
6527	......	......	8·0	18 59 ...	......	71 3 17·4	0·38	0	1
6528	ζ Aquilæ	(3·0)	......	18 59 17·82	0·51	76 20 ...	......	4	0
6574	......	......	(6·0)	19 7 ...	......	68 40 5·8	0·38	0	1
6595	ω Aquilæ	(5·0)	......	19 11 34·49	0·52	78 39 ...	......	1	0
6644	b Aquilæ	......	(5·0)	19 18 ...	......	78 20 18·0	0·38	0	1
6646	δ Aquilæ	(3·5)	......	19 18 47·50	0·53	87 9 ...	......	3	0
6729	......	......	5·0	19 32 ...	......	84 54 10·7	0·60	0	1
6772	γ Aquilæ	(3·0)	......	19 39 56·15	0·55	79 43 ...	......	1	0
6791	......	......	0·8	19 42 ...	......	78 38 41·6	0·60	0	1
6802	α Aquilæ	(1·5)	......	19 44 17·58	0·55	81 29 ...	......	1	0
6833	β Aquilæ	(3·5)	......	19 48 46·83	0·55	83 55 ...	......	1	0
6852	......	......	6·5	19 51 ...	......	30 38 31·1	0·60	0	2
6966	......	......	5·0	20 10 ...	......	64 48 45·2	0·64	0	2
7006	......	......	(7·0)	20 15 ...	......	53 17 4·4	0·61	0	2
7014	......	......	6·0	20 17 ...	......	85 4 47·4	0·62	0	2
7086	......	......	6·0	20 26 ...	......	34 22 38·3	0·62	0	6
7157	......	......	(6·0)	20 34 ...	......	74 49 41·1	0·60	0	1
7161	......	......	(7·0)	20 35 ...	......	44 48 7·2	0·65	0	1
7256	32 Vulpeculæ	(4·5)	......	20 48 53·58	0·68	62 27 ...	......	1	0
7268	......	......	(6·5)	20 51 ...	......	43 5 28·8	0·60	0	2
7295	......	......	(7·0)	20 54 ...	......	83 0 2·2	0·62	0	2
7336	61¹ Cygni	......	(6·5)	21 1 ...	......	51 54 10·1	0·63	0	5

(a) Differs from Tab. N. P. D. by 2′.

(b) Differs from Tab. N. P. D. by 7′.

(c) Differs from Tab. N. P. D. by 1′.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.			h m s		° ′ ″		R. A.	N. P. D.
7354	....	......	(8·0)	21 4 ...	......	68 5 8·8	0·69	0	1
7368	ζ Cygni..................	(3·0)	......	21 7 16·59	0·46	60 19 2·2	0·62	3	2
7410	....	......	(5·5)	21 15 ...	......	66 42 11·1	0·66	0	3
7417	....	......	6·0	21 16 ...	......	31 56 19·1	0·65	0	1
7430	....	......	(6·0)	21 17 ...	......	29 46 27·3	0·60	0	1
7450	....	......	8·0	21 20 ...	......	71 11 57·5	0·66	0	2
7478	β Aquarii..................	(3·0)	......	21 24 33·34	0·68	96 9 16·1	0·71	1	1
7496	(Nebula, so called)..........	......	7·5	21 27 ...	......	42 8 33·7	0·65	0	1
7501	....	......	7·0	21 28 ...	......	44 44 6·1	0·68	0	1
7528	....	......	(5·5)	21 33 ...	......	70 20 0·4	0·70	0	2
7561	ε Pegasi..................	(2·5)	......	21 37 39·22	0·24	80 44 1·1	0·66	3	3
7566	....	......	7·0	21 38 ...	......	62 19 28·2	0·71	0	1
7627	16 Pegasi..................	(5·5)	......	21 47 0·70	0·68	64 42 ...	......	1	0
7644	....	......	(7·0)	21 50 ...	......	18 8 15·0	0·69	0	3
7688	α Aquarii..................	(3·0)	......	21 58 57·07	0·69	90 57 52·4	0·71	3	3
7708	....	......	5·5	22 1 ...	......	28 21 58·9	0·61	0	1
7759	....	6·0	......	22 7 38·28	0·72	29 53 53·7	0·71	2	2
7779	....	6·5	9·0	22 10 28·14	0·72	17 20 43·4	0·68	2	1
7795	γ Aquarii..................	3·0	......	22 14 47·15	0·73	92 3 ...	......	3	0
7908	ζ Pegasi..................	(3·0)	......	22 34 49·77	0·72	79 51 43·4	0·72	5	4
7958	μ Pegasi..................	3·8	......	22 43 35·15	0·73	66 0 ...	......	3	0
7970	λ Aquarii..................	(4·0)	......	22 45 40·32	0·75	98 17 ...	......	1	0
7977	....	7·3	......	22 47 4·63	0·72	88 51 46·0	0·71	3	2
7996	....	7·5	6·0	22 50 46·43	0·72	86 54 2·0	0·75	3	1
8024	....	6·5	......	22 55 54·01	0·73	33 36 32·4	0·73	4	4
8034	α Pegasi..................	(2·0)	......	22 58 8·19	0·72	75 31 ...	......	5	0
8065	....	7·8	7·5	23 2 34·83	0·72	68 34 33·5	0·74	3	2
8083	....	6·2	6·0	23 6 53·68	0·72	33 33 56·0	0·73	3	4
8106	γ Piscium..................	(4·5)	......	23 10 16·22	0·71	87 27 ...	......	2	0
8135	....	......	(6·0)	23 14 ...	......	46 36 37·2	0·74	0	1
8137	....	6·5	......	23 14 25·68	0·71	28 46 17·0	0·73	2	1
8147	....	7·0	......	23 16 8·58	0·76	70 10 ...	......	2	0
8169	κ Piscium..................	(5·5)	......	23 20 6·76	0·77	89 28 ...	......	1	0
8204	....	7·3	......	23 26 52·03	0·75	18 43 56·4	0·75	3	4
8233	ι Piscium..................	(4·5)	......	23 33 6·52	0·73	85 6 ...	......	8	0
8247	....	7·8	......	23 35 47·89	0·74	72 4 13·2	0·73	3	4
8252	....	7·0	7·0	23 36 37·60	0·76	37 35 5·9	0·80	2	1
8269	....	8·0	8·0	23 40 57·09	0·74	86 30 31·5	0·74	3	2
8270	....	8·5	......	23 41 1·27	0·76	86 34 ...	......	1	0
8272	....	......	(7·0)	23 41 ...	......	82 29 33·6	0·73	0	1
8298	....	6·9	......	23 45 37·02	0·75	13 8 15·6	0·75	4	1
8315	....	7·8	7·0	23 48 49·76	0·76	82 30 59·4	0·73	2	3
8331	ω Piscium..................	(4·5)	......	23 52 28·93	0·76	83 52 ...	......	7	0
8338	....	7·2	7·0	23 53 58·04	0·75	28 33 48·3	0·74	4	2
8350	85 Pegasi..................	......	(6·0)	23 55 13·79	0·77	63 37 19·9	0·74	1	3
8364	....	6·7	......	23 58 4·49	0·75	32 12 31·4	0·76	3	2
8372	....	6·2	......	23 59 19·47	0·74	32 18 18·9	0·73	3	1

ROYAL OBSERVATORY, EDINBURGH.

OBSERVATIONS

MADE WITH

THE TRANSIT INSTRUMENT,

AND

CALCULATION

OF

APPARENT RIGHT ASCENSIONS.

1868.

Date.	No. in British Association Catalogue.	OBJECT OBSERVED.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1868.
1868.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Jan. 6	1883	α Orionis	....	82 37	21·1	29·5	37·8	45·9	48 54·5	5 48 37·76	− 0·12	−35·11	−35·22	− 0·97
	1958	ν Orionis	....	75 13	21·5	30·0	38·6	46·0	0 55·9	6 0 38·40	− 0·11	−35·16	−35·22	− 1·01
	6281	δ Ursæ Minoris S. P.	....	3 24	28·0	56·9	10·0	29·5	19 49·0	6 15 10·50	+ 0·33	....	−35·22	+19·73
	2410	δ Geminorum	....	67 46	33·0	41·9	50·9	59·3	13 8·6	7 12 50·74	− 0·11	−35·30	−35·21	− 1·03
	2555	β Geminorum	....	61 39	31·9	41·0	50·2	59·5	38 9·4	7 37 50·40	− 0·10	−35·15	−35·21	− 1·02
	2672	6 Cancri	....	61 50	42·1	51·4	0·9	10·0	56 19·8	7 56 0·84	− 0·10	−35·34	−35·21	− 0·98
Jan. 9	1520	(a) ι Aurigæ	....	57 2	41·0	50·4	0·3	10·0	49 20·2	4 49 0·38	− 0·15	−35·14	−35·04	− 1·07
	1626	....	....	49 41	42·8	53·1	4·0	14·5	10 26·0	5 10 4·08	− 0·14	....	−35·04	− 1·25
	1656	....	....	81 42	51·9	0·1	8·8	16·4	15 25·3	5 15 8·50	− 0·22	....	−35·03	− 0·91
	1681	β Tauri	....	61 30	14·4	24·0	33·3	42·2	18 52·1	5 18 33·20	− 0·17	−35·00	−35·03	− 1·06
	1703	....	....	73 40	51·8	0·2	9·0	17·2	21 26·4	5 21 8·92	− 0·19	....	−35·03	− 0·98
	1730	δ Orionis	....	90 23	35·5	43·5	52·0	59·9	26 8·5	5 25 51·88	− 0·25	−34·90	−35·03	− 0·92
	1958	ν Orionis	....	75 13	21·5	30·0	38·5	46·6	0 55·7	6 0 38·46	− 0·20	−35·13	−35·03	− 1·01
	6281	δ Ursæ Minoris S. P.	....	3 24	......	56·0	10·5	29·5	19 50·0	6 15 11·78	− 1·01	....	−35·03	+19·68
	2163	γ Geminorum	....	73 29	24·1	33·0	41·4	49·7	30 58·9	6 30 41·42	− 0·19	−35·05	−35·03	− 1·01
	2410	δ Geminorum	....	67 46	32·8	41·5	50·8	59·2	13 8·6	7 12 50·58	− 0·19	−35·04	−35·03	− 1·05
	2485	α² Geminorum	....	57 49	27·1	37·0	47·0	56·1	27 6·4	7 26 46·72	− 0·16	−35·00	−35·02	− 1·09
	2522	α Canis Minoris	....	84 26	43·2	51·2	59·9	7·8	33 16·5	7 32 59·72	− 0·22	−34·98	−35·02	− 1·03
	2555	β Geminorum	....	61 39	31·6	41·0	50·4	59·5	38 9·2	7 37 50·34	− 0·17	−35·00	−35·02	− 1·04
Jan. 13	2410	(b) δ Geminorum	....	67 46	35·0	43·9	52·8	1·2	13 10·7	7 12 52·72	− 0·15	−37·19	−37·16	− 1·08
	2485	α² Geminorum	....	57 49	29·4	39·0	49·0	58·3	27 8·5	7 26 48·84	− 0·14	−37·09	−37·17	− 1·14
	2522	α Canis Minoris	....	84 26	45·4	53·4	2·0	9·9	33 18·7	7 33 1·88	− 0·18	−37·15	−37·18	− 1·06
	2555	β Geminorum	....	61 39	34·0	43·3	52·6	1·5	38 11·5	7 37 52·58	− 0·13	−37·23	−37·19	− 1·09
Jan. 14	1420	α Tauri	....	73 45	43·1	51·7	0·3	8·6	29 17·8	4 29 0·30	− 0·15	−38·46	−38·55	− 0·78
	1520	ι Aurigæ	....	57 2	44·0	54·0	3·9	13·4	49 23·8	4 49 3·82	− 0·13	−38·63	−38·56	− 1·04
	1623	β Orionis	....	98 21	34·6	43·0	51·4	59·4	9 8·1	5 8 51·30	− 0·21	−38·57	−38·57	− 0·86
	1681	β Tauri	....	61 30	18·0	27·4	37·0	45·9	18 56·0	5 18 36·86	− 0·13	−38·71	−38·58	− 1·05
	1730	δ Orionis	....	90 23	39·1	47·3	55·5	3·4	26 12·0	5 25 55·46	− 0·20	−38·54	−38·59	− 0·91
	1765	ι Orionis	....	91 17	54·2	2·4	10·6	18·4	30 27·2	5 30 10·56	− 0·20	−38·51	−38·59	− 0·93
Feb. 4	4	α Andromedæ	....	61 37	3·4	13·0	22·3	31·2	2 41·1	0 2 22·20	+ 0·45	−49·28	−49·22	+ 0·73
	26	γ Pegasi	....	75 32	57·4	6·1	14·9	23·0	7 32·8	0 7 14·68	+ 0·37	−49·42	−49·22	+ 0·61
	2485	α² Geminorum	....	57 49	40·8	50·5	0·3	9·7	27 20·0	7 27 0·26	+ 0·48	−49·05	−49·14	− 1·22
	2522	α Canis Minoris	....	84 26	56·9	5·0	13·3	21·3	33 30·0	7 33 13·30	+ 0·34	−49·01	−49·14	− 1·14
	2555	β Geminorum	....	61 39	45·2	54·8	4·0	13·0	38 23·0	7 38 4·00	+ 0·45	−49·12	−49·13	− 1·20
Feb. 10	2862	η Cancri	....	69 7	34·9	43·7	52·6	1·0	26 10·3	8 25 52·50	+ 0·39	−47·38	−47·36	− 1·20
	3171	83 Cancri	....	71 44	7·5	16·3	25·0	33·3	12 42·4	9 12 24·90	+ 0·38	−47·46	−47·36	− 1·21
	3331	ι Leonis	....	65 37	51·2	0·2	9·4	18·0	39 27·7	9 39 9·30	+ 0·12	−47·25	−47·35	− 1·19
	3415	π Leonis	....	81 20	45·8	54·0	2·4	10·4	54 19·1	9 54 2·34	+ 0·33	−47·30	−47·35	− 1·20
	3459	α Leonis	....	77 23	51·8	0·0	8·6	16·8	2 25·7	10 2 8·56	+ 0·36	−47·37	−47·34	− 1·17
Feb. 11	4	α Andromedæ	....	61 37	1·0	10·6	20·0	29·0	2 39·0	0 2 19·92	+ 0·43	−47·05	−46·96	+ 0·82
	2555	β Geminorum	....	61 39	43·0	52·4	1·8	10·9	38 20·5	7 38 1·72	+ 0·43	−46·84	−46·85	− 1·15
	2672	6 Cancri	....	61 50	53·3	2·8	12·1	21·1	56 31·0	7 56 12·06	+ 0·43	−46·67	−46·85	− 1·20
	2688	(c)	....	62 6	0·4	9·8	19·2	28·0	58 38·0	7 58 19·08	+ 0·43	....	−46·85	− 1·21
	2737	....	....	71 59	4·4	13·0	21·6	29·8	4 38·9	8 4 21·54	+ 0·36	....	−46·85	− 1·17
	2761	....	7·0	76 34	31·3	39·9	48·3	56·5	8 5·4	8 7 48·28	+ 0·35	....	−46·85	− 1·18

(a) Definition bad. Hazy.

(b) The cord of the Brisbane Clock was found broken this morning, the weight fallen, and the clock stopped. A new cord was supplied in the course of the day.

(c) Double, 9th and 10th mags.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1868.
1868.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Feb. 11	2778	β Cancri	....	80 25	52·3	0·6	9·0	17·0	10 25·9	8 10 8·96	+ 0·35	....	−46·85	− 1·18
	2937	γ Cancri	....	68 4	8·7	17·4	26·3	35·0	36 44·2	8 36 26·32	+ 0·39	....	−46·84	− 1·21
	2971	ε Hydræ	....	83 6	18·1	26·4	34·9	42·8	40 51·4	8 40 34·72	+ 0·32	−46·78	−46·84	− 1·23
	3013	....	....	84 10	57·0	5·2	13·6	21·6	46 30·2	8 46 13·52	+ 0·32	....	−46·84	− 1·23
	3053	....	....	80 7	5·8	14·1	22·6	30·6	51 39·4	8 51 22·50	+ 0·35	....	−46·81	− 1·22
	3103	....	7·5	72 22	22·0	30·5	39·1	47·1	59 56·6	8 59 39·12	+ 0·37	....	−46·83	− 1·21
	3111	κ Cancri	....	78 49	6·8	15·0	23·4	31·5	1 40·4	9 1 23·42	+ 0·35	....	−46·83	− 1·22
	3133	....	7·0	85 36	50·2	58·5	6·9	14·9	6 23·5	9 6 6·80	+ 0·32	....	−46·83	− 1·25
	3312	ο Leonis	....	79 31	37·0	45·4	54·0	2·0	35 11·0	9 34 53·68	+ 0·35	....	−46·83	− 1·22
	3331	ε Leonis	....	65 37	50·8	59·9	9·0	17·6	39 27·2	9 39 8·90	+ 0·41	−46·83	−46·82	− 1·20
	3371	μ Leonis	....	63 23	44·4	53·6	2·8	11·7	46 21·3	9 46 2·76	+ 0·43	....	−46·82	− 1·19
	3415	π Leonis	....	81 20	45·1	53·5	2·0	10·9	54 18·6	9 54 1·64	+ 0·32	−46·78	−46·82	− 1·21
	3430	....	9·0	81 9	49·3	57·8	6·0	14·0	57 23·0	9 57 6·02	+ 0·32	....	−46·81	− 1·21
	3438	....	7·0	84 22	25·0	33·4	41·7	49·9	58 58·4	9 58 41·68	+ 0·32	....	−46·81	− 1·22
	3459	α Leonis	....	77 23	51·1	59·5	8·0	16·1	2 25·0	10 2 7·94	+ 0·35	−46·71	−46·81	− 1·18
Feb. 17	2862	η Cancri	....	69 7	32·5	41·2	50·1	58·7	26 8·0	8 25 50·10	+ 0·38	−44·98	−44·95	− 1·19
	2971	ε Hydræ	....	83 6	16·1	24·5	33·0	41·0	40 49·7	8 40 32·86	+ 0·32	−44·93	−44·95	− 1·22
	3415	π Leonis	....	81 20	43·5	51·8	0·0	8·0	54 16·9	9 54 0·04	+ 0·32	−44·94	−44·94	− 1·25
	3459	α Leonis	....	77 23	49·5	57·6	6·1	14·4	2 23·3	10 2 6·18	+ 0·35	−44·90	−44·94	− 1·23
	3523	γ^1 Leonis	....	69 30	9·8	18·4	27·3	35·9	13 45·0	10 13 27·28	+ 0·38	−44·97	−44·93	− 1·20
Feb. 19	2485	(a) α^2 Geminorum	....	57 49	36·1	46·0	55·8	5·0	27 15·2	7 26 55·62	− 0·17	−43·85	−43·90	− 1·13
	2522	α Canis Minoris	....	84 26	52·1	0·4	8·8	16·5	33 25·4	7 33 8·64	− 0·22	−43·87	−43·90	− 1·06
	2555	β Geminorum	....	61 39	40·6	50·0	59·4	8·4	38 18·4	7 37 59·36	− 0·17	−43·93	−43·90	− 1·13
	2683	....	7·0	70 48	35·4	44·0	53·0	1·1	58 10·5	7 57 52·80	− 0·19	....	−43·91	− 1·13
	2737	....	7·0	74 59	2·2	10·8	19·2	27·4	4 36·4	8 4 19·20	− 0·19	....	−43·92	− 1·14
	2748	....	7·0	75 37	27·1	36·0	44·4	52·4	6 1·4	8 5 44·32	− 0·19	....	−43·92	− 1·14
	2761	....	7·0	76 34	29·0	37·8	46·0	54·1	8 3·1	8 7 46·00	− 0·19	....	−43·92	− 1·15
	2778	β Cancri	4·0	80 25	50·0	58·4	6·8	14·9	10 23·5	8 10 6·74	− 0·20	....	−43·93	− 1·15
	2867	....	7·5	79 30	57·5	6·0	14·2	22·9	26 31·1	8 26 14·34	− 0·20	....	−43·93	− 1·18
	2582	....	6·0	29 36	36·4	53·2	10·0	26·0	29 43·8	8 29 9·88	− 0·09	....	−43·94	− 1·90
	2937	γ Cancri	5·0	68 4	6·3	15·1	24·1	32·8	36 42·0	8 36 24·06	− 0·19	....	−43·95	− 1·20
	2968	....	7·5	34 34	29·9	44·3	59·0	13·0	44 28·4	8 43 58·92	− 0·11	....	−43·96	− 1·73
	3013	....	7·0	84 10	54·8	3·0	11·4	19·4	46 28·0	8 46 11·32	− 0·22	....	−43·96	− 1·23
	3053	....	6·0	80 7	3·7	12·0	20·3	28·3	51 37·1	8 51 20·28	− 0·20	....	−43·97	− 1·22
	3083	....	7·0	38 40	19·6	33·0	46·2	59·0	57 12·9	8 56 46·14	− 0·13	....	−43·97	− 1·56
	3111	κ Cancri	....	78 49	4·5	13·0	21·4	29·4	1 38·3	9 1 21·32	− 0·20	....	−43·98	− [illegible]
	3133	....	8·0	85 36	48·1	56·4	4·6	12·4	6 21·3	9 6 4·56	− 0·22	....	−43·99	− 1·26
	3157	....	7·0	29 40	34·0	50·8	7·3	23·6	11 41·0	9 11 7·34	− 0·09	....	−44·00	− 1·90
	3242	θ Ursæ Majoris	4·0	37 44	19·2	33·0	46·1	59·2	25 13·4	9 24 46·18	− 0·12	....	−44·01	− 1·56
	3312	....	4·0	79 31	35·0	43·4	51·8	0·0	35 8·7	9 34 51·78	− 0·20	....	−44·02	− 1·26
	3331	ε Leonis	....	65 37	48·5	57·8	6·8	15·5	39 25·0	9 39 6·72	− 0·17	−44·03	−44·02	− 1·24
	3380	....	6·0	83 26	16·0	24·3	32·6	40·6	47 49·4	9 47 32·58	− 0·22	....	−44·03	− 1·27
	3418	....	8·0	80 25	30·0	38·3	46·8	54·6	55 3·4	9 54 46·62	− 0·20	....	−44·04	− 1·26
	3430	....	8·5	81 9	47·1	55·5	4·0	12·0	57 20·8	9 57 3·88	− 0·21	....	−44·04	− 1·26
	3459	α Leonis	....	77 [illegible]	49·1	57·5	6·0	14·1	2 23·0	10 2 5·94	− 0·19	−44·11	[illegible]	− 1·24
	3481	....	7·0	57 56	1·2	11·0	20·9	30·0	7 40·3	10 7 20·68	− 0·17	....	−44·05	− 1·25
	3529	....	8·0	62 55	6·5	15·0	23·1	31·2	14 40·0	10 14 23·20	− 0·22	....	−44·05	− 1·26
	3592	....	7·0	67 50	24·8	33·0	41·4	49·2	23 58·0	10 23 41·28	− 0·23	....	[illegible]	− 1·29
	3609	ρ Leonis	....	80 1	20·4	28·9	37·0	45·1	26 54·0	10 26 37·08	− 0·20	−44·09	−44·06	− 1·23

(a) An apparent and excessive inversion of the clock's rate during this night's observations; most probably on account of a swerving of the piers of Transit through temperature changes.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1868.
1868.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Feb. 26	2862	η Cancri	....	69 7	31.0	40.0	48.8	57.1	26 6.4	8 25 48.66	− 0.19	−43.02	−42.97	− 1.14
	2971	ε Hydræ	....	83 6	15.0	23.0	31.3	39.3	40 48.1	8 40 31.34	− 0.22	−42.90	−42.97	− 1.19
	3171	83 Cancri	....	71 44	3.8	12.4	21.1	29.4	12 38.4	9 12 21.02	− 0.19	−42.99	−42.97	− 1.24
	3331	ε Leonis	....	65 37	47.5	56.4	5.6	14.2	39 24.0	9 39 5.54	− 0.17	−42.84	−42.97	− 1.25
	3415	π Leonis	....	81 20	42.0	50.3	58.7	6.9	54 15.5	9 53 58.68	− 0.21	−43.02	−42.97	− 1.26
	3459	α Leonis	....	77 23	48.1	56.4	5.0	13.0	2 22.0	10 2 4.90	− 0.19	−43.04	−42.97	− 1.27
Mar. 5	3331	(a) ε Leonis	....	66 37	47.0	56.0	5.1	13.9	39 23.2	9 39 5.04	− 0.16	−42.35	−42.33	− 1.23
	3415	π Leonis	....	81 20	41.3	49.7	58.1	6.0	54 15.0	9 53 58.02	− 0.22	−42.35	−42.33	− 1.28
	3459	α Leonis	....	77 23	47.4	55.7	4.1	12.3	2 21.2	10 2 4.14	− 0.20	−42.27	−42.33	− 1.27
	3523	γ¹ Leonis	....	69 30	7.7	16.5	25.3	33.9	13 43.1	10 13 25.30	− 0.20	−42.34	−42.33	− 1.27
	3609	ρ Leonis	....	80 1	18.9	27.0	35.4	43.4	26 52.2	10 26 35.38	− 0.21	−42.32	−42.33	− 1.29
Mar. 6	360	α Ursæ Minoris	....	1 24	33.0	15.0	56.0	23.5	22 20.5	1 10 53.60	+ 5.05	....	−42.30	+22.12
	648	α Arietis	....	67 9	8.0	17.1	26.2	34.9	0 44.2	2 0 26.08	− 0.10	−42.41	−42.30	+ 0.63
	2971	ε Hydræ	....	83 6	14.0	22.2	30.5	38.8	40 47.3	8 40 30.56	− 0.15	−42.26	−42.30	− 1.12
	2988	....	7.0	34 34	28.0	42.8	57.4	11.1	44 26.4	8 43 57.14	+ 0.03	....	−42.30	− 1.51
	3013	....	6.0	84 10	53.0	1.2	9.4	17.4	46 26.0	8 46 9.[illegible]	− 0.15	....	−42.30	− 1.14
	3053	....	6.0	80 7	1.7	10.0	18.4	26.4	51 35.1	8 51 18.32	− 0.14	....	−42.30	− 1.14
	3083	....	6.0	38 40	18.0	31.1	44.4	57.0	57 11.0	8 56 44.30	0.00	....	−42.30	− 1.43
	3103	....	7.5	72 22	17.7	26.4	35.2	43.3	59 52.5	8 59 35.02	− 0.12	....	−42.30	− 1.15
	3133	....	7.0	85 36	46.1	54.4	2.6	10.5	6 19.3	9 6 2.58	− 0.10	....	−42.30	− 1.20
	3157	....	7.5	29 40	32.6	49.1	6.0	22.0	11 39.5	9 11 5.84	+ 0.07	....	−42.30	− 1.75
	3242	θ Ursæ Majoris	....	37 44	17.6	31.1	44.9	57.5	25 11.9	9 24 44.60	+ 0.01	....	−42.30	− 1.48
	3312	ο Leonis	4.0	79 31	33.0	41.4	50.0	58.0	35 6.9	9 34 49.86	− 0.14	....	−42.30	− 1.24
	3331	ε Leonis	....	65 37	46.9	55.9	5.0	13.7	39 23.2	9 39 4.94	− 0.10	....	−42.30	− 1.23
	3371	μ Leonis	....	63 23	40.2	49.5	58.9	7.7	46 17.3	9 45 58.72	− 0.09	−42.33	−42.30	− 1.25
	3380	....	....	83 26	14.0	22.3	30.9	38.9	47 47.4	9 47 30.70	− 0.15	....	−42.30	− 1.27
	3418	....	....	80 25	28.0	36.5	45.0	53.0	55 1.6	9 54 44.82	− 0.14	....	−42.30	− 1.27
	3431	....	8.0	56 55	40.8	50.7	0.6	10.0	57 20.4	9 57 0.50	− 0.07	....	−42.30	− 1.29
	3439	....	7.5	54 22	25.2	35.5	45.8	55.4	59 6.0	9 58 45.58	− 0.06	....	−42.30	− 1.[illegible]
	3459	α Leonis	....	77 23	47.1	55.6	4.1	12.2	2 21.0	10 2 4.00	− 0.13	−42.20	−42.30	− 1.27
	3484	....	7.0	57 56	58.4	8.2	18.0	27.3	7 37.8	10 7 17.91	− 0.08	....	−42.30	− 1.29
	3529	....	7.0	82 55	4.9	13.1	21.4	29.4	14 38.2	10 14 21.40	− 0.15	....	−42.30	− 1.31
	3592	....	7.0	87 50	23.0	31.2	39.6	47.4	23 56.1	10 23 39.46	− 0.16	....	−42.30	− 1.35
	3609	ρ Leonis	....	80 1	18.5	27.0	35.3	43.3	26 52.0	10 26 35.22	− 0.14	−42.22	−42.30	− 1.30
	3662	....	....	78 35	10.6	19.0	27.4	35.4	35 44.5	10 35 27.38	− 0.13	....	−42.30	− 1.30
	3726	....	6.0	88 17	54.2	2.3	10.5	18.4	46 27.2	10 46 10.52	− 0.16	....	−42.30	− 1.36
	3768	d Leonis	....	85 41	11.9	20.1	28.4	36.2	54 45.0	10 54 28.32	− 0.16	....	−42.30	− 1.35
	3821	....	....	21 0	41.5	4.8	27.9	50.1	5 14.0	11 4 27.66	− 0.19	....	−42.30	− 2.35
	3946	υ Leonis	....	90 6	38.8	47.0	55.3	3.0	31 12.0	11 30 55.22	− 0.17	−42.28	−42.30	− 1.38
	3995	β Leonis	....	74 42	46.2	54.6	3.2	11.4	43 20.4	11 43 3.16	− 0.13	−42.27	−42.30	− 1.26
	360	α Ursæ Minoris S. P.	....	1 24	38.0	34.5	2.0	40.0	22 23.5	13 11 3.60	− 5.38	....	−42.30	+22.36
	4480	α Virginis	....	100 28	41.6	50.1	58.6	6.2	19 15.4	13 18 58.38	− 0.20	−42.44	−42.30	− 1.28
Mar. 11	3459	α Leonis	....	77 23	47.4	55.8	4.2	12.4	2 21.2	10 2 4.20	− 0.13	−42.41	−42.42	− 1.26
	3484	....	7.0	57 56	59.7	9.3	19.0	28.4	7 38.7	10 7 19.02	− 0.08	....	−42.42	− 1.28
	3523	γ¹ Leonis	....	69 30	7.8	16.5	25.3	34.0	13 43.0	10 13 25.32	− 0.11	−42.45	−42.42	− 1.27
	3592	....	7.5	87 50	23.3	31.3	39.6	47.6	23 56.4	10 23 39.64	− 0.16	....	−42.42	− 1.34
	3609	ρ Leonis	....	80 1	18.7	27.0	35.4	43.5	26 52.3	10 26 35.38	− 0.14	−42.38	−42.42	− 1.30
	3834	δ Leonis	....	68 45	31.4	40.1	49.0	57.5	8 6.9	11 7 48.98	− 0.11	−42.45	−42.42	− 1.30
	3946	υ Leonis	....	90 6	39.0	47.3	55.4	3.3	31 12.0	11 30 55.40	− 0.17	−42.43	−42.42	− 1.41

(a) Definition bad.

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1868.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Mar. 14	3523	γ^1 Leonis........	....	69 30	7·0	16·0	24·8	33·4	13 42·4	10 13 21·72	– 0·12	– 41·86	– 41·86	– 1·25
	3708	l Leonis........	....	78 46	45·7	54·0	2·4	10·5	43 19·2	10 43 2·36	– 0·14	– 41·92	– 41·85	– 1·30
	3788	χ Leonis........	....	81 57	39·0	47·4	55·9	3·8	59 12·5	10 58 55·72	– 0·16	– 41·83	– 41·85	– 1·34
	3834	δ Leonis........	....	68 45	30·6	39·5	48·4	56·9	8 6·2	11 7 48·32	– 0·12	– 41·78	– 41·84	– 1·30
Mar. 17	3788	χ Leonis........	....	81 57	38·0	46·3	54·6	2·8	59 11·4	10 58 54·62	– 0·16	– 40·73	– 40·70	– 1·31
	3834	δ Leonis........	....	68 45	29·6	38·3	47·3	55·9	8 5·0	11 7 47·22	– 0·13	– 40·66	– 40·69	– 1·31
	3946	υ Leonis........	....	90 6	37·3	45·5	53·9	1·9	31 10·3	11 30 53·78	– 0·18	– 40·78	– 40·68	– 1·43
	3995	β Leonis........	....	74 42	44·5	53·0	1·6	9·9	43 18·6	11 43 1·56	– 0·14	– 40·59	– 40·67	– 1·33
	4145	η Virginis........	....	89 56	35·0	43·3	51·4	59·3	14 8·0	12 13 51·40	– 0·18	– 40·64	– 40·66	– 1·42
Mar. 23	3667	34 Sextantis........	6·0	85 44	12·0	20·3	28·5	36·6	36 45·4	10 36 28·56	– 0·18	....	– 38·73	– 1·31
	3708	l Leonis........	....	78 46	42·4	50·8	59·2	7·2	43 16·3	10 42 59·18	– 0·16	– 38·74	– 38·73	– 1·28
	3726	....	6·0	86 17	50·5	58·8	7·0	15·0	46 23·6	10 46 6·98	– 0·19	....	– 38·72	– 1·35
	3768	d Leonis........	5·0	85 41	8·0	16·3	24·6	32·8	54 41·4	10 54 24·62	– 0·18	....	– 38·72	– 1·35
	3788	χ Leonis........	....	81 57	35·9	44·4	52·5	0·6	59 9·3	10 58 52·54	– 0·16	– 38·66	– 38·72	– 1·33
	3821	....	6·0	21 0	38·5	1·4	24·4	46·7	5 10·8	11 4 24·36	+ 0·17	....	– 38·71	– 2·28
	3834	δ Leonis........	....	68 45	27·7	36·5	45·3	54·0	8 3·1	11 7 45·32	– 0·13	– 38·77	– 38·71	– 1·30
	3869	....	7·0	71 51	57·1	6·0	14·6	23·0	16 32·0	11 16 14·54	– 0·14	....	– 38·71	– 1·32
	3900	τ Leonis........	4·0	86 26	32·5	41·0	49·2	57·0	22 5·9	11 21 49·12	– 0·18	....	– 38·71	– 1·40
	3946	υ Leonis........	....	90 6	35·3	43·5	51·8	59·5	31 8·4	11 30 51·76	– 0·19	– 38·74	– 38·70	– 1·44
	3995	β Leonis........	....	74 42	42·7	51·1	59·8	8·0	43 17·0	11 42 59·72	– 0·15	– 38·72	– 38·70	– 1·35
	4005	....	6·0	77 0	32·0	40·5	49·0	57·2	45 6·0	11 44 48·94	– 0·15	....	– 38·70	– 1·36
	4052	σ Virginis........	5·5	82 40	30·1	38·4	46·9	54·9	55 3·4	11 54 46·74	– 0·17	....	– 38·69	– 1·40
	4145	η Virginis........	....	89 56	33·0	41·2	49·5	57·4	14 6·0	12 13 49·42	– 0·20	– 38·60	– 38·68	– 1·46
Mar. 24	3459	(a) α Leonis........	....	77 23	43·5	51·8	0·0	8·2	2 17·0	10 2 0·10	– 0·15	– 38·38	– 38·32	– 1·17
	3523	γ^1 Leonis........	....	69 30	3·8	12·3	21·3	29·9	13 39·0	10 13 21·26	– 0·14	– 38·43	– 38·32	– 1·20
	3609	ρ Leonis........	....	80 1	14·5	23·0	31·2	39·4	26 45·8	10 26 31·22	– 0·16	– 38·25	– 38·31	– 1·25
	3788	χ Leonis........	....	81 57	35·5	43·9	52·1	0·0	59 9·0	10 58 52·10	– 0·16	– 38·22	– 38·31	– 1·33
	3821	....	6·0	21 0	37·4	1·0	21·2	46·0	5 10·2	11 4 23·76	+ 0·17	....	– 38·30	– 1·27
	3834	δ Leonis........	....	68 45	27·0	36·1	44·9	53·2	8 2·6	11 7 44·76	– 0·13	– 38·21	– 38·30	– 1·30
	3869	....	....	71 51	57·0	5·5	14·0	22·6	16 31·7	11 16 14·16	– 0·14	....	– 38·30	– 1·32
	3900	τ Leonis........	....	86 26	52·3	40·5	49·0	56·7	22 5·6	11 21 48·82	– 0·18	....	– 38·29	– 1·40
	3946	υ Leonis........	....	90 6	35·0	43·0	51·2	59·2	31 8·0	11 30 51·28	– 0·19	– 38·26	– 38·29	– 1·44
	3995	β Leonis........	....	74 42	42·3	51·0	59·4	7·5	43 16·5	11 42 59·34	– 0·15	– 38·34	– 38·28	– 1·35
Mar. 26	3529	....	7·0	82 55	0·1	8·5	17·0	25·0	14 33·8	10 14 16·88	– 0·17	....	– 37·84	– 1·22
	3609	ρ Leonis........	....	80 1	14·0	22·4	31·0	38·9	26 47·6	10 26 30·78	– 0·15	– 37·83	– 37·84	– 1·24
	3662	....	7·5	78 35	6·1	14·5	23·0	31·0	35 40·0	10 35 22·92	– 0·15	....	– 37·83	– 1·26
	3708	l Leonis........	....	78 46	41·5	50·0	58·3	6·4	43 15·1	10 42 58·26	– 0·15	– 37·85	– 37·83	– 1·26
	3726	....	....	86 17	49·5	57·8	6·0	14·0	46 22·5	10 46 5·96	– 0·18	....	– 37·83	– 1·34
	3768	d Leonis........	....	85 41	7·1	15·5	24·0	32·0	54 40·5	10 54 23·82	– 0·17	....	– 37·83	– 1·34
	3788	χ Leonis........	....	81 57	35·0	43·4	51·8	59·8	59 8·4	10 58 51·68	– 0·16	– 37·81	– 37·83	– 1·32
	3821	....	....	21 0	37·3	0·6	23·5	45·5	5 10·0	11 4 23·38	+ 0·20	....	– 37·83	– 2·24
	3834	δ Leonis........	....	68 45	26·6	35·4	44·4	53·0	8 2·2	11 7 44·32	– 0·12	– 37·79	– 37·82	– 1·29
	3946	υ Leonis........	....	90 6	34·5	42·7	51·0	58·9	31 7·5	11 30 50·92	– 0·18	– 37·91	– 37·82	– 1·44
	3995	β Leonis........	....	74 42	41·5	50·3	59·0	7·0	43 16·2	11 42 58·80	– 0·14	– 37·81	– 37·82	– 1·35
	4005	....	....	77 0	31·2	39·8	48·4	56·4	45 5·4	11 44 48·24	– 0·14	....	– 37·82	– 1·37
	4052	σ Virginis........	....	82 40	29·4	37·7	46·0	54·0	55 2·7	11 54 45·96	– 0·17	....	– 37·82	– 1·40
	4153	....	6·0	62 39	2·1	11·4	20·8	29·6	14 39·4	12 14 20·66	– 0·10	....	– 37·82	– 1·36

(a) Definition indifferent.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1868.
1868.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Mar. 26	4199	....	7·0	63 22	23·0	32·3	41·4	50·4	22 0·0	12 21 41·42	− 0·10	....	−37·81	− 1·36
	4231	....	8·0	64 50	16·6	27·9	37·0	45·6	27 55·3	12 27 36·88	− 0·11	....	−37·81	− 1·36
	4244	....	....	52 49	2·7	13·0	23·5	33·2	29 44·2	12 29 23·32	− 0·07	....	−37·81	− 1·40
Mar. 27	3834	δ Leonis	....	68 45	26·4	35·2	44·0	52·4	8 2·0	11 7 44·00	− 0·13	− 37·46	−37·40	− 1·29
	3869	....	7·0	71 51	56·0	4·4	13·3	21·7	16 30·8	11 16 13·24	− 0·14	....	−37·39	− 1·31
	3900	τ Leonis	....	86 26	31·2	39·4	47·9	55·9	22 4·5	11 21 47·78	− 0·18	....	−37·39	− 1·39
	3946	υ Leonis	....	90 6	33·9	42·2	50·4	58·4	31 7·0	11 30 50·38	− 0·19	− 37·37	−37·38	− 1·43
	3995	β Leonis	....	74 42	41·1	49·9	58·4	6·6	43 15·6	11 42 58·32	− 0·15	− 37·32	−37·38	− 1·35
	4005	....	....	77 0	30·7	39·3	47·9	56·0	45 4·9	11 44 47·76	− 0·15	....	−37·38	− 1·37
	4052	ε Virginis	....	82 40	28·9	37·1	45·4	53·4	55 2·2	11 54 45·40	− 0·17	....	−37·37	− 1·41
	4145	η Virginis	....	89 56	31·8	40·0	48·2	56·1	14 4·9	12 13 48·20	− 0·19	− 37·38	−37·37	− 1·47
	4199	....	....	63 22	22·6	31·9	41·0	50·0	21 59·8	12 21 41·06	− 0·10	....	−37·37	− 1·37
	4231	....	7·0	64 50	18·0	27·3	36·3	45·0	27 54·8	12 27 36·28	− 0·11	....	−37·37	− 1·37
	4244	....	....	52 49	1·5	12·3	23·0	33·0	29 43·8	12 29 22·72	− 0·07	....	−37·36	− 1·40
	4268	γ^1 Virginis	....	90 44	20·7	29·0	37·4	45·3	35 54·0	12 35 37·28	− 0·19	....	−37·36	− 1·45
	4340	δ Virginis	....	85 54	19·6	28·0	36·2	44·1	49 53·0	12 49 36·18	− 0·18	....	−37·35	− 1·44
April 1	3415	(a) ε Leonis	....	81 20	33·0	41·2	49·5	57·6	54 6·4	9 53 49·54	− 0·17	− 34·10	− 34·14	− 1·10
	3430	....	....	81 9	37·0	45·4	54·0	2·0	57 10·9	9 56 53·86	− 0·17	....	− 34·14	− 1·10
	3459	α Leonis	....	77 23	39·0	47·4	55·9	4·0	2 12·9	10 1 55·84	− 0·16	− 34·18	− 34·14	− 1·10
	3523	γ^1 Leonis	....	69 30	59·4	8·0	17·0	25·4	13 34·9	10 13 16·94	− 0·14	− 34·18	− 34·14	− 1·13
	4401	θ Virginis	....	94 50	26·5	34·6	43·0	51·0	3 59·8	13 3 42·98	− 0·21	− 34·20	− 34·14	− 1·56
	360	α Ursæ Minoris S. P....	....	1 24	22·5	21·0	44·0	23·5	22 5·5	13 10 47·30	− 5·71	....	− 34·14	+ 29·52
	4460	α Virginis	....	100 28	33·9	42·1	50·6	58·4	19 7·2	13 18 50·44	− 0·22	− 34·14	− 34·14	− 1·62
	4532	ζ Virginis	....	89 55	17·2	25·6	34·0	42·0	28 50·5	13 28 33·86	− 0·20	− 34·05	− 34·13	− 1·49
April 2	3459	(b) α Leonis	....	77 23	38·8	46·5	55·0	3·3	2 12·1	10 1 55·14	− 0·12	− 33·53	− 33·51	− 1·09
	3609	ρ Leonis	....	80 1	9·8	18·0	26·4	34·4	26 43·2	10 26 26·36	− 0·12	− 33·50	− 33·51	− 1·16
	3667	34 Sextantis	....	85 44	6·9	15·0	23·4	31·2	36 40·0	10 36 23·30	− 0·14	....	− 33·51	− 1·25
	3780	....	7·0	81 43	7·6	16·0	24·4	32·4	57 41·2	10 57 24·32	− 0·13	....	− 33·51	− 1·26
	3834	δ Leonis	....	68 45	22·2	31·1	40·0	48·5	7 58·0	11 7 39·96	− 0·11	− 33·46	− 33·51	− 1·27
	3946	υ Leonis	....	90 6	30·0	38·3	46·4	54·3	31 3·0	11 30 46·40	− 0·15	− 33·44	− 33·51	− 1·42
	3995	β Leonis	....	74 42	37·5	46·0	54·4	2·8	43 11·8	11 42 54·50	− 0·12	− 33·54	− 33·51	− 1·34
	4153	....	7·0	62 39	58·0	7·0	16·3	25·0	14 35·0	12 14 16·26	− 0·08	....	− 33·51	− 1·38
	4199	....	8·0	63 22	18·2	28·0	37·0	46·0	21 55·8	12 21 37·00	− 0·08	....	− 33·51	− 1·38
	360	α Ursæ Minoris S. P....	....	1 24	19·5	17·5	42·0	23·0	22 4·5	13 10 45·30	− 4·24	....	− 33·51	+ 29·57
	4480	(c) α Virginis	....	100 28	33·1	41·3	50·0	58·0	19 6·9	13 18 49·86	− 0·17	− 33·61	− 33·51	− 1·62
April 3	3459	(d) α Leonis	....	77 23	37·8	46·2	54·5	2·8	2 11·6	10 1 54·58	− 0·14	− 32·96	− 32·91	− 1·08
	3523	γ^1 Leonis	....	69 30	58·0	7·0	15·8	24·0	13 33·3	10 13 15·62	− 0·13	− 32·89	− 32·91	− 1·11
	3834	δ Leonis	....	68 45	21·8	30·6	39·3	48·0	7 57·1	11 7 39·36	− 0·12	− 32·86	− 32·91	− 1·25
	3995	β Leonis	....	74 42	37·0	45·5	54·0	2·0	43 11·0	11 42 53·90	− 0·14	− 32·92	− 32·91	− 1·34
April 6	3708	l Leonis	....	78 46	35·0	43·3	51·5	59·9	43 8·4	10 42 51·62	− 0·17	− 31·26	− 31·25	− 1·19
	3788	χ Leonis	....	81 57	28·5	36·6	45·0	53·1	59 2·0	10 58 45·04	− 0·17	− 31·22	− 31·24	− 1·26
	3834	δ Leonis	....	68 45	20·0	29·0	37·8	46·3	7 55·5	11 7 37·72	− 0·14	− 31·22	− 31·24	− 1·24
	3946	(d) υ Leonis	....	90 6	27·8	36·0	44·3	52·3	31 1·0	11 30 44·28	− 0·20	− 31·28	− 31·23	− 1·41
April 8	4401	θ Virginis	....	94 50	22·5	30·8	39·0	47·0	3 55·8	13 3 39·02	− 0·24	− 30·17	− 30·12	− 1·60
	360	α Ursæ Minoris S. P....	....	1 24	13·5	17·0	44·0	20·5	22 4·5	13 10 43·90	− 6·44	....	− 30·12	+ 29·52

(a) An apparent inversion of the clock's rate during observation.
(b) A decided inversion again of the clock's rate or instrument's position during observation.
(c) Very faint. Overcast.
(d) Very faint.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	interpolated.	Correction to Mean R.A. Jan. 1, 1868.
1868.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
April 8	4480	α Virginis	....	100 28	29·8	38·0	46·5	4·6	19 13·4	13 18 46·46	− 0·25	− 30·08	− 30·12	− 1·67
	4532	ζ Virginis	....	89 55	13·4	21·8	30·0	38·0	28 46·6	13 28 29·96	− 0·23	− 30·07	− 30·12	− 1·54
	4648	η Bootis	....	70 56	38·2	47·0	56·0	4·1	49 13·2	13 48 55·70	− 0·17	− 30·11	− 30·12	− 1·43
	4672	τ Virginis	....	87 49	11·3	19·4	27·8	35·9	55 44·3	13 55 27·74	− 0·22	− 30·19	− 30·12	− 1·53
April 13	4145	η Virginis	....	89 56	22·1	30·4	38·9	46·6	13 55·2	12 13 38·[illegible]	− 0·18	− 27·82	− 27·82	− 1·48
	4205	....	6·0	63 3	13·4	22·7	32·0	41·0	22 50·4	12 22 31·90	− 0·11	....	− 27·82	− 1·38
	4231	....	7·5	64 50	8·6	18·0	27·0	35·9	27 45·3	12 27 26·96	− 0·11	....	− 27·82	− 1·39
	4364	....	7·0	68 2	19·0	28·0	37·0	45·6	55 54·9	12 55 36·90	− 0·12	....	− 27·81	− 1·44
	4401	θ Virginis	....	94 50	20·0	28·4	36·7	44·8	3 53·2	13 3 36·62	− 0·19	− 27·80	− 27·81	− 1·62
	360	α Ursæ Minoris S. P.	....	1 24	12·0	10·5	38·0	15·0	22 6·0	13 10 40·30	− 4·64	....	− 27·81	+ 29·02
	4480	α Virginis	....	100 28	27·4	36·0	44·2	52·4	19 1·0	13 18 44·20	− 0·[illegible]	− 27·[illegible]	− 27·81	− 1·70
	4513	(a)	7·0	65 5	48·0	57·1	6·2	15·0	25 24·6	13 25 6·18	− 0·11	....	− 27·81	− 1·46
	4532	ζ Virginis	....	89 55	11·0	19·4	27·6	35·6	28 44·3	13 28 27·58	− 0·18	− 27·71	− 27·81	− 1·57
	4550	....	7·0	36 39	23·5	37·3	51·0	4·5	32 19·0	13 31 51·06	− 0·02	....	− 27·81	− 1·72
	4575	....	6·5	66 39	42·5	51·4	0·5	9·1	38 18·6	13 38 0·42	− 0·12	....	− 27·80	− 1·47
	4597	....	5·0	71 54	11·7	20·2	29·0	37·3	41 46·4	13 41 28·92	− 0·14	....	− 27·80	− 1·48
	4627	....	6·0	54 35	24·0	34·4	44·4	54·1	46 5·0	13 45 44·38	− 0·10	....	− 27·80	− 1·50
	4648	η Bootis	....	70 56	36·0	44·8	53·4	2·0	49 11·1	13 48 53·46	− 0·13	− 27·67	− 27·80	− 1·47
	4672	τ Virginis	....	87 49	9·0	17·2	25·4	33·3	55 42·0	13 55 25·38	− 0·17	− 27·84	− 27·80	− 1·57
	4729	α Bootis	....	70 8	50·5	59·1	8·0	16·4	10 25·4	14 10 7·88	− 0·13	− 27·81	− 27·80	− 1·45
April 14	4401	θ Virginis	....	94 50	19·7	27·9	36·1	44·1	3 52·9	13 3 36·14	− 0·09	− 27·42	− 27·40	− 1·62
	360	α Ursæ Minoris S. P.	....	1 [illegible]	9·5	10·5	35·5	14·5	21 56·0	13 10 37·20	− 1·72	....	− 27·40	+ 28·87
	4480	α Virginis	....	100 28	27·0	35·2	43·7	51·9	19 [illegible]	13 18 43·64	− 0·09	− 27·39	− 27·39	− 1·70
	4532	ζ Virginis	....	89 55	10·5	19·0	27·1	35·0	28 43·8	13 28 27·08	− 0·08	− 27·30	− 27·39	− 1·58
	4648	η Bootis	....	70 56	35·5	44·2	53·0	1·3	49 10·4	13 48 52·88	− 0·05	− 27·36	− 27·39	− 1·48
	4672	τ Virginis	....	87 49	8·4	16·5	25·0	33·0	55 41·4	13 55 24·86	− 0·07	− 27·41	− 27·39	− 1·58
	4729	α Bootis	....	70 8	50·0	58·7	7·4	16·0	10 25·1	14 10 7·44	− 0·05	− 27·44	− 27·38	− 1·46
April 16	3780	(b)	7·0	81 43	0·4	8·6	17·0	25·0	57 33·9	10 57 16·98	− 0·21	....	− 26·02	− 1·18
	3834	δ Leonis	....	68 45	15·0	23·7	32·5	41·0	7 50·3	11 7 32·50	− 0·16	− 26·06	− 26·02	− 1·16
	3946	υ Leonis	....	90 6	22·5	30·8	39·0	47·0	30 55·6	11 30 38·98	− 0·23	− 26·00	− 26·02	− 1·36
	3995	β Leonis	....	74 42	30·0	38·5	47·0	55·2	43 4·2	11 42 46·98	− 0·19	− 26·00	− 26·02	− 1·29
	4153	....	6·0	62 39	50·3	59·8	9·0	17·9	14 27·8	12 14 8·96	− 0·15	....	− 26·02	− 1·35
	4205	....	6·0	63 3	11·4	20·8	30·0	39·0	22 48·7	12 22 29·98	− 0·15	....	− 26·02	− 1·37
	4340	δ Virginis	4·0	85 54	8·5	16·8	25·1	33·0	49 41·8	12 49 25·04	− 0·22	....	− 26·02	− 1·52
	4364	....	7·0	68 2	17·1	26·2	35·0	43·9	55 53·0	12 55 35·04	− 0·16	....	− 26·02	− 1·44
	4401	θ Virginis	....	94 50	18·4	26·7	35·0	42·9	3 51·4	13 3 34·88	− 0·26	− 25·99	− 26·02	− 1·62
	360	α Ursæ Minoris S. P.	....	1 24	14·5	12·0	39·0	18·5	21 59·0	13 10 40·60	− 6·34	....	− 26·02	+ 28·52
	4457	....	6·0	54 11	7·3	17·4	27·7	37·4	13 48·0	13 13 27·56	− 0·12	....	− 26·02	− 1·49
	4466	....	7·0	75 10	2·8	11·3	19·8	28·0	15 37·0	13 15 19·78	− 0·19	....	− 26·02	− 1·49
	4480	α Virginis	....	100 28	25·8	34·0	42·5	50·4	18 59·3	13 18 42·40	− 0·27	− 25·96	− 26·0[illegible]	− 1·71
	4513	....	....	65 5	46·0	55·4	4·4	13·1	25 22·8	13 25 4·34	− 0·15	....	− 26·02	− 1·48
	4526	....	6·0	64 58	42·4	51·5	0·7	9·4	27 19·0	[illegible] 27 0·60	− 0·15	....	− 26·02	− 1·48
	4559	....	6·0	78 36	15·0	23·4	32·0	40·0	33 48·9	13 33 31·86	− 0·20	....	− 26·02	− 1·52
	4575	....	6·5	66 39	40·6	49·7	58·8	7·3	38 16·9	13 37 58·66	− 0·16	....	− 26·02	− 1·49
	4597	....	4·0	71 54	9·5	18·4	27·2	35·5	41 44·6	13 41 27·04	− 0·19	....	− 26·02	− 1·50
	4621	....	7·0	70 43	58·5	7·2	16·0	24·5	44 33·7	13 44 15·98	− 0·17	....	− 26·02	− 1·50
	4648	η Bootis	....	70 56	34·3	43·0	51·9	0·1	49 9·4	13 48 51·74	− 0·17	− 26·09	− 26·02	− 1·49
	4729	α Bootis	....	70 8	48·8	57·4	6·1	14·8	10 24·0	14 10 6·22	− 0·17	− 26·08	− 26·02	− 1·48

(a) Two stars same mag. Difference in R. A. = 4 sec. Observed second star.
(b) A change of clock-rate, or a swerving of the Transit Instrument during observation.

Date.	No. in British Association Catalogue.	OBJECT OBSERVED.	Magnitude observed.	North Polar Distance set to.	Wires observed.					Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock		Correction to Mean R.A., Jan. 1, 1868.
					I.	II.	III.	IV.	V.			observed.	interpolated.	
1868.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
April 21	4457	....	6·0	54 11	5·8	16·0	26·1	36·0	13 46·8	13 13 26·14	− 0·13	....	− 24·44	− 1·49
	4468	....	6·5	75 10	1·5	10·0	18·2	26·4	15 35·4	13 15 18·30	− 0·19	....	− 24·44	− 1·50
	4503	....	7·0	85 27	42·6	50·9	59·0	7·0	23 15·9	13 22 59·08	− 0·22	....	− 24·44	− 1·57
	4513	....	....	65 5	44·7	53·9	3·0	11·6	25 21·3	13 25 2·90	− 0·16	....	− 24·44	− 1·49
	4532	ζ Virginis........	....	89 55	7·9	16·1	21·4	32·3	28 41·0	13 28 21·34	− 0·24	− 24·37	− 24·44	− 1·61
	4550	....	6·0	36 39	20·0	33·9	47·9	1·0	32 15·6	13 31 47·68	− 0·04	....	− 24·44	− 1·74
	4575	....	6·0	66 39	39·4	48·2	57·2	6·0	38 15·4	13 37 57·24	− 0·16	....	− 24·44	− 1·61
	4597	....	5·0	71 54	8·4	17·0	25·6	34·0	41 43·0	13 41 25·60	− 0·18	....	− 24·44	− 1·52
	4621	....	6·5	70 43	57·0	5·9	14·6	22·9	44 32·0	13 44 14·46	− 0·18	....	− 24·44	− 1·52
	4648	η Bootis........	....	70 56	32·7	41·4	50·1	58·6	49 7·8	13 48 50·12	− 0·18	− 24·43	− 24·44	− 1·52
	4672	τ Virginis........	....	87 49	5·5	13·9	22·0	30·0	55 38·9	13 55 22·06	− 0·23	− 24·40	− 24·44	− 1·63
	4729	α Bootis........	....	70 8	47·1	56·0	4·7	13·1	10 22·4	14 10 4·66	− 0·17	− 24·49	− 24·44	− 1·51
	4808	ρ Bootis........	....	59 3	15·5	25·0	34·7	44·0	26 54·1	14 26 34·66	− 0·15	− 24·48	− 24·44	− 1·55
	4876	ε Bootis........	....	62 22	21·0	30·1	39·6	48·4	39 58·4	14 39 39·60	− 0·15	− 24·46	− 24·44	− 1·55
April 26	3798	χ Leonis........	....	81 57	19·3	27·7	36·0	44·0	58 52·9	10 58 35·98	− 0·20	− 22·31	− 22·30	− 1·08
	3834	δ Leonis........	....	68 45	11·0	20·0	28·5	37·1	7 46·6	11 7 28·64	− 0·17	− 22·29	− 22·29	− 1·05
	3946	υ Leonis........	....	90 6	18·8	27·0	35·2	43·1	30 51·9	11 30 35·20	− 0·22	− 22·30	− 22·28	− 1·29
	3995	β Leonis........	....	74 42	26·0	34·7	43·1	51·5	43 0·4	11 42 43·14	− 0·18	− 22·24	− 22·27	− 1·22
April 28	4648	η Bootis........	....	70 56	29·5	38·1	47·0	55·4	49 4·4	13 48 46·88	− 0·18	− 21·17	− 21·20	− 1·54
	4652	....	6·0	57 20	22·7	32·3	42·0	51·4	51 1·8	13 50 42·04	− 0·15	....	− 21·20	− 2·00
	4672	τ Virginis........	....	87 49	2·4	10·6	19·0	27·0	55 35·5	13 55 18·90	− 0·22	− 21·22	− 21·20	− 1·66
	4678	....	7·0	57 43	45·2	55·1	4·9	14·1	57 24·5	13 57 4·76	− 0·15	....	− 21·20	− 1·56
	4694	....	7·0	58 32	38·5	48·2	58·0	7·3	1 17·4	14 0 57·88	− 0·15	....	− 21·19	− 1·57
	4716	κ Virginis........	....	99 40	58·0	6·3	14·6	22·8	6 31·4	14 6 14·62	− 0·24	....	− 21·19	− 1·65
	4723	....	7·0	60 17	6·5	16·0	25·5	34·5	8 44·7	14 8 25·44	− 0·16	....	− 21·19	− 1·67
	4729	α Bootis........	....	70 8	43·9	52·6	1·5	10·0	10 19·1	14 10 1·42	− 0·17	− 21·21	− 21·19	− 1·55
	4797	....	6·0	53 13	51·0	1·1	11·6	21·4	23 32·2	14 23 11·46	− 0·13	....	− 21·19	− 1·62
	4820	....	6·0	56 54	38·0	48·0	57·9	7·3	29 17·6	14 28 57·76	− 0·15	....	− 21·19	− 1·61
	4863	....	7·5	52 41	21·5	31·9	42·2	52·1	38 3·1	14 37 42·16	− 0·13	....	− 21·18	− 1·64
	4876	ε Bootis........	....	62 22	17·7	27·0	36·3	45·2	39 56·0	14 39 36·24	− 0·15	− 21·15	− 21·18	− 1·60
	4942	....	6·0	49 50	24·5	34·5	45·4	54·7	55 7·2	14 54 45·26	− 0·12	....	− 21·18	− 1·79
	4969	ψ Bootis........	....	62 32	51·9	1·1	10·5	19·2	59 29·1	14 59 10·36	− 0·15	− 21·20	− 21·18	− 1·60
May 1	3459	α Leonis........	....	77 23	24·2	32·6	41·0	49·2	1 58·1	10 1 41·02	− 0·18	− 19·71	− 19·70	− 0·73
	4145	η Virginis........	....	89 56	14·0	22·2	30·5	38·4	13 47·0	12 13 30·42	− 0·21	− 19·64	− 19·69	− 1·41
	4205	....	6 0	63 3	5·1	14·4	23·6	32·6	22 42·3	12 22 23·60	− 0·15	....	− 19·69	− 1·29
	4244	....	6·5	52 49	44·8	55·0	5·3	15·3	29 26 0	12 29 5·28	− 0·13	....	− 19·69	− 1·31
	4340	δ Virginis........	4·0	85 54	2·0	10·4	18·8	26·6	49 35·3	12 49 16·62	− 0·20	....	− 19·69	− 1·50
	4401	θ Virginis........	....	94 50	12·0	20·2	28·7	36·6	3 45·2	13 3 28·54	− 0·22	− 19·68	− 19·68	− 1·63
	360	α Ursæ Minoris S. P.....	....	1 24	10·0	8·5	35·0	16·0	21 54·5	13 10 36·80	− 4·09	....	− 19·68	+ 23·68
	4457	....	....	54 11	0·6	11·0	21·4	31·1	13 41·9	13 13 21·20	− 0·13	....	− 19·68	− 1·46
	4468	....	7·0	75 10	56·3	5·0	13·4	21·8	15 30·7	13 15 13·44	− 0·18	....	− 19·68	− 1·50
	4480	α Virginis........	....	100 28	19·4	27·9	36·1	44·2	18 53·0	13 18 36·12	− 0·23	− 19·69	− 19·68	− 1·74
	4526	....	6·0	64 58	36·0	45·1	54·3	3·0	27 12·8	13 26 54·24	− 0·16	....	− 19·68	− 1·49
	4550	....	7 0	36 39	15·0	29·0	43·0	56·1	32 10·9	13 31 42·80	− 0·07	....	− 19·68	− 1·70
	4575	....	6·0	66 39	34·4	43·4	52·3	1·0	38 10·6	13 37 52·34	− 0·16	....	− 19·68	− 1·52
	4597	....	5·0	71 54	3·4	12·1	20·9	29·1	41 38·4	13 41 20·78	− 0·17	....	− 19·67	− 1·54
	4627	....	6·0	54 33	16·0	26·3	36·4	46·1	45 56·9	13 45 36·34	− 0·14	....	− 19·67	− 1·55
	4648	η Bootis........	....	70 56	28·0	36·9	45·4	53·9	49 3·0	13 48 45·44	− 0·17	− 19·73	− 19·67	− 1·55

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1. 1868.
1868.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
May 1	4652	....	....	57 20	21·0	30·9	40·5	50·0	51 0·2	13 50 40·52	− 0·14	....	− 19·67	− 1·55
	4672	τ Virginis	....	87 49	1·0	9·1	17·4	25·2	55 34·0	13 55 17·34	− 0·21	− 19·66	− 19·67	− 1·67
	4678	....	7·0	57 43	44·0	53·5	3·4	12·9	57 23·1	13 57 3·38	− 0·15	....	− 19·67	− 1·57
	4694	....	7·5	55 32	37·0	46·9	56·5	5·9	1 16·0	14 0 56·46	− 0·15	....	− 19·67	− 1·57
	4808	ρ Bootis	....	59 3	10·8	20·2	30·0	39·2	26 49·1	14 26 29·86	− 0·15	− 19·63	− 19·67	− 1·60
	4820	....	6·0	56 54	37·0	46·6	56·3	5·8	29 16·0	14 28 56·34	− 0·14	....	− 19·66	− 1·62
	4863	....	7·0	52 41	20·0	30·2	40·9	50·7	38 1·6	14 37 40·68	− 0·13	....	− 19·66	− 1·66
	4876	ι Bootis	....	62 22	16·1	25·4	35·0	43·8	39 53·7	14 39 34·80	− 0·15	− 19·69	− 19·66	− 1·62
	4934	....	7·0	48 20	1·8	11·9	22·9	33·5	51 45·0	14 51 23·02	− 0·11	....	− 19·66	− 1·71
	4942	....	....	40 50	22·1	33·1	44·0	54·2	55 5·8	14 54 43·84	− 0·12	....	− 19·66	− 1·70
	4965	....	....	44 51	25·4	37·0	48·5	59·9	59 12·0	14 58 48·56	− 0·10	....	− 19·66	− 1·76
	4992	....	5·0	34 57	23·6	38·1	52·6	6·5	3 21·6	15 2 52·48	− 0·06	....	− 19·66	− 1·98
	5000	....	7·0	56 25	20·0	29·9	39·9	49·2	5 59·6	15 5 39·72	− 0·14	....	− 19·66	− 1·66
	5034	β Libræ	....	98 54	59·4	7·7	16·0	24·2	10 33·0	15 10 16·06	− 0·23	− 19·65	− 19·65	− 1·83
	5071	....	6·0	37 36	6·5	20·5	34·1	47·2	17 1·3	15 16 33·98	− 0·07	....	− 19·65	− 1·92
	5091	....	6·0	26 11	11·5	30·2	49·0	7·1	21 27·0	15 20 48·96	− 0·00	....	− 19·65	− 2·37
	5143	α Coronæ Borealis	....	62 50	9·0	18·2	27·5	36·4	29 46·1	15 29 27·44	− 0·15	− 19·67	− 19·65	− 1·63
May 4	4672	τ Virginis	....	87 49	59·0	7·2	15·5	23·4	55 32·0	13 55 15·42	− 0·19	− 17·75	− 17·84	− 1·68
	4729	α Bootis	....	70 8	40·7	49·1	58·0	6·5	10 15·9	14 9 58·10	− 0·15	− 17·89	− 17·84	− 1·57
	4876	ι Bootis	....	62 22	14·4	23·9	33·0	42·0	39 51·8	14 39 33·02	− 0·14	− 17·90	− 17·83	− 1·64
	4969	ψ Bootis	....	62 32	48·7	57·8	7·1	16·0	59 26·0	14 59 7·12	− 0·14	− 17·92	− 17·83	− 1·65
	5034	β Libræ	....	98 54	57·5	6·0	14·2	22·1	10 31·0	15 10 14·16	− 0·20	− 17·75	− 17·82	− 1·86
	5143	α Coronæ Borealis	....	62 50	7·0	16·4	25·6	34·5	29 44·4	15 29 25·58	− 0·14	− 17·79	− 17·82	− 1·66
	5196	α Serpentis	....	83 9	49·1	57·3	5·8	13·8	38 22·4	15 38 5·68	− 0·18	− 17·75	− 17·81	− 1·71
May 5	4401	(a) θ Virginis	....	94 50	9·3	17·5	26·0	34·0	3 42·6	13 3 25·88	− 0·15	− 17·10	− 17·11	− 1·62
	360	(b) α Ursæ Minoris S. P.	....	1 24	5·5	6·0	31·0	14·0	21 52·5	13 10 33·80	− 1·81	....	− 17·11	+ 22·08
	4457	....	....	54 11	59·4	8·5	16·9	28·6	13 39·0	13 13 18·68	− 0·11	....	− 17·11	− 1·44
	4468	....	....	75 10	54·0	2·3	11·0	19·0	15 28·0	13 15 10·86	− 0·14	....	− 17·11	− 1·49
	4480	α Virginis	....	100 28	16·8	25·1	33·5	41·5	18 50·3	13 18 33·44	− 0·16	− 17·08	− 17·11	− 1·74
	4513	....	....	65 5	37·2	46·4	55·6	4·4	25 14·0	13 21 55·52	− 0·12	....	− 17·11	− 1·48
	4532	ζ Virginis	....	89 55	0·5	9·0	17·0	25·0	28 33·9	13 28 17·08	− 0·16	− 17·17	− 17·11	− 1·63
	4550	....	....	36 39	13·3	26·6	40·4	53·8	32 8·1	13 31 40·44	− 0·08	....	− 17·11	− 1·67
	4606	....	....	57 57	22·6	32·2	42·0	51·6	43 1·8	13 42 42·04	− 0·12	....	− 17·11	− 1·53
	4627	....	....	54 35	13·8	23·9	34·0	43·7	45 54·4	13 45 33·96	− 0·11	....	− 17·11	− 1·55
	4648	η Bootis	....	70 56	25·2	34·0	43·0	51·4	49 0·2	13 48 42·70	− 0·13	− 17·09	− 17·11	− 1·55
	4670	....	....	57 48	30·4	40·1	50·0	59·3	56 9·5	13 55 49·86	− 0·12	....	− 17·11	− 1·56
	4809	....	....	62 45	30·0	39·4	48·7	57·6	27 7·4	14 26 48·62	− 0·12	....	− 17·11	− 1·62
	4820	....	....	56 54	34·0	43·9	53·9	3·2	29 13·6	14 28 53·72	− 0·12	....	− 17·11	− 1·64
	4863	....	....	52 41	17·0	27·9	38·2	48·0	37 59·0	14 37 38·02	− 0·11	....	− 17·11	− 1·67
	4876	ι Bootis	....	62 22	13·6	23·0	32·2	41·1	39 51·0	14 39 32·18	− 0·12	− 17·08	− 17·11	− 1·64
	4992	....	....	34 57	21·1	35·6	50·0	4·0	3 19·0	15 2 49·94	− 0·07	....	− 17·11	− 2·00
	5000	....	....	56 25	17·0	27·0	37·0	46·6	5 57·0	15 5 36·92	− 0·11	....	− 17·11	− 1·69
	5091	....	....	26 11	8·8	28·0	46·6	4·5	21 24·4	15 20 46·46	− 0·05	....	− 17·11	− 2·41
	5143	α Coronæ Borealis	....	62 50	6·2	15·6	25·0	34·0	29 43·7	15 29 24·90	− 0·12	− 17·12	− 17·11	− 1·67
	5196	α Serpentis	....	83 9	48·5	56·7	5·0	13·0	38 21·9	15 38 5·02	− 0·15	− 17·11	− 17·11	− 1·72
May 16	4532	ζ Virginis	....	89 55	52·8	1·0	9·2	17·0	28 26·0	13 28 9·20	− 0·27	− 9·20	− 9·23	− 1·61
	4729	α Bootis	....	70 8	32·1	40·8	49·5	58·0	10 7·1	14 9 49·50	− 0·23	− 9·21	− 9·23	− 1·57
	4808	ρ Bootis	....	59 3	0·3	10·0	19·6	29·0	26 39·0	14 26 19·58	− 0·21	− 9·20	− 9·23	− 1·63

(a) Definition bad all night. (b) An apparent inversion or annihilation of the clock's rate during the observation.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1868.
1868.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
May 16	4876	ι Bootis	....	62 22	6·0	15·2	24·5	33·4	39 43·3	14 39 24·48	− 0·21	− 9·26	− 9·23	− 1·67
	4969	ψ Bootis	....	62 32	40·0	49·3	58·7	7·4	59 17·4	14 58 58·56	− 0·22	− 9·22	− 9·23	− 1·71
May 20	4876	ι Bootis	....	62 22	2·2	11·5	21·0	29·9	39 39·7	14 39 20·86	− 0·23	− 5·61	− 5·55	− 1·68
	4969	ψ Bootis	....	62 32	36·3	45·7	55·0	4·0	59 13·8	14 58 54·96	− 0·24	− 5·59	− 5·54	− 1·72
	5034	β Libræ	....	98 54	45·5	53·9	2·3	10·4	10 19·0	15 10 2·22	− 0·31	− 5·57	− 5·53	− 1·99
	5143	(a) α Coronæ Borealis	....	62 50	55·0	4·4	13·7	22·3	29 32·0	15 29 13·48	− 0·24	− 5·46	− 5·52	− 1·79
	5196	α Serpentis	....	83 9	37·0	45·5	53·8	1·6	38 10·5	15 37 53·68	− 0·28	− 5·50	− 5·52	− 1·86
	5414	δ Ophiuchi	....	93 21	17·0	25·3	33·6	41·5	7 50·0	16 7 33·48	− 0·29	− 5·47	− 5·50	− 1·98
May 23	4648	η Bootis	....	70 56	11·9	20·7	29·4	37·7	48 47·0	13 48 29·34	− 0·27	− 3·56	− 3·52	− 1·52
	4876	ι Bootis	....	62 22	0·1	9·4	18·9	27·9	39 37·5	14 39 18·76	− 0·25	− 3·50	− 3·51	− 1·67
	4969	ψ Bootis	....	62 32	34·2	43·8	53·0	2·0	59 11·6	14 58 52·92	− 0·25	− 3·54	− 3·50	− 1·72
	5143	α Coronæ Borealis	....	62 50	53·1	2·3	11·6	20·5	29 30·0	15 29 11·50	− 0·25	− 3·46	− 3·49	− 1·80
	5196	α Serpentis	....	83 9	35·0	43·5	51·6	59·8	38 8·4	15 37 51·66	− 0·29	− 3·45	− 3·49	− 1·88
May 25	4532	ζ Virginis	....	89 55	45·9	54·0	2·1	10·0	28 18·9	13 28 2·18	− 0·32	− 2·16	− 2·16	− 1·58
	4648	η Bootis	....	70 56	10·5	19·2	28·0	36·4	48 45·5	13 48 27·92	− 0·29	− 2·14	− 2·15	− 1·50
	4729	α Bootis	....	70 8	25·0	33·7	42·6	51·0	10 0·0	14 9 42·46	− 0·28	− 2·14	− 2·14	− 1·55
	4876	ι Bootis	....	62 22	59·0	8·1	17·5	26·4	39 36·2	14 39 17·44	− 0·26	− 2·17	− 2·14	− 1·67
	5143	α Coronæ Borealis	....	62 50	51·8	1·0	10·1	19·0	29 29·0	15 29 10·18	− 0·27	− 2·12	− 2·13	− 1·80
	5196	α Serpentis	....	83 9	33·9	42·0	50·4	58·3	38 7·0	15 37 50·32	− 0·30	− 2·09	− 2·12	− 1·89
May 26	360	(b) α Ursæ Minoris S. P.	....	1 24	......	......	30·5	11·0	21 48·0	13 10 32·04	− 3·31	....	− 1·31	+ 9·42
	4480	α Virginis	....	100 28	1·0	9·5	17·9	26·0	18 34·8	13 18 17·84	− 0·34	− 1·37	− 1·31	− 1·67
	4532	ζ Virginis	....	89 55	45·0	53·0	1·4	9·1	28 18·0	13 28 1·30	− 0·33	− 1·27	− 1·31	− 1·56
	4648	η Bootis	....	70 56	9·5	18·4	27·0	35·4	48 44·5	13 48 26·96	− 0·29	− 1·18	− 1·31	− 1·50
	4729	α Bootis	....	70 8	24·1	32·9	41·8	50·1	9 59·2	14 9 41·62	− 0·29	− 1·29	− 1·31	− 1·55
	4676	ι Bootis	....	62 22	58·0	7·3	16·8	25·9	39 35·5	14 39 16·70	− 0·27	− 1·42	− 1·31	− 1·67
May 27	4648	(c) η Bootis	....	70 56	9·0	17·9	26·6	35·0	48 44·1	13 48 26·52	− 0·29	− 0·74	− 0·78	− 1·49
	4672	τ Virginis	....	87 49	42·0	50·2	58·8	6·4	55 16·2	13 54 58·52	− 0·32	− 0·74	− 0·78	− 1·66
	4729	α Bootis	....	70 8	23·6	32·2	41·0	49·6	9 58·9	14 9 41·06	− 0·29	− 0·73	− 0·78	− 1·55
	4808	ρ Bootis	....	59 3	51·8	1·4	11·0	20·5	26 30·4	14 26 11·02	− 0·27	− 0·66	− 0·78	− 1·61
	5143	α Coronæ Borealis	....	62 50	50·2	59·8	9·0	18·0	29 27·8	15 29 8·96	− 0·27	− 0·89	− 0·78	− 1·81
	5414	δ Ophiuchi	....	93 21	12·4	20·6	29·0	37·0	7 45·8	16 7 28·96	− 0·33	− 0·85	− 0·78	− 2·02
	5604	ζ Herculis	....	58 9	2·1	12·0	21·9	31·0	36 41·4	16 36 21·68	− 0·27	− 0·82	− 0·78	− 1·93
May 29	2485	(d) α² Geminorum	....	57 49	50·6	0·4	10·2	19·9	26 29·8	7 26 10·18	− 0·27	+ 0·08	+ 0·21	+ 0·48
	4729	α Bootis	....	70 8	22·4	31·1	40·4	48·5	9 58·0	14 9 40·08	− 0·29	+ 0·24	+ 0·21	− 1·54
	5821	α Herculis	....	75 27	22·5	31·0	40·0	48·0	8 57·0	17 8 39·70	− 0·29	+ 0·32	+ 0·21	− 1·96
	5941	α Ophiuchi	....	77 20	33·7	42·0	50·6	58·7	29 7·5	17 28 50·50	− 0·30	+ 0·18	+ 0·21	− 1·94
June 2	4808	ρ Bootis	....	59 3	48·8	58·5	8·0	17·3	26 27·3	14 26 7·98	− 0·29	+ 2·37	+ 2·37	− 1·48
	4876	ι Bootis	....	62 22	54·2	3·6	13·0	22·0	39 31·5	14 39 12·86	− 0·28	+ 2·40	+ 2·37	− 1·[illegible]
	5143	α Coronæ Borealis	....	62 50	47·1	56·5	6·0	14·7	29 24·4	15 29 5·74	− 0·28	+ 2·35	+ 2·37	− 1·62
	5196	α Serpentis	....	83 9	29·4	37·5	45·9	54·0	38 2·9	15 37 45·94	− 0·32	+ 2·35	+ 2·37	− 1·93
June 6	4876	ι Bootis	....	62 22	53·0	2·2	11·4	20·4	39 30·3	14 39 11·46	− 0·28	+ 3·78	+ 3·75	− 1·63
	4969	ψ Bootis	....	62 32	27·0	36·3	45·7	54·8	59 4·4	14 58 45·64	− 0·29	+ 3·76	+ 3·76	− 1·70
	5034	β Libræ	....	98 54	36·4	44·7	53·0	1·1	10 10·0	15 9 53·04	− 0·34	+ 3·69	+ 3·76	− 2·04

(a) Cloudy.
(b) A remarkable apparent inversion of the clock's error during observation.
(c) Again an apparent inversion of the clock's rate during observation.
(d) Very faint.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	interpolated.	Correction to Mean R.A., Jan. 1, 1868.
1868.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
June 6	5143	α Coronæ Borealis	....	62 50	45·8	55·2	4·4	13·3	29 23·1	15 29 4·36	− 0·29	+ 3·73	+ 3·76	− 1·81
	5196	α Serpentis	....	[illegible] 9	28·0	36·2	44·5	52·4	38 1·3	15 37 44·48	− 0·32	+ 3·82	+ 3·77	− 1·94
June 9	4808	ρ Bootis	....	59 3	48·0	57·6	7·2	16·3	26 26·7	14 26 7·16	− 0·29	+ 3·14	+ 3·10	− 1·[illegible]
	4876	ι Bootis	....	[illegible]	53·5	2·7	12·1	21·2	39 31·0	14 39 12·10	− 0·28	+ 3·13	+ 3·10	− 1·61
	5143	α Coronæ Borealis	....	62 50	46·4	55·8	5·0	14·0	29 23·8	15 29 5·00	− 0·29	+ 3·09	+ 3·10	− 1·81
	5196	α Serpentis	....	83 9	28·8	37·0	45·2	53·0	38 2·0	15 37 45·20	− 0·32	+ 3·11	+ 3·10	− 1·95
	5414	δ Ophiuchi	....	93 21	8·7	16·9	25·1	33·0	7 42·0	16 7 25·14	− 0·33	+ 3·06	+ 3·10	− 2·11
	5821	α Herculis	....	75 27	20·0	28·5	37·0	45·2	8 54·3	17 8 37·00	− 0·31	+ 3·15	+ 3·10	− 2·07
	5941	α Ophiuchi	....	77 20	30·9	39·3	48·0	56·0	29 4·9	17 28 47·82	− 0·31	+ 3·01	+ 3·10	− 2·08
June 13	5414	δ Ophiuchi	....	[illegible] 21	9·5	17·6	26·0	34·0	7 42·7	16 7 25·96	− 0·33	+ 2·25	+ 2·25	− 2·12
	5604	ζ Herculis	....	58 9	59·3	9·0	18·8	28·0	36 38·5	16 36 18·72	− 0·29	+ 2·25	+ 2·24	− 2·02
	5708	κ Ophiuchi	....	80 25	8·9	17·1	25·4	33·4	51 42·2	16 51 25·40	− 0·31	+ 2·21	+ 2·24	− 2·08
	5821	α Herculis	....	75 27	21·0	29·4	38·0	46·1	8 55·0	17 8 37·90	− 0·31	+ 2·27	+ 2·23	− 2·09
	5941	α Ophiuchi	....	77 20	31·9	40·1	48·8	56·9	29 5·6	17 28 48·66	− 0·31	+ 2·20	+ 2·22	− 2·11
June 15	5034	β Libræ	....	98 54	38·1	46·5	55·0	3·0	10 11·8	15 9 54·88	− 0·33	+ 1·[illegible]	+ 1·85	− 2·03
	5143	α Coronæ Borealis	....	62 50	47·6	57·0	6·3	15·1	29 24·9	15 29 6·18	− 0·29	+ 1·89	+ 1·85	− 1·79
	5196	α Serpentis	....	83 9	29·9	38·1	46·4	54·4	38 3·0	15 37 46·36	− 0·31	+ 1·[illegible]	+ 1·85	− 1·94
	5414	δ Ophiuchi	....	93 21	9·8	18·0	26·3	34·1	7 43·0	16 7 26·21	− 0·32	+ 1·96	+ 1·85	− 2·12
	5821	(a) α Herculis	....	75 27	21·4	30·0	38·7	46·9	8 55·7	17 8 38·54	− 0·30	+ 1·64	+ 1·85	− 2·11
June 17	4969	ψ Bootis	....	62 32	29·1	38·5	47·8	56·9	59 6·6	14 58 47·78	− 0·28	+ 1·54	+ 1·52	− 1·63
	5143	α Coronæ Borealis	....	62 50	47·9	57·3	6·5	15·4	29 25·2	15 29 6·46	− 0·28	+ 1·59	+ 1·52	− 1·78
	5196	α Serpentis	....	83 9	30·1	38·4	46·9	54·9	38 3·5	15 37 46·76	− 0·30	+ 1·52	+ 1·51	− 1·94
	5414	δ Ophiuchi	....	93 21	10·1	18·5	26·8	34·9	7 43·4	16 7 26·74	− 0·31	+ 1·46	+ 1·50	− 2·13
	5821	α Herculis	....	75 27	21·9	30·0	38·8	46·9	8 56·0	17 8 38·72	− 0·30	+ 1·47	+ 1·48	− 2·12
	5941	α Ophiuchi	....	77 20	32·6	41·0	49·4	57·8	29 6·5	17 28 49·46	− 0·29	+ 1·41	+ 1·47	− 2·14
June 18	5143	α Coronæ Borealis	....	62 50	48·2	57·4	6·9	15·6	29 25·4	15 29 6·70	− 0·28	+ 1·34	+ 1·30	− 1·77
	5196	α Serpentis	....	83 9	30·3	38·8	47·0	55·0	38 3·9	15 37 47·00	− 0·29	+ 1·27	+ 1·30	− 1·91
	5414	δ Ophiuchi	....	93 21	10·1	18·6	27·0	35·0	7 43·7	16 7 26·88	− 0·31	+ 1·32	+ 1·29	− 2·13
	5821	α Herculis	....	75 27	21·8	30·4	39·0	47·2	8 56·0	17 8 38·88	− 0·29	+ 1·30	+ 1·28	− 2·12
	5941	α Ophiuchi	....	77 20	32·8	41·1	49·7	58·0	29 6·9	17 28 49·70	− 0·29	+ 1·18	+ 1·27	− 2·15
June 19	5143	α Coronæ Borealis	....	[illegible] 50	48·4	57·7	7·0	15·9	29 25·8	15 29 6·96	− 0·25	+ 1·05	+ 1·08	− 1·77
	5196	α Serpentis	....	83 9	30·5	39·0	47·2	55·1	38 3·9	15 37 47·14	− 0·25	+ 1·09	+ 1·08	− 1·94
	5414	δ Ophiuchi	....	[illegible] 21	10·4	18·8	27·0	35·0	7 43·8	16 7 27·00	− 0·25	+ 1·14	+ 1·08	− 2·13
	5821	α Herculis	....	75 27	22·0	30·5	39·1	47·1	8 56·3	17 8 39·00	− 0·25	+ 1·15	+ 1·07	− 2·13
	5941	α Ophiuchi	....	77 20	33·0	41·4	49·9	58·0	29 7·0	17 28 49·86	− 0·25	+ 0·99	+ 1·07	− 2·16
	6281	δ Ursæ Minoris	....	3 24	34·0	55·0	14·0	27·5	[illegible] 54·5	18 15 13·00	− 0·62	....	+ 1·07	− 17·99
June 25	5196	α Serpentis	....	[illegible] 9	32·5	40·9	49·2	57·3	38 6·0	15 37 49·18	− 0·31	− 0·91	− 0·92	− 1·92
	5414	δ Ophiuchi	....	[illegible] 21	12·5	20·9	29·1	37·0	7 45·8	16 7 29·06	− 0·32	− 0·86	− 0·91	− 2·1[illegible]
	5604	ζ Herculis	....	[illegible] 9	2·5	12·1	22·0	31·2	36 41·7	16 36 21·90	− 0·30	− 0·93	− 0·94	− 2·01
	5941	α Ophiuchi	....	77 20	35·3	43·5	52·0	0·1	29 9·0	17 28 51·98	− 0·31	− 1·04	− 0·97	− 2·19
June 27	5604	ζ Herculis	....	58 9	3·1	12·7	22·5	32·0	36 42·1	16 36 22·48	− 0·31	− 1·50	− 1·55	− 2·01
	5708	κ Ophiuchi	....	80 25	12·7	21·0	29·3	37·3	51 46·1	16 51 29·28	− 0·31	− 1·62	− 1·56	− 2·13
	5821	α Herculis	....	75 27	24·8	33·1	41·6	50·0	8 59·0	17 8 41·70	− 0·30	− 1·48	− 1·56	− 2·15
	5941	α Ophiuchi	....	77 20	35·8	44·0	52·7	0·6	29 9·7	17 28 52·56	− 0·23	− 1·69	− 1·57	− 2·20

(a) Faint. Cloudy.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1868.
1868.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
June 28	5414	(a) δ Ophiuchi	....	93 21	13·4	21·8	30·0	38·0	7 46·9	16 7 30·02	− 0·31	− 1·83	− 1·76	− 2·12
	5604	ζ Herculis	....	58 9	3·0	13·0	22·9	32·1	36 42·3	16 36 22·66	− 0·31	− 1·69	− 1·76	− 2·00
	5821	α Herculis	....	75 27	25·0	33·5	42·0	50·1	8 59·3	17 8 41·98	− 0·30	− 1·75	− 1·76	− 2·16
	5941	α Ophiuchi	....	77 20	35·8	44·4	52·6	1·0	29 9·8	17 28 52·72	− 0·30	− 1·77	− 1·76	− 2·21
June 29	5604	(b) ζ Herculis	....	58 9	3·6	13·2	23·0	32·2	36 42·4	16 36 22·88	− 0·31	− 1·91	− 1·91	− 2·00
	5821	α Herculis	....	75 27	25·1	33·7	42·2	50·4	8 59·5	17 8 42·18	− 0·30	− 1·95	− 1·92	− 2·16
	5941	α Ophiuchi	....	77 20	36·0	44·5	52·9	1·0	29 10·0	17 28 52·88	− 0·30	− 1·93	− 1·92	− 2·21
	6281	δ Ursæ Minoris	....	3 24	37·0	56·0	16·5	29·0	19 57·0	18 15 15·10	− 0·48	....	− 1·93	− 17·33
	6355	α Lyræ	....	51 20	11·8	22·4	33·0	43·0	32 54·0	18 32 32·94	− 0·30	− 1·92	− 1·93	− 2·46
	6429	β Lyræ	....	56 47	57·5	7·1	17·1	26·4	45 37·0	18 45 17·02	− 0·30	− 1·91	− 1·94	− 2·40
July 2	4729	α Bootis	....	70 8	25·0	33·7	42·3	51·0	10 0·2	14 9 42·44	− 0·29	− 2·40	− 2·36	− 1·26
	5143	α Coronæ Borealis	....	62 50	51·9	1·0	10·3	19·3	29 29·1	15 29 10·32	− 0·29	− 2·36	− 2·36	− 1·68
	5196	α Serpentis	....	83 9	34·0	42·2	50·4	58·7	38 7·3	15 37 50·52	− 0·29	− 2·30	− 2·36	− 1·89
	5821	α Herculis	....	75 27	25·5	34·0	42·8	50·8	8 59·8	17 8 42·58	− 0·30	− 2·35	− 2·36	− 2·16
	5941	α Ophiuchi	....	77 20	36·3	45·0	53·5	1·4	29 10·4	17 28 53·32	− 0·29	− 2·38	− 2·36	− 2·21
July 9	4876	ι Bootis	....	62 22	0·4	10·0	19·4	28·3	39 38·1	14 39 19·24	− 0·30	− 4·29	− 4·28	− 1·31
	4969	ψ Bootis	....	62 32	34·9	44·1	53·5	2·4	59 12·2	14 58 53·42	− 0·30	− 4·29	− 4·29	− 1·42
	5034	β Libræ	....	98 54	44·0	52·4	1·0	9·0	10 17·7	15 10 0·82	− 0·28	− 4·29	− 4·30	− 1·90
	5143	α Coronæ Borealis	....	62 50	53·8	3·0	12·2	21·0	29 31·0	15 29 12·20	− 0·30	− 4·30	− 4·31	− 1·61
	5196	α Serpentis	....	83 9	36·0	44·2	52·5	0·4	38 9·2	15 37 52·16	− 0·29	− 4·29	− 4·32	− 1·84
July 12	5414	δ Ophiuchi	....	93 21	16·7	24·9	33·2	41·1	7 50·0	16 7 33·18	− 0·28	− 5·06	− 5·03	− 2·06
	5604	ζ Herculis	....	58 9	6·4	16·3	26·0	35·2	36 45·5	16 36 25·88	− 0·31	− 5·01	− 5·05	− 1·90
	5708	κ Ophiuchi	....	80 25	15·6	24·4	32·9	40·8	51 49·6	16 51 32·70	− 0·29	− 5·10	− 5·05	− 2·09
	5941	α Ophiuchi	....	77 20	39·1	47·5	56·0	4·0	29 13·1	17 28 55·94	− 0·29	− 5·00	− 5·05	− 2·21
July 14	5143	α Coronæ Borealis	....	62 50	54·9	4·1	13·4	22·3	29 32·0	15 29 13·34	− 0·30	− 5·60	− 5·52	− 1·54
	5196	α Serpentis	....	83 9	37·0	45·4	53·7	1·9	38 10·4	15 37 53·08	− 0·28	− 5·56	− 5·52	− 1·80
	5414	δ Ophiuchi	....	93 21	17·0	25·3	33·7	41·5	7 50·4	16 7 33·58	− 0·28	− 5·49	− 5·53	− 2·05
	5821	α Herculis	....	75 27	28·8	37·0	45·8	54·0	9 3·0	17 8 45·72	− 0·29	− 5·53	− 5·53	− 2·11
	5941	α Ophiuchi	....	77 20	39·5	48·0	56·6	4·8	29 13·6	17 28 56·50	− 0·29	− 5·56	− 5·54	− 2·21
July 17	5604	ζ Herculis	....	58 9	7·7	17·4	27·2	36·6	36 46·9	16 36 27·16	− 0·32	− 6·33	− 6·34	− 1·65
	5708	κ Ophiuchi	....	80 25	17·2	25·4	34·0	42·0	51 51·0	16 51 33·92	− 0·29	− 6·34	− 6·35	− 2·07
	5821	α Herculis	....	75 27	29·5	38·0	46·6	54·8	9 3·9	17 8 46·56	− 0·29	− 6·39	− 6·35	− 2·11
	5941	α Ophiuchi	....	77 20	40·4	49·0	57·3	5·3	29 14·4	17 28 57·28	− 0·29	− 6·35	− 6·36	− 2·20
July 27	5821	α Herculis	....	75 27	31·5	40·0	48·7	57·0	9 6·0	17 8 48·64	− 0·27	− 8·56	− 8·50	− 2·04
	5941	α Ophiuchi	....	77 20	42·4	51·0	59·4	7·2	29 16·5	17 28 59·30	− 0·27	− 8·45	− 8·51	− 2·14
	6021	μ Herculis	....	62 12	9·9	19·1	28·6	37·5	41 47·3	17 41 28·48	− 0·28	− 8·48	− 8·52	− 2·12
	6281	δ Ursæ Minoris	....	3 24	38·5	59·0	19·5	32·5	20 1·0	18 15 18·10	− 1·92	....	− 8·53	− 12·30
	6355	α Lyræ	....	51 20	18·2	29·0	39·5	49·0	33 0·9	18 32 39·44	− 0·31	− 8·54	− 8·54	− 2·43
	6429	β Lyræ	....	56 47	4·0	14·0	24·0	33·4	45 43·7	18 45 23·82	− 0·31	− 8·66	− 8·55	− 2·44
July 30	5708	κ Ophiuchi	....	80 25	20·0	28·3	37·0	44·9	51 53·8	16 51 36·80	− 0·24	− 9·38	− 9·30	− 1·96
	5821	α Herculis	....	75 27	32·2	40·7	49·2	57·5	9 6·5	17 8 49·22	− 0·24	− 9·20	− 9·30	− 2·01
	5941	α Ophiuchi	....	77 20	43·2	51·8	0·1	8·4	29 17·1	17 29 0·12	− 0·25	− 9·31	− 9·30	− 2·12
	6021	μ Herculis	....	62 12	10·6	20·0	29·4	38·3	41 48·0	17 41 29·26	− 0·27	− 9·30	− 9·30	− 2·09

(a) Bad definition. (b) Very bad definition.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1868.
1868.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
July 31	5821	(a) α Herculis	....	75 27	32·5	41·0	49·7	57·9	9 6·9	17 8 49·60	− 0·24	− 9·[illegible]	− 9·58	− 2·00
	5941	α Ophiuchi	....	77 20	43·7	52·[illegible]	0·3	8·6	29 17·5	17 29 0·42	− [illegible]·23	− 9·64	− 9·58	− 2·11
	6021	μ Herculis	....	62 12	10·8	20·1	29·8	38·6	41 48·3	17 41 29·52	− 0·27	− 9·57	− 9·59	− 2·08
	6281	δ Ursæ Minoris	....	3 24	39·5	0·0	20·0	33·0	20 1·0	18 15 18·70	− 2·50	....	− 9·59	− 11·24
	6355	α Lyræ	....	51 20	19·2	30·0	40·2	50·6	33 1·9	18 32 40·38	− 0·30	− 9·52	− 9·59	− 2·40
	6429	β Lyræ	....	56 47	5·0	15·0	24·9	34·2	45 44·6	18 45 24·74	− 0·30	− 9·62	− 9·60	− 2·41
Aug. 1	6355	α Lyræ	....	51 20	19·3	30·3	40·9	51·[illegible]	33 2·1	18 32 40·72	− 0·27	− 9·90	− 9·94	− 2·39
	6429	β Lyræ	....	56 47	5·4	15·1	25·0	34·5	45 45·0	18 45 25·00	− 0·25	− 9·94	− 9·94	− 2·40
	6528	ζ Aquilæ	....	76 19	16·2	24·7	33·1	41·4	59 50·3	18 59 33·14	− 0·18	− 9·99	− 9·95	− 2·43
	6772	γ Aquilæ	....	79 42	55·1	3·3	11·8	19·8	40 28·5	19 40 11·70	− 0·16	− 9·96	− 9·96	− 2·54
Aug. 4	6281	δ Ursæ Minoris	....	3 21	40·0	0·0	21·0	35·5	20 2·0	18 15 19·70	− 3·98	....	− 10·22	− 10·10
	6355	α Lyræ	....	51 20	20·0	30·4	41·0	51·2	33 2·5	18 32 41·02	− 0·24	− 10·27	− 10·23	− 2·35
	6429	β Lyræ	....	56 47	5·4	15·3	25·2	34·8	45 45·1	18 45 25·16	− 0·21	− 10·16	− 10·23	− 2·38
	6528	ζ Aquilæ	....	76 19	16·5	25·0	33·4	41·5	59 50·5	18 59 33·38	− 0·12	− 10·30	− 10·23	− 2·42
	6772	γ Aquilæ	....	79 42	55·1	3·5	12·0	20·0	40 28·9	19 40 11·90	− 0·10	− 10·22	− 10·24	− 2·54
	6833	β Aquilæ	....	83 54	46·0	54·4	2·7	10·5	49 19·4	19 49 2·60	− 0·09	− 10·22	− 10·24	− 2·57
Aug. [illegible]	6429	β Lyræ	....	56 47	6·0	15·6	25·6	35·0	45 45·2	18 45 25·48	− 0·22	− 10·49	− 10·55	− 2·36
	6528	ζ Aquilæ	....	76 19	16·8	25·1	33·8	42·0	59 50·8	18 59 33·70	− 0·13	− 10·62	− 10·56	− 2·41
	6646	δ Aquilæ	....	87 8	47·1	55·4	3·8	11·6	19 20·2	19 19 3·62	− 0·08	− 10·52	− 10·56	− 2·52
	6772	γ Aquilæ	....	79 42	55·5	4·0	12·2	20·3	40 29·4	19 40 12·28	− 0·11	− 10·59	− 10·57	− 2·54
	6802	α Aquilæ	....	81 28	17·0	25·3	33·9	42·0	44 50·9	19 44 33·82	− 0·11	− 10·60	− 10·58	− 2·57
	6833	β Aquilæ	....	83 54	46·4	54·8	3·[illegible]	11·0	49 19·7	19 49 2·98	− 0·10	− 10·59	− 10·58	− 2·57
Aug. 7	6595	ω Aquilæ	....	78 38	34·0	42·3	50·7	59·0	12 7·7	19 11 50·74	− 0·13	− 10·96	− 10·90	− 2·46
	6646	δ Aquilæ	....	87 8	47·5	56·[illegible]	4·1	12·0	19 20·9	19 19 4·10	− 0·09	− 10·90	− 10·90	− 2·52
	6772	γ Aquilæ	....	79 42	56·0	4·2	12·7	20·5	40 29·1	19 40 12·56	− 0·12	− 10·86	− 10·90	− 2·54
	6802	α Aquilæ	....	81 28	17·4	25·7	34·1	42·1	44 51·0	19 44 34·06	− 0·12	− 10·83	− 10·90	− 2·57
	6833	β Aquilæ	....	83 54	46·9	55·0	3·2	11·1	49 20·0	19 49 3·24	− 0·10	− 10·85	− 10·90	− 2·57
Sept. 10	7256	32 Vulpeculæ	....	62 26	2·2	11·6	21·[illegible]	29·8	49 39·6	20 49 20·84	− 0·23	− 21·94	− 21·87	− 2·59
	7368	ζ Cygni	....	60 18	25·0	34·4	44·0	53·2	8 3·1	21 7 43·94	− 0·25	− 21·84	− 21·87	− 2·72
	7561	ι Pegasi	....	80 43	50·2	58·6	7·0	15·0	38 23·9	21 38 6·94	− 0·20	− 21·85	− 21·88	− 2·71
	7627	16 Pegasi	....	64 41	10·0	19·4	28·4	37·2	47 46·7	21 47 28·34	− [illegible]	− 21·82	− 21·89	− 2·85
	8034	α Pegasi	....	75 29	19·2	27·8	36·4	44·5	58 53·5	22 58 36·28	− 0·22	− 21·96	− 21·89	− 2·91
Sept. 28	7368	(b) ζ Cygni	....	60 18	31·6	41·0	50·7	0·0	8 9·9	21 7 50·61	− 0·20	− 28·84	− 28·75	− 2·47
	7478	β Aquarii	....	96 8	51·2	59·5	8·0	16·0	25 24·6	21 25 7·86	− 0·17	− 28·71	− 28·75	− 2·53
	7688	α Aquarii	....	90 57	15·0	23·4	31·9	39·7	59 48·2	21 59 31·61	− 0·17	− 28·69	− 28·75	− 2·63
	7908	ζ Pegasi	....	79 50	7·5	16·0	24·5	32·6	35 41·6	22 35 24·41	− 0·18	− 28·77	− 28·75	− 2·79
Oct. 7	5821	α Herculis	....	75 27	54·0	2·1	10·9	19·0	9 28·0	17 9 10·80	− 0·17	− 32·02	− 32·02	− 0·84
	5941	α Ophiuchi	....	77 20	4·5	13·[illegible]	21·7	29·9	29 38·7	17 29 21·56	− 0·17	− 31·96	− 32·04	− 0·99
	7908	ζ Pegasi	....	79 50	11·0	19·4	27·9	35·5	35 44·4	22 35 27·64	− 0·16	− 32·05	− 32·10	− 2·73
	8034	α Pegasi	....	75 20	29·2	37·9	46·4	54·4	59 3·5	22 58 46·28	− 0·17	− 32·06	− 32·11	− 2·86
	8233	ι Piscium	....	85 4	28·7	36·6	44·9	53·0	34 1·4	23 33 44·92	− 0·17	− 32·20	− 32·13	− 2·89
	4	α Andromedæ	....	61 37	51·0	0·5	9·8	18·8	2 28·8	0 2 9·78	− 0·17	− 32·17	− 32·14	− 3·32
	26	γ Pegasi	....	75 32	44·7	53·3	1·9	10·0	7 19·0	0 7 1·78	− 0·17	− 32·11	− 32·14	− 3·06

(a) Definition bad. (b) Very faint.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed.					Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock		Correction to Mean R.A. Jan. 1, 1868.
					I.	II.	III.	IV.	V.			observed.	interpolated.	
1868.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Oct. 9	7773	θ Aquarii	....	98 25	10·9	19·0	27·7	35·6	10 44·4	22 10 27·52	− 0·16	− 32·82	− 32·75	− 2·58
	7868	η Aquarii	....	90 47	53·5	1·3	10·0	18·0	29 26·4	22 29 9·84	− 0·15	− 32·74	− 32·75	− 2·64
	7909	ζ Pegasi	....	79 50	11·4	20·0	28·3	36·4	35 45·2	22 35 28·26	− 0·16	− 32·69	− 32·76	− 2·71
	8034	α Pegasi	....	75 29	30·0	38·5	17·0	55·2	59 4·2	22 58 46·98	− 0·16	− 32·79	− 32·76	− 2·84
	8233	ι Piscium	....	85 4	29·0	37·3	45·4	53·4	34 2·1	23 33 45·44	− 0·16	− 32·74	− 32·76	− 2·88
	4	α Andromedæ	....	61 37	51·8	1·0	10·3	19·2	2 29·3	0 2 10·32	− 0·16	− 32·72	− 32·77	− 3·[illegible]
	26	γ Pegasi	....	75 32	45·5	54·0	2·5	10·7	7 19·8	0 7 2·50	− 0·16	− 32·84	− 32·77	− 3·06
Oct. 13	6772	γ Aquilæ	....	79 42	17·6	26·1	34·4	42·6	40 51·2	19 40 34·38	− 0·21	− 33·44	− 33·46	− 1·60
	6802	α Aquilæ	....	81 28	39·3	47·6	56·0	4·1	45 13·0	19 44 56·00	− 0·22	− 33·49	− 33·47	− 1·75
	6833	β Aquilæ	....	83 54	9·0	17·0	25·3	33·0	49 42·0	19 49 25·26	− 0·21	− 33·56	− 33·47	− 1·77
	8331	ω Piscium	....	83 51	52·0	0·4	6·8	16·8	53 25·4	23 53 8·68	− 0·21	− 33·53	− 33·49	− 2·93
	4	α Andromedæ	....	61 37	52·2	1·8	11·1	20·1	2 30·0	0 2 11·04	− 0·20	− 33·41	− 33·49	− 3·31
	26	γ Pegasi	....	75 32	46·2	54·6	3·1	11·5	7 20·4	0 7 3·16	− 0·21	− 33·46	− 33·49	− 3·05
	360	α Ursæ Minoris	....	1 24	11·0	54·5	34·0	0·5	24 1·5	1 12 32·30	− 0·24	....	− 33·50	− 81·33
Oct. 15	4	α Andromedæ	....	61 37	53·0	2·3	11·7	20·8	2 30·6	0 2 11·68	− 0·12	− 34·14	− 34·16	− 3·30
	26	γ Pegasi	....	75 32	46·8	55·3	3·9	12·0	7 21·0	0 7 3·80	− 0·11	− 34·20	− 34·16	− 3·05
	112	12 Ceti	....	94 40	38·9	47·0	55·2	3·1	24 12·0	0 23 55·24	− 0·10	− 34·15	− 34·17	− 2·85
	288	ε Piscium	....	82 48	26·4	34·8	43·0	51·0	56 59·8	0 56 43·00	− 0·11	− 34·16	− 34·18	− 3·06
	360	α Ursæ Minoris	....	1 24	14·0	57·0	38·5	......	24 3·5	1 12 35·61	− 2·82	....	− 34·18	− 81·36
	420	θ Ceti	....	98 51	46·0	54·3	2·9	10·8	18 19·6	1 18 2·72	− 0·10	− 34·22	− 34·19	− 2·99
	518	ν Piscium	....	85 10	54·7	3·0	11·1	19·2	35 27·8	1 35 11·16	− 0·10	− 34·24	− 34·20	− 3·05
	577	β Arietis	....	69 49	41·4	50·1	59·0	7·2	48 16·6	1 47 58·86	− 0·12	− 34·31	− 34·21	− 3·35
Oct. 16	8034	α Pegasi	....	75 29	31·8	40·1	48·9	57·0	59 6·0	22 58 48·76	− 0·13	− 34·65	− 34·60	− 2·79
	8233	ι Piscium	....	85 4	30·7	39·0	47·3	55·2	34 4·0	23 33 47·24	− 0·12	− 34·61	− 34·60	− 2·85
	8331	ω Piscium	....	83 51	53·1	1·4	9·7	17·9	53 26·5	23 53 9·72	− 0·13	− 34·66	− 34·60	− 2·92
	4	α Andromedæ	....	61 37	53·4	2·9	12·1	21·1	2 31·0	0 2 12·10	− 0·13	− 34·55	− 34·60	− 3·39
	26	γ Pegasi	....	75 32	47·1	55·8	4·2	12·4	7 21·3	0 7 4·16	− 0·12	− 34·55	− 34·60	− 3·05
	360	α Ursæ Minoris	....	1 24	14·5	57·3	38·0	6·0	24 1·0	1 12 35·36	− 2·37	....	− 34·60	− 81·35
Oct. 23	26	γ Pegasi	....	75 32	49·8	58·1	6·9	15·0	7 24·0	0 7 6·76	− 0·08	− 37·21	− 37·23	− 3·03
	112	12 Ceti	....	94 40	41·8	50·0	58·3	6·0	24 15·0	0 23 58·22	− 0·06	− 37·18	− 37·23	− 2·87
	360	α Ursæ Minoris	....	1 24	17·0	0·0	41·5	......	24 4·5	1 12 38·16	− 2·80	....	− 37·23	− 80·96
	420	θ Ceti	....	98 51	49·0	57·4	5·7	13·9	18 22·8	1 18 6·76	− 0·06	− 37·28	− 37·23	− 2·92
	518	ν Piscium	....	85 10	57·7	6·0	14·3	22·2	35 31·0	1 35 14·24	− 0·07	− 37·30	− 37·23	− 3·10
	577	β Arietis	....	69 49	44·2	53·0	2·0	10·4	48 19·5	1 48 1·62	− 0·08	− 37·25	− 37·23	− 3·41
	648	α Arietis	....	67 9	7·0	16·0	25·0	33·8	0 43·1	2 0 24·98	− 0·09	− 37·18	− 37·23	− 3·61
Oct. 24	7908	ζ Pegasi	....	79 50	16·0	24·6	33·1	41·0	35 49·8	22 35 32·90	− 0·08	− 37·56	− 37·58	− 2·56
	8233	ι Piscium	....	85 4	33·6	42·0	50·2	58·1	34 7·0	23 33 50·18	− 0·07	− 37·65	− 37·58	− 2·80
	8331	ω Piscium	....	83 51	36·0	4·2	12·8	20·6	53 29·4	23 53 12·60	− 0·07	− 37·64	− 37·58	− 2·86
	4	α Andromedæ	....	61 37	56·1	5·6	15·0	24·1	2 34·0	0 2 14·96	− 0·09	− 37·49	− 37·58	− 3·26
	26	γ Pegasi	....	75 32	50·2	58·6	7·1	15·4	7 24·3	0 7 7·12	− 0·08	− 37·58	− 37·58	− 3·02
Oct. 26	8034	α Pegasi	....	75 29	35·1	43·5	52·2	0·4	59 9·4	22 58 52·12	− 0·08	− 38·16	− 38·20	− 2·69
	8105	γ Piscium	....	87 25	43·9	52·2	0·4	8·1	11 17·0	23 11 0·32	− 0·07	− 38·23	− 38·20	− 2·70
	8233	ι Piscium	....	85 4	34·2	42·5	51·0	59·0	34 7·6	23 33 50·86	− 0·07	− 38·34	− 38·21	− 2·79
	4	α Andromedæ	....	61 37	57·0	6·4	15·8	24·9	2 34·5	0 2 15·72	− 0·09	− 38·25	− 38·22	− 3·26
	26	γ Pegasi	....	75 32	50·9	59·2	7·8	16·0	7 25·0	0 7 7·78	− 0·08	− 38·25	− 38·22	− 3·01

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1868.
1868.				° ′	s	s	s	s	m s	h m s	s	s	s	s
Oct. 27	8331	ω Piscium	....	83 51	56·9	5·0	13·3	21·3	53 30·0	23 53 13·30	– 0·07	– 38·35	– 38·40	– 2·67
	4	α Andromedæ	....	61 37	57·0	6·4	16·0	25·0	2 34·8	0 2 15·81	– 0·08	– 38·39	– 38·41	– 3·25
	112	12 Ceti	....	94 40	43·0	51·2	59·6	7·5	24 16·0	0 23 59·46	– 0·06	– 38·43	– 38·42	– 2·86
	288	ι Piscium	....	82 48	30·7	39·0	47·3	55·0	57 4·0	0 56 47·20	– 0·07	– 38·38	– 38·42	– 3·06
	360	α Ursæ Minoris	....	1 24	19·0	1·5	40·5	......	24 6·0	1 12 39·19	– 2·45	....	– 38·43	– 80·37
	420	θ Ceti	....	98 51	50·2	58·6	7·0	15·0	18 23·7	1 18 6·90	– 0·06	– 38·41	– 38·43	– 2·93
	577	β Arietis	....	69 49	45·5	54·4	3·1	11·6	48 21·0	1 48 3·12	– 0·07	– 38·53	– 38·44	– 3·44
	648	α Arietis	....	67 9	8·4	17·3	26·2	35·0	0 44·3	2 0 26·24	– 0·08	– 38·42	– 38·45	– 3·54
Oct. 29	112	12 Ceti	....	94 40	43·2	51·4	0·0	7·9	24 16·7	0 23 59·84	– 0·04	– 38·84	– 38·91	– 2·85
	288	ι Piscium	....	82 48	31·0	39·2	47·8	55·6	57 4·6	0 56 47·64	– 0·05	– 38·84	– 38·92	– 3·08
	360	α Ursæ Minoris	....	1 24	19·0	0·0	43·0	7·0	24 6·0	1 12 39·00	– 2·91	....	– 38·93	– 80·01
	518	ν Piscium	....	85 10	59·4	7·8	16·0	24·0	35 32·7	1 35 15·94	– 0·05	– 39·00	– 38·94	– 3·12
	577	β Arietis	....	69 49	46·1	54·9	3·8	12·6	48 21·1	1 48 3·58	– 0·05	– 39·00	– 38·96	– 3·45
	648	α Arietis	....	67 9	9·0	18·0	26·8	35·3	0 45·0	2 0 26·62	– 0·06	– 39·01	– 38·97	– 3·55
Nov. 4	288	ι Piscium	....	82 48	32·0	40·5	48·9	56·8	57 5·4	0 56 48·72	– 0·05	– 39·94	– 40·04	– 3·07
	360	α Ursæ Minoris	....	1 24	18·0	58·0	38·0	......	....	1 12 37·41	– 1·73	....	– 40·05	– 78·58
	577	β Arietis	....	69 49	47·1	56·0	4·7	13·1	48 22·4	1 48 4·66	– 0·06	– 40·06	– 40·06	– 3·46
	648	α Arietis	....	67 9	10·1	19·0	28·0	36·5	0 46·0	2 0 27·92	– 0·06	– 40·08	– 40·07	– 3·58
	704	67 Ceti	....	97 1	50·1	58·9	7·1	15·1	11 21·0	2 11 7·10	– 0·05	– 40·02	– 40·07	– 3·04
	837	γ Ceti	....	87 18	54·0	2·9	11·2	19·0	37 27·9	2 37 11·00	– 0·05	– 40·02	– 40·08	– 3·18
	949	α Ceti	....	86 25	49·9	58·1	6·2	14·1	56 23·0	2 56 6·26	– 0·05	– 40·15	– 40·09	– 3·22
Nov. 6	288	ι Piscium	....	82 48	32·5	41·0	49·1	57·1	57 5·9	0 56 49·12	– 0·07	– 40·32	– 40·34	– 3·06
	360	α Ursæ Minoris	....	1 24	18·0	59·5	40·0	7·0	24 5·5	1 12 38·00	– 0·70	....	– 40·34	– 78·00
	518	ν Piscium	....	85 10	0·9	9·0	17·4	25·4	35 34·0	1 35 17·34	– 0·07	– 40·38	– 40·35	– 3·14
	577	β Arietis	....	69 49	47·5	56·3	5·0	13·5	48 22·9	1 48 5·04	– 0·07	– 40·42	– 40·35	– 3·47
	648	α Arietis	....	67 9	10·4	19·1	28·2	37·0	0 46·3	2 0 28·20	– 0·06	– 40·35	– 40·36	– 3·59
	837	γ Ceti	....	87 18	55·0	3·2	11·3	19·3	37 28·1	2 37 11·38	– 0·07	– 40·36	– 40·36	– 3·20
	949	α Ceti	....	86 25	50·0	58·3	6·3	14·4	56 23·1	2 56 6·42	– 0·07	– 40·27	– 40·36	– 3·24
Nov. 10	288	ι Piscium	....	82 48	33·0	41·4	49·8	57·9	57 6·4	0 56 49·70	– 0·11	– 40·88	– 40·95	– 3·04
	360	α Ursæ Minoris	....	1 24	19·0	59·0	39·0	......	24 6·0	1 12 38·27	+ 1·01	....	– 40·95	– 76·67
	420	θ Ceti	....	98 51	52·8	1·0	9·3	17·4	18 26·5	1 18 9·40	– 0·12	– 40·86	– 40·95	– 2·92
	518	ν Piscium	....	85 10	1·5	9·6	18·0	26·0	35 34·7	1 35 17·96	– 0·11	– 40·94	– 40·95	– 3·14
	577	β Arietis	....	69 49	48·2	57·0	5·8	14·0	48 23·5	1 48 5·70	– 0·09	– 41·06	– 40·95	– 3·47
	648	α Arietis	....	67 9	11·0	20·0	28·9	37·6	0 47·0	2 0 28·90	– 0·09	– 41·01	– 40·95	– 3·60
Dec. 1	518	ν Piscium	....	85 10	1·9	10·1	18·4	26·4	35 35·0	1 35 18·36	– 0·06	– 41·46	– 41·46	– 3·07
	577	β Arietis	....	69 49	48·5	57·3	6·0	14·6	48 24·0	1 48 6·08	– 0·04	– 41·53	– 41·46	– 3·43
	648	α Arietis	....	67 9	11·3	20·4	29·2	38·0	0 47·4	2 0 29·26	– 0·04	– 41·45	– 41·46	– 3·57
	704	67 Ceti	....	97 1	52·0	0·4	8·5	16·4	11 25·4	2 11 8·54	– 0·06	– 41·45	– 41·46	– 3·04
	837	γ Ceti	....	87 18	56·0	4·3	12·6	20·4	37 29·3	2 37 12·52	– 0·06	– 41·44	– 41·46	– 3·27
	949	α Ceti	....	86 25	51·0	59·8	7·6	15·6	56 24·4	2 56 7·68	– 0·06	– 41·43	– 41·47	– 3·35
	1166	η Tauri	....	66 17	6·0	15·0	24·0	32·8	40 42·1	3 40 23·98	– 0·04	– 41·49	– 41·47	– 3·95
	1376	ε Tauri	....	71 6	22·8	31·4	40·1	48·4	21 57·8	4 21 40·10	– 0·04	– 41·55	– 41·48	– 3·86
	1420	α Tauri	....	73 45	49·0	57·6	6·1	14·5	29 23·5	4 29 6·14	– 0·04	– 41·41	– 41·48	– 3·80
Dec. 3	837	γ Ceti	....	87 18	56·7	4·1	13·0	21·0	37 29·5	2 37 12·86	– 0·04	– 41·81	– 41·88	– 3·26
	949	α Ceti	....	86 25	51·5	0·0	8·0	16·0	56 24·9	2 56 8·08	– 0·04	– 41·85	– 41·88	– 3·35

Date.	No. in British Association Catalogue.	OBJECT OBSERVED.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1868.
1868.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Dec. 3	986	δ Arietis	....	70 46	33·4	42·0	51·0	59·2	5 8·4	3 4 50·80	− 0·03	− 41·96	− 41·89	− 3·74
	1166	η Tauri	....	66 17	6·4	15·3	24·4	33·0	40 42·7	3 40 24·36	− 0·02	− 41·88	− 41·89	− 3·96
	1376	ε Tauri	....	71 6	23·1	31·9	40·6	49·0	21 58·2	4 21 40·56	− 0·03	− 42·00	− 41·90	− 3·88
	1420	α Tauri	....	73 45	49·5	58·0	6·6	15·1	29 24·0	4 29 6·64	− 0·04	− 41·88	− 41·91	− 3·82
Dec. 15	1166	η Tauri	....	66 17	8·0	17·2	26·2	35·0	40 44·3	3 40 26·14	− 0·00	− 43·64	− 43·70	− 4·00
	1376	ε Tauri	....	71 6	25·0	33·9	42·4	50·8	22 0·0	4 21 42·42	− 0·01	− 43·80	− 43·70	− 3·96
	1420	α Tauri	....	73 45	51·2	0·0	8·5	16·9	29 26·0	4 29 8·52	− 0·01	− 43·70	− 43·71	− 3·91
	1520	ι Aurigæ	....	57 2	52·5	2·4	12·2	22·0	49 32·0	4 49 12·22	− 0·01	− 43·68	− 43·71	− 4·51
	1681	β Tauri	....	61 30	26·2	35·6	45·0	54·1	19 4·0	5 18 44·98	− 0·00	− 43·66	− 43·71	− 4·35
	1730	δ Orionis	....	90 23	46·8	55·0	3·1	11·0	26 20·0	5 26 3·18	− 0·03	− 43·76	− 43·72	− 3·59
	1765	ι Orionis	....	91 17	1·8	10·0	18·2	26·2	30 35·0	5 30 18·24	− 0·03	− 43·72	− 43·72	− 3·57
Dec. 16	1420	α Tauri	....	73 45	51·6	0·2	8·9	17·0	29 26·1	4 29 8·76	− 0·01	− 43·93	− 43·89	− 3·92
	1520	ι Aurigæ	....	57 2	52·7	2·9	12·4	22·0	49 32·3	4 49 12·46	− 0·00	− 43·92	− 43·90	− 4·52
	1681	β Tauri	....	61 30	26·4	35·9	45·2	54·1	19 4·0	5 18 45·12	− 0·00	− 43·79	− 43·90	− 4·36
	1730	δ Orionis	....	90 23	46·9	55·2	3·3	11·4	26 20·0	5 26 3·36	− 0·02	− 43·94	− 43·91	− 3·59
	1765	ι Orionis	....	91 17	2·0	10·2	18·5	26·6	30 35·0	5 30 18·46	− 0·02	− 43·94	− 43·91	− 3·58
Dec. 19	1376	ε Tauri	....	71 6	25·4	34·1	43·0	51·4	22 0·4	4 21 42·86	− 0·00	− 44·23	− 44·16	− 3·98
	1420	α Tauri	....	73 45	52·0	0·3	9·1	17·2	29 26·4	4 29 9·00	− 0·00	− 44·17	− 44·16	− 3·93
	1520	ι Aurigæ	....	57 2	53·0	3·0	12·8	22·2	49 32·5	4 49 12·70	+ 0·02	− 44·16	− 44·16	− 4·51
	1681	β Tauri	....	61 30	26·7	36·1	45·5	54·5	19 4·4	5 18 45·41	+ 0·01	− 44·10	− 44·16	− 4·35
	1730	δ Orionis	....	90 23	47·1	55·4	3·5	11·6	26 20·3	5 26 3·58	− 0·01	− 44·15	− 44·16	− 3·61
Dec. 21	1166	η Tauri	....	66 17	9·0	18·0	27·0	36·0	40 45·4	3 40 27·08	+ 0·03	− 44·62	− 44·61	− 3·99
	1376	ε Tauri	....	71 6	26·0	34·5	43·3	51·7	22 0·6	4 21 43·22	+ 0·02	− 44·61	− 44·62	− 3·96
	1420	α Tauri	....	73 45	52·1	0·9	9·3	17·9	29 27·0	4 29 9·44	+ 0·02	− 44·63	− 44·62	− 3·93
	1520	ι Aurigæ	....	57 2	53·4	3·4	13·1	22·8	49 33·1	4 49 13·16	+ 0·02	− 44·62	− 44·63	− 4·54
	1681	β Tauri	....	61 30	27·2	36·6	46·0	55·1	19 5·0	5 18 45·98	+ 0·03	− 44·64	− 44·64	− 4·40
Dec. 22	1376	(a) ε Tauri	....	71 6	26·3	35·0	43·7	52·0	22 1·3	4 21 43·66	+ 0·02	− 45·05	− 44·98	− 3·95
	1420	α Tauri	....	73 45	52·4	1·3	10·0	18·0	29 27·2	4 29 9·78	+ 0·02	− 44·97	− 44·98	− 3·93
	1681	β Tauri	....	61 30	27·8	37·0	46·4	55·3	19 5·2	5 18 46·34	+ 0·03	− 44·99	− 44·98	− 4·41
	1730	δ Orionis	....	90 23	46·0	56·1	4·4	12·4	26 21·0	5 26 4·38	+ 0·02	− 44·96	− 44·98	− 3·61
	1765	ι Orionis	....	91 17	3·0	11·3	19·5	27·4	30 36·2	5 30 19·48	+ 0·02	− 44·96	− 44·98	− 3·61
	1883	α Orionis	....	82 37	33·7	42·0	50·4	58·4	49 7·0	5 48 50·30	+ 0·02	− 44·95	− 44·98	− 3·61
Dec. 24	1376	ε Tauri	....	71 6	27·3	36·4	45·0	53·3	22 2·5	4 21 44·91	+ 0·04	− 46·34	− 46·39	− 3·99
	1420	α Tauri	....	73 45	54·0	2·7	11·3	19·6	29 28·5	4 29 11·22	+ 0·04	− 46·42	− 46·40	− 3·94
	1520	ι Aurigæ	....	57 2	55·2	5·1	15·0	24·4	49 34·7	4 49 14·88	+ 0·04	− 46·34	− 46·41	− 4·56
	1681	β Tauri	....	61 30	29·1	38·5	47·9	56·9	19 6·6	5 18 47·80	+ 0·05	− 46·46	− 46·43	− 4·42
	1765	ι Orionis	....	91 17	4·4	12·6	21·1	29·0	30 37·9	5 30 21·00	+ 0·04	− 46·48	− 46·44	− 3·61
Dec. 26	1166	η Tauri	....	66 17	12·4	21·4	30·5	39·2	40 48·9	3 40 30·48	+ 0·06	− 48·06	− 48·05	− 3·[illegible]
	1376	ε Tauri	....	71 6	29·2	38·0	46·8	55·0	22 4·2	4 21 46·64	+ 0·06	− 48·06	− 48·05	− 3·99
	1420	α Tauri	....	73 45	55·8	4·2	13·0	21·1	29 30·3	4 29 12·88	+ 0·06	− 48·10	− 48·05	− 3·94
	1520	ι Aurigæ	....	57 2	56·8	6·7	16·6	26·0	49 36·4	4 49 16·50	+ 0·06	− 47·97	− 48·05	− 4·57
Dec. 28	1623	β Orionis	....	98 21	48·6	57·0	5·2	13·1	9 22·0	5 9 5·18	+ 0·07	− 50·10	− 50·07	− 3·49
	1681	β Tauri	....	61 30	32·7	42·1	51·5	0·4	19 10·3	5 18 51·40	+ 0·07	− 50·05	− 50·07	− 4·45

(a) An apparent inversion of the clock's rate during observation.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1, 1868.
1868.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Dec. 28	1765	ι Orionis	....	91 17	8·0	16·3	24·5	32·5	30 41·2	5 30 24·50	+ 0·07	− 49·99	− 50·08	− 3·66
	1883	α Orionis	....	82 37	39·0	47·0	55·4	3·2	49 12·1	5 48 55·34	+ 0·07	− 49·99	− 50·08	− 3·86
	1958	ν Orionis	....	75 13	39·1	47·9	56·2	4·5	1 13·4	6 0 56·22	+ 0·07	− 50·14	− 50·09	− 4·03
	2047	μ Geminorum	....	67 25	35·2	44·0	52·9	1·4	16 11·0	6 15 52·90	+ 0·07	− 50·22	− 50·10	− 4·26
Dec. 29	1376	γ Tauri	....	71 6	32·0	40·8	49·6	58·0	22 7·0	4 21 49·48	+ 0·08	− 50·93	− 50·88	− 3·98
	1420	α Tauri	....	73 45	58·5	7·0	15·8	24·0	29 33·0	4 29 15·66	+ 0·08	− 50·91	− 50·88	− 3·93
	1520	ι Aurigæ	....	57 2	0·0	9·7	19·5	29·0	49 39·3	4 49 19·50	+ 0·08	− 50·99	− 50·89	− 4·57
	1681	β Tauri	....	61 30	33·3	43·0	52·2	1·1	19 11·0	5 18 52·12	+ 0·08	− 50·78	− 50·89	− 4·45
	1730	δ Orionis	....	90 23	53·9	2·0	10·3	18·3	26 27·0	5 26 10·30	+ 0·07	− 50·89	− 50·89	− 3·67
	1765	ι Orionis	....	91 17	9·0	17·0	25·3	33·3	30 42·1	5 30 25·34	+ 0·08	− 50·84	− 50·90	− 3·66
	1883	α Orionis	....	82 37	39·7	48·1	56·3	4·2	49 13·0	5 48 56·26	+ 0·08	− 50·91	− 50·90	− 3·87
	6281	δ Ursæ Minoris S. P.	....	3 24	27·5	54·0	6·5	26·5	19 47·0	6 15 8·30	+ 0·63	....	− 50·91	+ 37·41
Dec. 30	1376	γ Tauri	....	71 6	33·0	41·7	50·3	58·9	22 8·0	4 21 50·38	+ 0·08	− 51·63	− 51·70	− 3·98
	1420	α Tauri	....	73 45	59·2	7·9	16·5	24·9	29 34·0	4 29 16·50	+ 0·08	− 51·75	− 51·70	− 3·93
	1520	ι Aurigæ	....	57 2	0·5	10·4	20·1	29·8	49 40·0	4 49 20·16	+ 0·08	− 51·65	− 51·71	− 4·57
	1681	β Tauri	....	61 30	34·1	43·6	53·0	2·0	19 12·0	5 18 52·94	+ 0·08	− 51·60	− 51·71	− 4·45
	1730	δ Orionis	....	90 23	54·7	3·0	11·1	19·1	26 27·7	5 26 11·12	+ 0·07	− 51·71	− 51·71	− 3·67
	1883	α Orionis	....	82 37	40·4	48·8	57·0	5·2	49 14·0	5 48 57·08	+ 0·08	− 51·73	− 51·72	− 3·87
Dec. 31	1420	α Tauri	....	73 45	59·9	8·2	17·0	25·2	29 34·4	4 29 16·94	+ 0·08	− 52·19	− 52·20	− 3·93
	1520	ι Aurigæ	....	57 2	1·0	11·0	20·9	30·2	49 40·6	4 49 20·74	+ 0·08	− 52·23	− 52·21	− 4·57
	1681	β Tauri	....	61 30	35·0	44·2	53·6	2·6	19 12·4	5 18 53·56	+ 0·08	− 52·22	− 52·22	− 4·45
	1730	δ Orionis	....	90 23	55·2	3·3	11·9	19·6	26 28·3	5 26 11·66	+ 0·07	− 52·25	− 52·23	− 3·67
	1765	ι Orionis	....	91 17	10·3	18·5	26·9	34·6	30 43·5	5 30 26·76	+ 0·08	− 52·25	− 52·23	− 3·67
	1883	α Orionis	....	82 37	41·0	49·3	57·6	5·7	49 14·4	5 48 57·60	+ 0·08	− 52·25	− 52·24	− 3·87
	6281	δ Ursæ Minoris S. P.	....	3 24	28·5	54·5	8·0	28·0	19 49·0	6 15 9·60	+ 0·63	....	− 52·25	+ 37·42

ROYAL OBSERVATORY, EDINBURGH.

Individual Observations of Mean Right Ascensions of Stars observed at the Royal Observatory, Edinburgh, in the Year 1868, reduced to January 1, 1868.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
B.A.C. 4, α Andromedæ.				
			° ′	h. m. s.
Feb. 4	0·09	(a) (1·0)	61 38	0 1 34·18
11	0·11			34·21
Oct. 7	0·77			34·15
9	0·77			34·07
13	0·78			34·04
15	0·79			34·10
16	0·79			34·07
24	0·81			34·03
26	0·82			34·15
27	0·82			34·10
B.A.C. 26, γ Pegasi.				
Feb. 4	0·09	(2·0)	75 33	0 6 26·64
Oct. 7	0·77			26·41
9	0·77			26·51
13	0·78			26·41
15	0·79			26·48
16	0·79			26·39
23	0·81			26·42
24	0·81			26·44
26	0·82			26·47
B.A.C. 112, 12 Ceti.				
Oct. 15	0·79	(6·0)	94 41	0 23 18·09
23	0·81			18·06
27	0·82			18·12
29	0·83			18·04
B.A.C. 268, ι Piscium.				
Oct. 15	0·79	(4·0)	92 49	0 36 5·65
27	0·82			5·63
29	0·83			5·59
Nov. 4	0·84			5·56
6	0·85			5·65
10	0·86			5·60
B.A.C. 420, d[1] Ceti.				
			° ′	h. m. s.
Oct. 15	0·79	(3·0)	98 52	1 17 25·53
23	0·81			25·55
27	0·82			25·48
Nov. 10	0·86			25·41
B.A.C. 518, ν Piscium.				
Oct. 15	0·79	(5·0)	85 11	1 34 33·81
23	0·81			33·64
29	0·83			33·53
Nov. 6	0·85			33·78
10	0·86			33·76
Dec. 1	0·92			33·77
B.A.C. 577, β Arietis.				
Oct. 15	0·79	(3·0)	69 50	1 47 21·18
23	0·81			21·10
27	0·82			21·17
29	0·83			21·12
Nov. 4	0·84			21·08
6	0·85			21·15
10	0·86			21·19
Dec. 1	0·92			21·15
B.A.C. 648, α Arietis.				
Mar. 6	0·18	(2·0)	67 10	1 59 44·31
Oct. 23	0·81			44·15
27	0·82			44·17
29	0·83			44·24
Nov. 4	0·84			44·21
6	0·85			44·19
10	0·86			44·26
Dec. 1	0·92			44·19
B.A.C. 704, 67 Ceti.				
			° ′	h. m. s.
Nov. 4	0·84	(6·0)	97 2	2 10 23·94
Dec. 1	0·92			23·96
B.A.C. 837, γ Ceti.				
Nov. 4	0·84	(3·0)	87 19	2 36 27·69
6	0·85			27·75
Dec. 1	0·92			27·73
3	0·92			27·68
B.A.C. 949, α Ceti.				
Nov. 4	0·84	(2·5)	86 26	2 55 22·90
6	0·85			22·75
Dec. 1	0·92			22·80
3	0·92			22·81
B.A.C. 986, δ Arietis.				
Dec. 3	0·92	(4·0)	70 46	3 4 5·14
B.A.C. 1166, η Tauri.				
Dec. 1	0·92	(3·0)	66 18	3 39 38·52
3	0·92			38·49
15	0·96			38·44
21	0·97			38·51
26	0·99			38·51
B.A.C. 1376, ε Tauri.				
Dec. 1	0·92	(3·5)	71 7	4 20 54·72
3	0·92			54·75
15	0·96			54·75
19	0·97			54·72
21	0·97			54·64

(a) Magnitudes in parenthesis are the tabular ones of the British Association Catalogue.

B.A.C. 1376, ε Tauri.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
			° '	h. m. s.
Dec. 22	0·97	(3·5)	71 7	4 20 54·72
24	0·98			54·60
26	0·99			54·66
29	0·99			54·70
30	1·00			54·78

B.A.C. 1420, α Tauri.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Jan. 14	0·04	(1·0)	73 46	4 28 20·81
Dec. 1	0·92			20·82
3	0·92			20·87
15	0·96			20·89
16	0·96			20·94
19	0·97			20·91
21	0·97			20·91
22	0·97			20·89
24	0·98			20·92
26	0·99			20·95
29	0·99			20·93
30	1·00			20·95
31	1·00			20·89

B.A.C. 1520, ι Aurigæ.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Jan. 9	0·02	(4·0)	57 3	4 48 24·12
14	0·04			24·09
Dec. 15	0·96			23·99
16	0·96			24·04
19	0·97			24·02
21	0·97			24·01
24	0·98			23·95
26	0·99			23·91
29	0·99			24·12
30	1·00			23·96
31	1·00			24·04

B.A.C. 1623, β Orionis.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Jan. 14	0·04	(1·0)	98 21	5 8 11·66
Dec. 28	0·99			11·69

B.A.C. 1626.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Jan. 9	0·02	(7·5)	49 41	5 9 27·65

B.A.C. 1656.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Jan. 9	0·02	(6·0)	81 42	5 14 32·34

B.A.C. 1681, β Tauri.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
			° '	h. m. s.
Jan. 9	0·02	(2·0)	61 30	5 17 56·94
14	0·04			57·10
Dec. 15	0·96			56·92
16	0·96			56·86
19	0·97			56·91
21	0·97			56·97
22	0·97			56·98
24	0·98			57·00
28	0·99			56·95
29	0·99			56·86
30	1·00			56·86
31	1·00			56·97

B.A.C. 1703.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Jan. 9	0·02	(7·0)	73 40	5 20 32·74

B.A.C. 1730, δ Orionis.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Jan. 9	0·02	(2·0)	90 24	5 25 15·68
14	0·04			15·76
Dec. 15	0·96			15·85
16	0·96			15·84
19	0·97			15·80
22	0·97			15·79
29	0·99			15·81
30	1·00			15·81
31	1·00			15·83

B.A.C. 1765, ε Orionis.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Jan. 14	0·04	(2·5)	91 17	5 29 30·84
Dec. 15	0·96			30·92
16	0·96			30·95
22	0·97			30·90
24	0·98			30·96
28	0·99			30·83
29	0·99			30·86
31	1·00			30·94

B.A.C. 1863, α Orionis.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Jan. 8	0·02	(1·0)	82 37	5 48 1·45
Dec. 22	0·97			1·53
28	0·99			1·47
29	0·99			1·57
30	1·00			1·57
31	1·00			1·57

B.A.C. 1958, ν Orionis.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
			° '	h. m. s.
Jan. 8	0·02	(4·5)	75 13	6 0 2·06
9	0·02			2·22
Dec. 28	0·99			2·17

B.A.C. 2047, μ Geminorum.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Dec. 28	0·99	(3·0)	67 25	6 14 58·61

B.A.C. 2163, γ Geminorum.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Jan. 9	0·02	(2·5)	73 29	6 30 5·16

B.A.C. 2410, δ Geminorum.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Jan. 8	0·02	(3·0)	67 47	7 12 14·39
9	0·02			14·31
13	0·03			14·33

B.A.C. 2485, α² Geminorum.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Jan. 9	0·02	(1·5)	57 50	7 26 10·45
13	0·03			10·39
Feb. 4	0·09			10·38
19	0·13			10·42
May 29	0·41			10·60

B.A.C. 2522, α Canis Minoris.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Jan. 9	0·02	(1·0)	84 26	7 32 23·45
13	0·03			23·46
Feb. 4	0·09			23·36
19	0·13			23·46

B.A.C. 2555, β Geminorum.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Jan. 8	0·02	(2·0)	61 39	7 37 14·07
9	0·02			14·11
13	0·03			14·17
Feb. 4	0·09			14·12
11	0·11			14·12
19	0·13			14·16

B.A.C. 2672, β Cancri.

Date. Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Jan. 8	0·02	(5·5)	61 50	7 55 24·55
Feb. 11	0·11			24·44

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
B.A.C. 2683.				
Feb. 19	0·13	7·0	70° 47′	7h 57m 7s·57
B.A.C. 2688.				
Feb. 11	0·11	(7·0)	62 6	7 57 31·45
B.A.C. 2737.				
Feb. 11	0·11		74 59	8 3 33·88
19	0·13	7·0		33·95
B.A.C. 2748.				
Feb. 19	0·13	7·0	75 37	8 4 59·07
B.A.C. 2761.				
Feb. 11	0·11	7·0	76 33	8 7 0·60
19	0·13	7·0		0·74
B.A.C. 2778, β Cancri.				
Feb. 11	0·11		80 25	8 9 21·28
19	0·13	4·0		21·46
B.A.C. 2862, ι Cancri.				
Feb. 10	0·11	(6·0)	69 7	8 25 4·33
17	0·13			4·34
26	0·15			4·36
B.A.C. 2867.				
Feb. 19	0·13	7·5	79 30	8 25 29·03
B.A.C. 2882.				
Feb. 19	0·13	6·0	29 36	8 28 23·95
B.A.C. 2937, γ Cancri.				
Feb. 11	0·11		68 3	8 35 39·66
19	0·13	5·0		39·72
B.A.C. 2971, ι Hydræ.				
Feb. 11	0·11	(4·0)	83° 6′	8h 39m 46s·97
17	0·13			47·01
26	0·15			46·96
Mar. 6	0·18			46·99
B.A.C. 2988.				
Feb. 19	0·13	7·5	34 34	8 43 13·12
Mar. 6	0·18	7·0		13·36
B.A.C. 3013.				
Feb. 11	0·11		84 10	8 45 25·77
19	0·13	7·0		25·91
Mar. 6	0·18	6·0		25·61
B.A.C. 3053.				
Feb. 11	0·11		80 6	8 50 34·79
19	0·13	6·0		34·89
Mar. 6	0·18	6·0		34·74
B.A.C. 3083.				
Feb. 19	0·13	7·0	38 39	8 56 0·48
Mar. 6	0·18	6·0		0·57
B.A.C. 3103.				
Feb. 11	0·11	7·5	72 22	8 58 51·45
Mar. 6	0·18	7·5		51·45
B.A.C. 3111, κ Cancri.				
Feb. 11	0·11	(5·0)	78 48	9 0 35·72
19	0·13			35·91
B.A.C. 3133.				
Feb. 11	0·11	7·0	85 36	9 5 19·04
19	0·13	6·0		19·09
Mar. 6	0·18	7·0		18·92
B.A.C. 3157.				
Feb. 19	0·13	7·0	29 40	9 10 21·35
Mar. 6	0·18	7·5		21·86
B.A.C. 3171, 83 Cancri.				
Feb. 10	0·11	(6·0)	71° 44′	9h 11m 36s·71
26	0·15			36·62
B.A.C. 3242, θ Ursæ Majoris.				
Feb. 19	0·13	4·0	37 43	9 24 0·49
Mar. 6	0·18			0·63
B.A.C. 3312, ο Leonis.				
Feb. 11	0·11		79 30	9 34 6·15
19	0·13	4·0		6·30
Mar. 6	0·18	4·0		6·18
B.A.C. 3331, ι Leonis.				
Feb. 10	0·11	(3·0)	65 37	9 38 21·18
11	0·11			21·29
19	0·13			21·29
26	0·15			21·15
Mar. 5	0·18			21·30
6	0·18			21·31
B.A.C. 3371, μ Leonis.				
Feb. 11	0·11	(3·0)	63 22	9 45 15·15
Mar. 6	0·18			15·45
B.A.C. 3380.				
Feb. 19	0·13	6·0	83 25	9 46 47·05
Mar. 6	0·18			46·98
B.A.C. 3415, π Leonis.				
Feb. 10	0·11	(4·5)	81 19	9 53 14·12
11	0·11			14·13
17	0·13			14·17
26	0·15			14·22
Mar. 5	0·18			14·19
April 1	0·25			14·13
B.A.C. 3418.				
Feb. 19	0·13	6·0	80 25	9 54 1·12
Mar. 6	0·18			1·11

B.A.C. 3430.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
			° ′	h. m. s.
Feb. 11	0·11	9·0	81 8	[illegible] 56 18·32
19	0·13	8·5		18·37
April 1	0·25			18·45

B.A.C. 3438.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Feb. 11	0·11	7·0	84 22	9 57 53·97

B.A.C. 3439.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Mar. 6	0·18	7·5	54 22	9 58 1·93

B.A.C. 3459, α Leonis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Feb. 10	0·11	(1·0)	77 23	10 1 20·43
11	0·11			20·30
17	0·13			20·36
19	0·13			20·47
26	0·15			20·47
Mar. 5	0·18			20·34
[illegible]	0·18			20·30
11	0·19			20·39
24	0·23			20·46
April 1	0·25			20·44
2	0·25			20·42
3	0·25			20·45
May 1	0·33			20·41

B.A.C. 3484.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Feb. 19	0·13	7·0	57 55	10 6 35·21
Mar. 11	0·19	7·0		35·24

B.A.C. 3523, γ¹ Leonis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Feb. 17	0·13	(2·0)	69 30	10 12 41·53
Mar. 5	0·18			41·50
11	0·19			41·52
14	0·20			41·49
24	0·23			41·60
April 1	0·25			41·53
3	0·25			41·47

B.A.C. 3529.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
			° ′	h. m. s.
Feb. 19	0·13	8·0	82 54	10 13 37·67
Mar. 6	0·18	7·0		37·64
26	0·23	7·0		37·65

B.A.C. 3592.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Feb. 19	0·13	7·0	87 49	10 22 55·70
Mar. 6	0·18	7·0		55·65
11	0·19	7·5		55·72

B.A.C. 3609, ρ Leonis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Feb. 19	0·13	(4·0)	80 1	10 25 51·59
Mar. 5	0·18			51·55
6	0·18			51·48
11	0·19			51·52
24	0·23			51·50
26	0·23			51·55
April 2	0·25			51·55

B.A.C. 3662.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Mar. 6	0·18	(7·5)	78 34	10 31 43·65
26	0·23			43·68

B.A.C. 3667, 34 Sextantis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Mar. 23	0·22	6·0	85 44	10 35 48·34
April 2	0·25			48·40

B.A.C. 3708, l Leonis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Mar. 14	0·20	(6·0)	78 45	10 42 19·07
23	0·22			19·01
26	0·23			19·02
April 6	0·26			19·01

B.A.C. 3726.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Mar. 6	0·18	6·0	88 16	10 45 26·70
[illegible]	0·22	6·0		26·72
26	0·23			26·61

B.A.C. 3768, d Leonis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Mar. 6	0·18	(5·0)	85 40	10 53 44·51
23	0·22			44·37
26	0·23			44·48

B.A.C. 3780.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
			° ′	h. m. s.
April 2	0·25	7·0	81 42	10 56 49·40
16	0·29	7·0		49·57

B.A.C. 3788, χ Leonis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Mar. 14	0·20	(4·5)	81 57	10 58 12·37
17	0·21			12·42
23	0·22			12·33
24	0·23			12·30
26	0·23			12·37
April 6	0·26			12·37
26	0·32			12·40

B.A.C. 3821.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Mar. 6	0·18		21 0	11 3 42·82
23	0·22	6·0		43·54
24	0·23	6·0		43·36
26	0·23			43·51

B.A.C. 3834, δ Leonis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Mar. 11	0·19	(2·5)	68 45	11 7 5·15
14	0·20			5·06
17	0·21			5·09
23	0·[illegible]			5·18
24	0·23			5·03
26	0·23			5·09
27	0·24			5·18
April 2	0·25			5·07
3	0·25			5·07
6	0·26			5·10
16	0·29			5·16
26	0·32			5·12

B.A.C. 3869.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Mar. 23	0·22	7·0	71 50	11 15 34·37
24	0·23			34·40
27	0·24	7·0		34·40

B.A.C. 3900, τ Leonis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Mar. 23	0·22	4·0	86 25	11 21 8·83
24	0·23			8·95
27	0·24			8·92

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
B.A.C. 3946, υ Leonis.				
Mar. 6	0·18	(4·5)	90° 6′	11h 30m 11·37s
11	0·19			11·40
17	0·21			11·49
23	0·22			11·43
24	0·23			11·36
26	0·23			11·48
27	0·24			11·38
April 2	0·25			11·32
6	0·26			11·44
16	0·29			11·37
26	0·32			11·41
B.A.C. 3995, β Leonis.				
Mar. 6	0·18	(2·5)	74 41	11 42 19·47
17	0·21			19·42
23	0·22			19·52
24	0·23			19·56
26	0·23			19·49
27	0·24			19·44
April 2	0·25			19·53
3	0·25			19·51
16	0·29			19·48
26	0·32			19·47
B.A.C. 4005.				
Mar. 23	0·22	6·0	76 59	11 44 8·73
26	0·23			8·91
27	0·24			8·86
B.A.C. 4052, π Virginis.				
Mar. 23	0·22	6·5	82 39	11 54 6·48
26	0·23			6·57
27	0·24			6·45
B.A.C. 4145, η Virginis.				
Mar. 17	0·21	(3·5)	89 56	12 13 9·14
23	0·22			9·08
27	0·24			9·17
April 13	0·28			9·16
May 1	0·33			9·11
B.A.C. 4153.				
Mar. 26	0·23	6·0	62 38	12 13 41·38
April 2	0·25	7·0		41·29
16	0·29	6·0		41·44
B.A.C. 4199.				
Mar. 26	0·23	7·0	63 21	12 21 2·15
27	0·24			2·22
April 2	0·25	6·0		2·03
B.A.C. 4205.				
April 13	0·28	6·0	63 2	12 22 2·59
16	0·29	6·0		2·44
May 1	0·33	6·0		2·47
B.A.C. 4231.				
Mar. 26	0·23	8·0	64 49	12 26 57·60
27	0·24	7·[illegible]		57·43
April 13	0·28	7·5		57·61
B.A.C. 4244.				
Mar. 26	0·23		52 53	12 28 44·04
27	0·24			43·89
May 1	0·33	6·5		44·15
B.A.C. 4268, γ¹ Virginis.				
Mar. 27	0·24	(4·0)	90 44	12 34 58·25
B.A.C. 4340, δ Virginis.				
Mar. 27	0·24		85 53	12 48 57·21
April 16	0·29	4·0		57·28
May 1	0·33	4·0		57·23
B.A.C. 4364.				
April 13	0·28	7·0	68 1	12 55 7·53
16	0·29	7·0		7·42
B.A.C. 4401, θ Virginis.				
April 1	0·25	(4·5)	94 50	13 3 7·07
8	0·27			7·06
13	0·28			7·00
B.A.C. 4401, θ Virginis.				
April 14	0·28	(4·5)	94 50	13 3 7·03
16	0·29			6·98
May 1	0·33			7·01
5	0·34			7·00
B.A.C. 4457.				
April 16	0·29	6·0	54 11	13 12 59·93
21	0·30	6·0		60·08
May 1	0·33			59·93
5	0·34			60·02
B.A.C. 4468.				
April 16	0·29	7·0	75 9	13 14 52·05
21	0·30	6·5		52·17
May 1	0·33	7·0		52·08
5	0·34			52·12
B.A.C. 4480, α Virginis.				
Mar. 6	0·18	(1·0)	100 28	13 18 14·60
April 1	0·25			14·46
[illegible]	0·25			14·56
8	0·27			14·42
13	0·28			14·48
14	0·28			14·45
16	0·29			14·40
May 1	0·33			14·47
5	0·34			14·43
26	0·40			14·52
B.A.C. 4503.				
April 21	0·30	7·0	55 26	13 22 32·65
B.A.C. 4513.				
April 13	0·28	7·0	65 5	13 24 36·80
16	0·29			36·69
21	0·30			36·81
May 5	0·34			36·81
B.A.C. 4526.				
April 16	0·29	6·0	64 58	13 26 32·95
May 1	0·33	6·0		32·91

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
B.A.C. 4532, ζ Virginis.				
			° ′	h. m. s.
April 1	0·25	(4·0)	59 55	13 27 58·04
8	0·27			58·07
13	0·28			58·02
14	0·28			58·03
21	0·30			58·05
May 5	0·34			58·18
16	0·37			58·09
25	0·40			58·12
26	0·40			58·08
B.A.C. 4550.				
April 13	0·28	7·0	36 38	13 31 21·51
21	0·30	6·0		21·46
May 1	0·33	7·0		21·35
5	0·34			21·58
B.A.C. 4559.				
April 16	0·29	6·0	78 35	13 33 4·12
B.A.C. 4575.				
April 13	0·28	6·5	66 38	13 37 31·03
16	0·29	6·5		30·99
21	0·30	6·0		31·13
May 1	0·33	6·0		30·98
B.A.C. 4597.				
April 13	0·28	5·0	71 53	13 40 59·50
16	0·29	4·0		59·33
21	0·30	5·0		59·46
May 1	0·33	5·0		59·40
B.A.C. 4606.				
May 5	0·34	(7·0)	57 57	13 42 23·28
B.A.C. 4621.				
April 16	0·29	7·0	70 43	13 43 48·29
21	0·30	6·5		48·34
B.A.C. 4627.				
April 13	0·28	6·0	54 31	13 45 14·98
May 1	0·33	6·0		14·98
5	0·34			15·10
B.A.C. 4618, η Bootis.				
			° ′	h. m. s.
April 8	0·27	(3·0)	70 56	13 48 23·98
13	0·28			24·06
14	0·28			23·96
16	0·29			24·06
21	0·30			23·98
28	0·32			23·96
May 1	0·33			24·05
5	0·34			23·97
23	0·39			24·03
25	0·40			23·98
26	0·40			23·86
27	0·40			23·96
B.A.C. 4652. (a)				
April 28	0·32	6·0	57 19	13 50 18·69
May 1	0·33			19·16
B.A.C. 4672, τ Virginis.				
April 8	0·27	(4·5)	87 49	13 54 55·87
13	0·28			55·94
14	0·28			55·82
21	0·30			55·76
28	0·32			55·82
May 1	0·33			55·79
4	0·34			55·71
27	0·40			55·76
B.A.C. 4676.				
May 5	0·34	(7·0)	57 48	13 55 31·07
B.A.C. 4678				
April 28	0·32	7·0	57 42	13 56 41·85
May 1	0·33	7·0		41·99
B.A.C. 4694.				
April 28	0·32	7·0	58 31	14 0 34·97
May 1	0·33	7·5		35·07
B.A.C. 4716, κ Virginis.				
April 28	0·32	(4·0)	99 40	14 5 51·54
B.A.C. 4723.				
			° ′	h. m. s.
April 28	0·32	7·0	60 17	14 8 2·52
B.A.C. 4729, α Bootis.				
April 13	0·28	(1·0)	70 8	14 9 38·50
14	0·28			38·55
16	0·29			38·55
21	0·30			38·54
28	0·32			38·51
May 4	0·34			38·54
16	0·37			38·47
25	0·40			38·49
26	0·40			38·47
27	0·40			38·44
29	0·41			38·46
July 2	0·50			38·53
B.A.C. 4797.				
April 28	0·32	6·0	53 13	14 22 49·52
B.A.C. 4808, ρ Bootis.				
April 21	0·30	(4·0)	59 3	14 26 8·52
May 1	0·33			8·44
16	0·37			8·51
27	0·40			8·36
June 2	0·42			8·48
9	0·44			8·44
B.A.C. 4809.				
May 5	0·34	(6·0)	62 44	14 26 29·77
B.A.C. 4820.				
April 28	0·32	6·0	56 53	14 28 34·81
May 1	0·33	6·0		34·92
5	0·34			34·85
B.A.C. 4863.				
April 28	0·32	7·5	52 41	14 37 19·21
May 1	0·33	7·0		19·23
5	0·34			19·13

(a) Tabular R. A. apparently 28 secs. too small.

B.A.C. 4876, ε Bootis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
			° ′	h. m. s.
April 21	0·30	(3·0)	62 22	14 39 13·36
28	0·32			13·31
May 1	0·33			13·37
4	0·34			13·41
5	0·34			13·31
16	0·37			13·37
20	0·38			13·40
23	0·39			13·33
25	0·40			13·37
26	0·40			13·45
June 2	0·42			13·31
6	0·43			13·31
9	0·44			13·31
July 9	0·52			13·35

B.A.C. 4934.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
May 1	0·33	7·0	48 20	14 51 1·54

B.A.C. 4942.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
April 28	0·32	6·0	49 50	14 54 22·17
May 1	0·33			22·36

B.A.C. 4965.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
May 1	0·33	(5·5)	44 50	14 58 27·04

B.A.C. 4969, ψ Bootis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
April 28	0·32	(5·0)	62 32	14 58 47·43
May 4	0·34			47·50
16	0·37			47·40
20	0·36			47·46
23	0·39			47·45
June 6	0·43			47·41
17	0·46			47·39
July 9	0·52			47·41

B.A.C. 4992.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
May 1	0·33	5·0	34 56	15 2 30·78
5	0·34			30·70

B.A.C. 5000.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
			° ′	h. m. s.
May 1	0·33	7·0	56 25	15 5 18·26
5	0·34			18·01

B.A.C. 5034, β Libræ.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
May 1	0·33	(2·5)	98 54	15 9 54·35
4	0·34			54·28
20	0·39			54·39
June 6	0·43			54·42
15	0·45			54·37
July 9	0·52			54·34

B.A.C. 5071.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
May 1	0·33	6·0	37 36	15 16 12·34

B.A.C. 5091.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
May 1	0·33	6·0	26 11	15 20 26·94
5	0·34			26·89

B.A.C. 5143, α Coronæ Borealis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
May 1	0·33	(2·5)	62 50	15 29 6·01
4	0·34			5·96
5	0·34			6·00
20	0·38			5·93
23	0·39			5·96
25	0·40			5·98
27	0·40			6·10
June 2	0·42			6·01
6	0·43			6·02
9	0·44			6·00
15	0·45			5·95
17	0·46			5·92
18	0·46			5·95
19	0·47			6·02
July 2	0·50			5·99
9	0·52			5·98
14	0·53			5·98

B.A.C. 5196, α Serpentis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
May 4	0·34	(2·5)	83 9	15 37 45·98
5	0·34			46·04

B.A.C. 5196, α Serpentis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
			° ′	h. m. s.
May 20	0·38	(2·5)	83 9	15 37 46·02
23	0·39			46·01
25	0·40			46·01
June 2	0·42			46·05
6	0·43			45·99
9	0·44			46·03
15	0·45			45·96
17	0·46			46·03
18	0·46			46·07
19	0·47			46·03
25	0·48			46·03
July 2	0·50			45·98
9	0·52			46·01
14	0·53			46·06

B.A.C. 5414, δ Ophiuchi.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
May 20	0·38	(3·0)	93 21	16 7 25·73
27	0·40			25·83
June 9	0·44			25·80
13	0·45			25·76
15	0·45			25·65
17	0·46			25·60
18	0·46			25·73
19	0·47			25·70
25	0·48			25·68
28	0·49			25·83
July 12	0·53			25·79
14	0·53			25·72

B.A.C. 5604, ζ Herculis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
May 27	0·40	(3·0)	58 9	16 36 18·70
June 13	0·45			18·65
25	0·48			18·65
27	0·49			18·61
28	0·49			18·59
29	0·49			18·66
July 12	0·53			18·62
17	0·54			18·65

B.A.C. 5708, κ Ophiuchi.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
June 13	0·45	(4·0)	80 25	16 51 25·23
27	0·49			25·28
July 12	0·53			25·27
17	0·54			25·21
30	0·58			25·30

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B.A.C. 5821, α Herculis.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
			° ′	h. m. s.
May 29	0·41	(3·5)	75 27	17 8 37·66
June 9	0·44			37·72
13	0·45			37·73
15	0·45			37·98
17	0·46			37·78
18	0·46			37·75
19	0·47			37·69
27	0·49			37·69
28	0·49			37·76
29	0·49			37·80
July 2	0·50			37·76
14	0·53			37·77
17	0·54			37·81
27	0·57			37·83
30	0·58			37·67
31	0·58			37·78
Oct. 7	0·77			37·77

B.A.C. 5941, α Ophiuchi.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
May 29	0·41	(2·0)	77 20	17 28 48·47
June 9	0·44			48·53
13	0·45			48·46
17	0·46			48·50
18	0·46			48·53
19	0·47			48·52
25	0·48			48·51
27	0·49			48·56
28	0·49			48·45
29	0·49			48·45
July 2	0·50			48·46
12	0·53			48·39
14	0·53			48·46
17	0·54			48·43
27	0·57			48·38
30	0·58			48·45
31	0·58			48·50
Oct. 7	0·77			48·36

B.A.C. 6021, μ Herculis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
July 27	0·57	(4·0)	62 12	17 41 17·56
30	0·58			17·60
31	0·58			17·58

B.A.C. 6365, α Lyræ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
			° ′	h. m. s.
June 29	0·49	(1·0)	51 20	18 32 28·15
July 27	0·57			28·16
31	0·58			28·09
Aug. 1	0·58			28·12
4	0·59			28·20

B.A.C. 6429, β Lyræ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
June 29	0·49	(3·0)	56 47	18 45 12·38
July 27	0·57			12·52
31	0·58			12·43
Aug. 1	0·58			12·41
4	0·59			12·34
6	0·60			12·35

B.A.C. 6528, ζ Aquilæ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Aug. 1	0·58	(3·0)	76 20	18 59 20·58
4	0·59			20·61
6	0·60			20·60

B.A.C. 6595, ω Aquilæ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Aug. 7	0·60	(5·0)	78 38	19 11 37·25

B.A.C. 6646, δ Aquilæ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Aug. 6	0·60	(3·5)	87 9	19 18 50·46
7	0·60			50·59

B.A.C. 6772, γ Aquilæ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Aug. 1	0·58	(3·0)	79 42	19 39 59·04
4	0·59			59·02
6	0·60			59·06
7	0·60			59·00
Oct. 13	0·78			59·02

B.A.C. 6802, α Aquilæ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Aug. 6	0·60	(1·5)	81 29	19 44 20·56
7	0·60			20·47
Oct. 13	0·78			20·56

B.A.C. 6833, β Aquilæ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
			° ′	h. m. s.
Aug. 4	0·59	(3·5)	83 55	19 48 49·70
6	0·60			49·73
7	0·60			49·67
Oct. 13	0·78			49·81

B.A.C. 7256, 32 Vulpeculæ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Sept. 10	0·69	(4·5)	62 27	20 48 56·15

B.A.C. 7368, ζ Cygni.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Sept. 10	0·69	(3·0)	60 19	21 7 19·10
28	0·74			19·22

B.A.C. 7478, β Aquarii.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Sept. 28	0·74	(3·0)	96 9	21 24 36·41

B.A.C. 7561, ε Pegasi.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Sept. 10	0·69	(2·5)	80 44	21 37 42·15

B.A.C. 7627, 16 Pegasi.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Sept. 10	0·69	(5·5)	64 42	21 47 3·38

B.A.C. 7688, α Aquarii.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Sept. 28	0·74	(3·0)	90 58	21 59 0·09

B.A.C. 7773, θ Aquarii.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Oct. 9	0·77	(4·5)	98 26	22 9 52·03

B.A.C. 7868, η Aquarii.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Oct. 9	0·77	(4·0)	90 48	22 28 34·30

B.A.C. 7908, ζ Pegasi.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Sept. 28	0·74	(3·0)	79 51	22 34 52·72
Oct. 7	0·77			52·65

B.A.C. 7808, ζ Pegasi.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Oct. 9	0·77	(3·0)	° ′ 79 51	h m s 22 34 52·63
24	0·81			52·68

B.A.C. 8034, α Pegasi.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Sept. 10	0·69	(2·0)	75 30	22 58 11·26
Oct. 7	0·77			11·14
9	0·77			11·22
16	0·79			11·24
26	0·82			11·15

B.A.C. 8105, γ Piscium.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Oct. 26	0·82	4·5	° ′ 87 26	h m s 23 10 19·35

B.A.C. 8233, ι Piscium.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Oct. 7	0·77	(4·5)	85 5	23 33 9·73
9	0·77			9·64
16	0·79			9·67
24	0·81			9·73
26	0·82			9·79

B.A.C. 8331, ω Piscium.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1868.
Oct. 13	0·78	(4·5)	° ′ 83 52	h m s 23 52 32·05
16	0·79			32·07
24	0·81			32·07
27	0·82			31·96

EXPLANATION OF THE EDINBURGH TRANSIT OBSERVATIONS FOR 1868; AND THE METHODS OF THEIR REDUCTION.

Pages 638 to 653 contain the Transit Observations of stars for 1868, similarly with those for 1849, where the methods of reduction are more fully described; the variable data for the present year being as below.

The star observations were taken almost wholly by Mr Alexander Wallace, M.A., the First Assistant Astronomer. They were actually more numerous than here recorded, because, with a view chiefly to economy in printing, all days of observation with less than four standard stars have been struck out; also parts of a day far removed from the chief observing hours of the night; also those periods of the year when either the Instrumental corrections were uncertain, or the Clock going badly. The said observations, however, had been already computed in our MS. books, and have often served useful temporary purposes, as for approximate clock-corrections and instrumental errors.

The Micrometer observations for instrumental corrections have, on the other hand, always been taken by the Astronomer, and he has also decided on the quantities for computation to be adopted for each day of star observation.

Intervals of the Wires.

From 13 observations of α Ursæ Minoris, above and below the Pole, in the year 1868, the intervals of the wires and their Equatorial distances from their Mean or Middle point were found to be, the star being above the Pole,—

		s.	
Wire	I.	+ 16·522	Equatorial
...	II.	+ 8·210	
...	III.	− 0·056	
...	IV.	− 7·983	
...	V.	− 16·679	

These values, immaterially different from those of 1867, have been employed in the reductions throughout the year; using for Polaris (whose Declination varied between 88° 36′ 4″ and 88° 36′ 53″) the following quantities or those adapted to a declination of 88° 36′, with the amount of alteration due to each additional second of Declination added under the term of n'',—

		m.	s.				s.	
Wire	I.	+ 11	16·52	+	n''	×	·136	Declination 88° 36′
...	II.	+ 5	36·07	+	n	×	·067	
...	III.	− 0	2·29					
...	IV.	− 5	26·78	−	n	×	·066	
...	V.	− 11	22·95	−	n	×	·137	

and for δ Ursæ Minoris (whose Declination varied between 86° 36′ 7″ and 86° 36′ 45″) the following quantities or those adapted to a declination of 86° 36′,

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with the amount of alteration due to each additional second of Declination added under the term of n'',—

			m. s.		s.	
Wire	I.	+	4 38·61	+ n'' ×	·023	Declination 86° 36′
...	II.	+	2 18·44	+ n ×	·012	
...	III.	−	0 0·94			
...	IV.	−	2 14·60	− n ×	·012	
...	V.	−	4 41·25	− n ×	·023	

The correction generally for the imperfect transit of a star, whose North Polar Distance is not very small, being

$$= \frac{\text{Sum of Equatorial intervals for Wires observed}}{\text{Number of Wires}} \times \text{cosecant of Star's N. P. D.},$$

this quantity being applied to the mean of whatever wires were observed.

With close Polar stars, the *Sine* is used in place of the *Arc*.

The signs and order of the Wires are to be changed when the star is below the Pole.

In the column entitled "Reduction to the Mean of the Wires," either the simple arithmetical mean of the Wires—if 5 were observed—is entered; or, if a less number, the reduced mean according to the method already explained and the quantities above given.

CORRECTIONS FOR INSTRUMENTAL DEVIATIONS.

These deviations are three in number, and are severally termed, Collimation error, Level error, and Azimuth error.

The Collimation error is the deviation of the line joining the optical centre of the object-glass and the Mean of the Wires, from the plane perpendicular to the axis of rotation; and is *mechanically* positive, or is positive as a correction for all objects at all altitudes both above and below the horizon, when the object-glass deviates to the east of the said plane:—0"·012, the diurnal aberration, is included, for practical convenience, in the sum representing the collimation.

The Level error is the angle of inclination of the axis of rotation to the horizon, measured in a vertical plane; and is *mechanically* positive, as a correction, for all objects above the horizon, negative for those below, when the Western end is higher than the other.

The Azimuthal error is the angle of deviation of the axis of rotation (presumed approximately horizontal) from the East and West line, measured in a horizontal plane; and is *mechanically* positive as a correction for all objects South of the Zenith, or Nadir, and negative for those North of the same, when the Western end of said axis deviates towards the South.

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COLLIMATION AND LEVEL ERRORS.

These are determined, as explained in former years, by special observations made from time to time with the collimating eye-piece, and by measuring micrometrically the distance between the Middle wire and its reflected image in reversed positions of the transit-instrument's axis.

For dates between the epochs of observation, the errors have been assumed to vary as the time, except where the readings of the earth-thermometers, as noticed in the Introduction, have indicated a modification thereof to be probably desirable.

AZIMUTHAL ERROR.

Of the three usual methods for determining the azimuthal position of a transit-instrument; viz. by a Polar star combined with an Equatorial star, by two successive transits of a Polar star above and below the Pole, or by three consecutive transits of a Polar star, the first plan has alone been adopted; for although the two latter have the advantage of being independent of the Right Ascension assumed for the stars, yet they can only be employed with safety when the stability of the instrument can be depended on through the twelve or twenty-four hours during which the observations extend.

Now grave doubts had long existed on this head; and, as set forth both in the Introduction to this volume and the Report to the Board of Visitors for 1870, towards the end of the volume, see pp. R 50 to R 57, they have since been proved to be only too well founded. The following therefore is the formula which has always been adopted, enabling, for each transit of a Polar star observed, a comparatively instantaneous determination of the Azimuthal error then to be made:—

$$\text{Azimuthal error} = \frac{\text{R.A. 1st} \ast - \text{R.A. 2d} \ast - (\text{obs. tr. 1st} \ast - \text{obs. tr. 2d} \ast) - \text{clock's loss in the interval}}{\left(\frac{\sin \text{Z.D. South}}{\sin \text{N.P.D.}}\ \text{1st} \ast\right) - \left(\frac{\sin \text{Z.D. South}}{\sin \text{N.P.D.}}\ \text{2d} \ast\right)}$$

In the course of the year 29 combinations of either α, or δ, Ursæ Minoris and a Clock star were obtained, from which the Azimuth error at these epochs was computed, and for dates between them the error was made to vary nearly as the time, modified in some cases by the temperature and the annual curve shown in Plate III.

TABLE I.

ADOPTED INSTRUMENTAL CORRECTIONS, EXPRESSED IN SECONDS OF TIME FOR CONVENIENCE OF APPLICATION TO TIME OBSERVATIONS.

Date.	Collimation.	Level.	Azimuth.
1868.	s.	s.	s.
Jan. 5	−0·11	+0·06	−0·15
8	−0·11	+0·06	−0·07
9	−0·11	+0·06	−0·20
12	−0·11	+0·06	−0·13
13	−0·11	+0·06	−0·14
Feb. 2	+0·42	+0·06	−0·16
4	+0·42	+0·06	−0·16
5	+0·42	+0·06	−0·16
10	+0·42	+0·05	−0·16
11	+0·42	+0·05	−0·17
15	+0·42	+0·05	−0·17
17	+0·42	+0·05	−0·17
19	−0·11	+0·05	−0·18
21	−0·11	+0·05	−0·18
26	−0·11	+0·05	−0·18
29	−0·11	+0·05	−0·18
Mar. 4	−0·11	+0·05	−0·19
5	−0·11	+0·05	−0·19
6	−0·03	+0·05	−0·20
7	−0·03	+0·05	−0·20
10	−0·03	+0·05	−0·20
11	−0·03	+0·05	−0·20
14	−0·03	+0·05	−0·21
17	−0·03	+0·04	−0·21
22	−0·03	+0·04	−0·22
23	−0·03	+0·04	−0·22
[illegible]	−0·03	+0·04	−0·22
26	−0·03	+0·05	−0·22
27	−0·03	+0·04	−0·23
29	−0·03	+0·04	−0·23
April 1	−0·03	+0·04	−0·23
2	−0·03	+0·04	−0·17
3	−0·03	+0·04	−0·20
6	−0·03	+0·04	−0·23
8	−0·03	+0·04	−0·26
13	−0·03	+0·03	−0·20
14	−0·03	+0·03	−0·08
16	−0·03	+0·03	−0·27
21	−0·03	+0·02	−0·26
23	−0·03	+0·01	−0·25
26	−0·03	+0·01	−0·24
28	−0·03	0·00	−0·23

Date.	Collimation.	Level.	Azimuth.
1868.	s.	s.	s.
May 1	−0·03	0·00	−0·22
4	−0·03	−0·01	−0·18
5	−0·03	−0·01	−0·14
7	−0·03	−0·03	−0·20
12	−0·03	−0·04	−0·21
13	−0·03	−0·04	−0·22
14	−0·03	−0·05	−0·23
15	−0·03	−0·05	−0·24
16	−0·03	−0·05	−0·25
19	−0·03	−0·06	−0·26
20	−0·03	−0·06	−0·27
23	−0·03	−0·07	−0·28
25	−0·03	−0·08	−0·29
26	−0·03	−0·08	−0·30
27	−0·03	−0·08	−0·30
29	−0·03	−0·08	−0·30
31	−0·03	−0·09	−0·30
June 1	−0·03	−0·09	−0·30
2	−0·03	−0·09	−0·30
4	−0·03	−0·10	−0·30
6	−0·03	−0·10	−0·29
7	−0·03	−0·10	−0·29
9	−0·03	−0·10	−0·29
11	−0·03	−0·10	−0·28
13	−0·03	−0·11	−0·28
14	−0·03	−0·11	−0·27
15	−0·03	−0·11	−0·27
17	−0·03	−0·11	−0·26
18	−0·03	−0·11	−0·25
19	−0·03	−0·12	−0·19
22	−0·03	−0·12	−0·25
25	−0·03	−0·13	−0·25
27	−0·03	−0·14	−0·24
28	−0·03	−0·14	−0·24
29	−0·03	−0·14	−0·24
30	−0·03	−0·14	−0·24
July 2	−0·03	−0·14	−0·23
4	−0·03	−0·15	−0·22
5	−0·03	−0·15	−0·21
9	−0·03	−0·16	−0·20
12	−0·03	−0·17	−0·19
14	−0·03	−0·17	−0·19
17	−0·03	−0·18	−0·18

Date.	Collimation.	Level.	Azimuth.
1868.	s.	s.	s.
July 25	−0·03	−0·18	−0·17
26	−0·03	−0·18	−0·16
27	−0·03	−0·18	−0·14
29	−0·03	−0·18	−0·12
30	−0·03	−0·18	−0·11
31	−0·03	−0·19	−0·09
Aug. 1	−0·03	−0·19	0·00
4	−0·03	−0·19	+0·08
6	−0·03	−0·19	+0·07
7	−0·03	−0·19	+0·06
8	−0·03	−0·19	+0·05
9	−0·03	−0·19	+0·04
10	−0·03	−0·19	+0·03
14	−0·03	−0·18	+0·01
19	−0·03	−0·18	0·00
24	−0·03	−0·17	−0·01
30	−0·03	−0·17	−0·02
Sept. 1	−0·03	−0·17	−0·03
2	−0·03	−0·17	−0·04
3	−0·03	−0·16	−0·05
4	−0·03	−0·16	−0·06
5	−0·03	−0·16	−0·07
6	−0·03	−0·16	−0·08
8	−0·03	−0·16	−0·09
9	−0·03	−0·15	−0·10
10	−0·03	−0·15	−0·10
28	−0·03	−0·11	−0·10
30	−0·03	−0·10	−0·10
Oct. 5	−0·03	−0·09	−0·10
7	−0·03	−0·09	−0·10
9	−0·03	−0·08	−0·10
13	−0·03	−0·08	−0·17
15	−0·03	−0·07	−0·04
16	−0·03	−0·07	−0·06
18	−0·03	−0·07	−0·05
19	−0·03	−0·06	−0·03
21	−0·03	−0·06	−0·02
23	−0·03	−0·05	−0·01
24	−0·03	−0·05	−0·01
26	−0·03	−0·05	−0·01
27	−0·03	−0·04	−0·01
29	−0·03	−0·04	+0·01

Date.	Collimation.	Level.	Azimuth.	Date.	Collimation.	Level.	Azimuth.	Date.	Collimation.	Level.	Azimuth.
1868	s.	s.	s.	1868.	s.	s.		1868.	s.	s.	s.
Nov. 4	−0·03	−0·02	−0·01	Dec. 1	−0·03	+0·02	−0·05	Dec. 22	−0·03	+0·05	+0·02
6	−0·03	−0·01	−0·04	3	−0·03	+0·03	−0·04	23	−0·03	+0·05	+0·04
7	−0·03	0·00	−0·05	4	−0·03	+0·03	−0·04	24	−0·03	+0·05	+0·05
9	−0·03	0·00	−0·06	14	−0·03	+0·04	−0·03	26	−0·03	+0·06	+0·06
10	−0·03	0·00	−0·10	15	−0·03	+0·04	−0·02	28	−0·03	+0·06	+0·08
12	−0·03	0·00	−0·06	16	−0·03	+0·04	−0·01	29	−0·03	+0·06	+0·09
16	−0·03	+0·01	−0·06	19	−0·03	+0·05	−0·01	30	−0·03	+0·06	+0·09
21	−0·03	+0·01	−0·05	21	−0·03	+0·05	+0·01	31	−0·03	+0·06	+0·09

The correction to the star observations of times of Transit, for each of the above three instrumental deviations successively, is,

$$\text{Collimation correction} \times \frac{1}{\text{sin Star's North Polar Distance}},$$

the sign being positive for a star above the Pole, and negative when it crosses the Meridian below the Pole.

$$\text{Level correction} \times \frac{\text{cos Star's Zenith Distance South}}{\text{sin Star's North Polar Distance}},$$

the sign being positive for a star above the Pole, and negative when it crosses the Meridian below the Pole. And

$$\text{Azimuthal correction} = \frac{\text{sin Star's Zenith Distance South}}{\text{sin Star's North Polar Distance}},$$

the sign being positive for a star above the Pole *and* to the South of the Zenith, also for a star below the Pole and North of the Zenith; but negative when above the Pole and to the North of the Zenith.

CORRECTION OF THE CLOCK.

For computing the errors of the Clock and the Azimuthal errors of the Transit Instrument, the following Table of the Mean Right Ascensions of the principal stars for January 1, 1868, has been employed, and was kindly communicated at the time by G. B. Airy, Esq., Astronomer Royal, as being the same employed by him for reducing the Greenwich Observations of 1868.

TABLE II.

Mean Right Ascensions adopted of Standard Stars.

Star's Name.	Assumed Mean Right Ascension, January 1, 1868.	Correction to Nautical Almanac.	Star's Name.	Assumed Mean Right Ascension, January 1, 1868.	Correction to Nautical Almanac.
	h. m. s.	s.		h. m. s.	s.
α Andromedæ	0 1 34·13	+0·06	η Geminorum	6 6 54·61	....
γ Pegasi	0 6 26·44	+0·05	μ Geminorum	6 14 58·49	+0·01
ι Ceti	0 12 42·04	....	β Canis Majoris	6 16 53·30	....
12 Ceti	0 23 18·11	−0·04	ν Geminorum	6	....
ε Andromedæ	0 31 35·11	....	γ Geminorum	6 30 5·14	−0·03
β Ceti	0 36 57·69	+0·06	Cephei 51	6 37 43·23	+2·98
μ Andromedæ	0 49 26·01	....	Sirius	6	....
ε Piscium	0 56 5·67	−0·02	θ Canis Majoris	6 48 3·43	....
β Andromedæ	1 2 20·90	....	ε Canis Majoris	6 53 26·31	0·00
Polaris	1 10 37·09	+0·07	γ Canis Majoris	6 57 47·21	−0·02
θ^1 Ceti	1 17 25·50	+0·03	51 Geminorum	7 5 47·40	....
η Piscium	1 24 25·36	+0·05	δ Geminorum	7 12 14·30	+0·01
ν Piscium	1 34 33·77	0·00	β Canis Minoris	7 19 59·47	....
β Arietis	1 47 21·08	+0·01	Castor	7 26 10·47	+0·01
α Arietis	1 59 44·20	+0·02	Procyon	7 32 23·49	+0·09
67 Ceti	2 10 23·99	+0·04	Pollux	7 37 14·13	+0·03
ξ^2 Ceti	2 21 8·56	−0·01	ξ Navis	7 43 44·57	....
δ Ceti	2 32 43·13	....	6 Cancri	7 55 24·42	−0·09
γ Ceti	2 36 27·75	+0·04	15 Argûs	8 1 55·37	0·00
σ Arietis	2 44 12·45	....	β Cancri	8 9 21·33	....
α Ceti	2 55 22·85	+0·06	d^2 Cancri	8 15 48·17	....
δ Arietis	3 4 5·07	+0·01	η Cancri	8 25 4·31	+0·02
τ^1 Arietis	3 13 36·57	....	γ Cancri	8 35 38·60	....
ο Tauri	3 17 42·75	....	ε Hydræ	8 39 47·04	−0·03
f Tauri	3 23 35·32	....	α Cancri	8 51 15·92	....
ε Eridani	3 26 42·75	....	κ Cancri	9 0 35·74	....
11 Tauri	3 32 53·51	....	83 Cancri	9 11 36·62	+0·09
δ Eridani	3 36 55·54	....	α Hydræ	9 21 6·02	+0·03
η Tauri	3 39 35·50	+0·06	ξ Leonis	9 24 49·66	....
γ^1 Eridani	3 51 52·25	+0·04	ο Leonis	9 34 6·20	....
ω^1 Tauri	4 1 28·76	....	ε Leonis	9 38 21·28	+0·04
o^1 Eridani	4 5 25·34	−0·02	μ Leonis	9 45 15·10	....
γ Tauri	4 12 17·05	....	π Leonis	9 53 14·17	+0·01
ε Tauri	4 20 54·65	+0·01	Regulus	10 1 20·40	+0·03
Aldebaran	4 28 20·90	−0·01	γ^1 Leonis	10 12 41·49	0·00
μ Eridani	4 38 54·26	....	μ Hydræ	10	....
ι Aurigæ	4 48 24·02	0·00	ρ Leonis	10 25 51·56	0·00
ε Leporis	4 59 52·39	+0·05	34 Sextantis	10 35 48·43	....
Rigel	5 8 11·66	+0·01	l Leonis	10 42 19·00	+0·02
β Tauri	5 17 56·97	+0·06	d Leonis	10 53 44·54	....
δ Orionis	5 25 15·61	−0·04	χ Leonis	10 58 12·39	−0·01
α Leporis	5 26 54·52	−0·04	δ Leonis	11 7 5·12	+0·01
ε Orionis	5 29 30·92	−0·01	δ Crateris	11 12 44·56	+0·05
α Columbæ	5 34 52·22	−0·15	τ Leonis	11 21 8·88	....
κ Orionis	5 41 29·75	....	υ Leonis	11 30 11·39	−0·03
α Orionis	5 48 1·56	+0·03	β Leonis	11 42 19·50	+0·05
1 Geminorum	5 56 5·82	....	π Virginis	11 54 6·51	....
ν Orionis	6 0 2·12	−0·01	ε Corvi	12 3 20·38	+0·03

Digitized

Star's Name.	Assumed Mean Right Ascension, January 1, 1868.	Correction to Nautical Almanac.	Star's Name.	Assumed Mean Right Ascension, January 1, 1868.	Correction to Nautical Almanac.
	h. m. s.	s.		h. m. s.	s.
η Virginis	12 13 9·16	+0·04	α Lyræ	18 32 28·16	+0·07
δ Corvi	12 23 12·33	....	2 Aquilæ	18	....
β Corvi	12 27 27·39	+0·14	β Lyræ	18 45 12·41	+0·12
35 Virginis	12 41 8·13	....	ι Aquilæ	18 53 37·85	....
δ Virginis	12 48 57·34	....	ζ Aquilæ	18 59 20·54	+0·13
ε Virginis	12 55 36·34	....	ψ Sagittarii	19 7 26·64	....
θ Virginis	13 3 7·01	+0·02	ω Aquilæ	19 11 37·20	+0·03
Spica	13 18 14·46	+0·02	δ Aquilæ	19 18 50·50	+0·03
ζ Virginis	13 27 58·12	−0·01	α Vulpeculæ	19 23 12·78	....
m Virginis	13 34 41·13	....	μ Aquilæ	19 27 38·44	....
τ Bootis	13 40 59·38	....	h² Sagittarii	19 28 40·27	+0·11
η Bootis	13 48 23·99	+0·03	γ Aquilæ	19 39 59·04	+0·09
τ Virginis	13 54 55·80	+0·05	α Aquilæ	19 44 20·54	+0·05
κ Virginis	14 5 51·44	....	β Aquilæ	19 48 49·72	+0·06
Arcturus	14 9 39·40	+0·06	c Sagittarii	19 54 32·23	....
f Bootis	14 20 19·03	....	λ Ursæ Minoris	19 56 15·36	−0·18
ρ Bootis	14 26 8·48	0·00	θ Aquilæ	20 4 29·56	....
ε Bootis	14 39 13·34	+0·08	α² Capricorni	20 10 43·69	+0·06
α² Libræ	14 43 34·77	+0·05	β Capricorni	20 13 35·52	....
ξ² Libræ	14 49 36·51	....	ρ Capricorni	20 21 19·68	+0·15
ψ Bootis	14 58 47·41	−0·03	ε Delphini	20 26 54·34	....
β Libræ	15 9 51·36	+0·03	α Delphini	20 33 30·43	....
ι¹ Libræ	15 15 40·21	....	ε Aquarii	20 40 31·66	....
ζ³ Libræ	15 20 48·96	....	32 Vulpeculæ	20 48 56·06	+0·03
α Coronæ	15 29 5·99	+0·07	θ Capricorni	20 58 31·39	....
α Serpentis	15 37 46·01	+0·08	ζ Cygni	21 7 19·13	+0·07
ε Serpentis	15 44 14·25	....	α Equulei	21 9 13·43	....
γ Serpentis	15 50 21·45	....	ι Capricorni	21 14 53·57	....
β¹ Scorpii	15 57 45·89	+0·04	β Aquarii	21 24 36·45	+0·03
δ Ophiuchi	16 7 25·76	+0·05	ξ Aquarii	21 30 43·34	....
γ Herculis	16 16 5·89	....	ε Pegasi	21 37 42·18	+0·03
Antares	16 21 19·03	+0·03	δ Capricorni	21 39 45·07	....
λ Ophiuchi	16 24 15·45	....	16 Pegasi	21 47 3·44	+0·02
ζ Ophiuchi	16 29 53·52	....	α Aquarii	21 59 0·15	+0·04
ζ Herculis	16 36 18·66	+0·02	ι Pegasi	22 0 52·01	....
κ Ophiuchi	16 51 25·22	−0·05	θ Aquarii	22 9 51·96	+0·01
ε Herculis	16 55 14·44	....	γ Aquarii	22 14 50·25	....
η Ophiuchi	17 2 48·54	....	π Aquarii	22 23 39·53	....
α Herculis	17 8 37·77	+0·10	η Aquarii	22 28 34·31	+0·01
θ Ophiuchi	17 13 54·27	+0·07	ζ Pegasi	22 34 52·70	+0·08
ο Ophiuchi	17 19 57·94	....	μ Pegasi	22 43 38·04	....
α Ophiuchi	17 28 48·44	+0·05	λ Aquarii	22 45 43·51	....
β Ophiuchi	17 36 57·09	....	Fomalhaut	22 50 21·02	+0·04
μ Herculis	17 41 17·60	+0·07	α Pegasi	22 58 11·19	+0·02
89 Herculis	17 50 5·73	....	γ Piscium	23 10 19·32	+0·01
72 Ophiuchi	18 1 5·49	....	κ Piscium	23 20 9·91	−0·03
μ¹ Sagittarii	18 5 52·11	+0·05	ι Piscium	23 33 9·66	−0·04
η Serpentis	18 14 28·77	....	δ Sculptoris	23 42 2·71	−0·03
δ Ursæ Minoris	18 14 55·37	−0·09	ω Piscium	23 52 32·01	−0·03
λ Sagittarii	18 19 49·46	....	2 Ceti	23 56 58·50	....

The Mean Right Ascensions are converted into Apparent for any day of observation, by the application of the reductions of mean to apparent places taken from the Nautical Almanac. The Correction of the Clock is determined from the observed transits of the stars in the foregoing Table (excepting the

close Polar stars), the corrections of the instrument being previously applied, compared with the Apparent Right Ascensions computed.

The Corrections of the Clock thus determined are contained in the column entitled "Correction of Clock observed."

The sign + prefixed to the Correction of the Clock denotes that the clock is slow; the sign − that it is fast.

On account partly of the variability at times of the Clock-rate, and still more frequently of swerving in the azimuthal position of the Transit Instrument as produced by changes of temperature acting on its supporting stone piers during the observations, the "Adopted Clock Corrections" have been generally obtained by graphical projection, and the stars of each night have been used much more by themselves than with reference to those of preceding and following nights.

At the same time, to afford a tabular view, in the usual manner, of the march of the Clock, its daily errors at 0^h Sidereal Time, as given more or less approximately by the curves, are contained in the following Table.

TABLE III.

CORRECTION FOR TRANSIT CLOCK AT 0^h SIDEREAL TIME.

Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.
1868.	s	1868.	s	1868.	s	1868.	s	1868.	s
Jan 8	−35·22	Mar. 26	37·09	May 26	−1·11	July 27	−8·59	Oct. 27	−38·41
9	−35·07	27	−37·23	27	−0·40	30	−9·36	29	−38·90
(a)		April 1	−34·08	29	+0·35	31	−9·66	Nov. 4	−40·04
13	−36·83	2	−33·25	June 2	+2·45	Aug. 1	−10·00	6	−40·33
14	−38·33	3	−32·70	6	+3·03	4	−10·28	10	−40·94
Feb. 4	−49·22	6	−30·68	9	+3·02	6	−10·62	Dec. 1	−41·45
10	−47·14	8	−30·00	15	+1·70	7	−10·87	3	−41·66
11	−46·96	13	−27·60	17	+1·44	Sept. 10	−21·92	15	−43·67
17	−45·03	16	−26·10	18	+1·20	28	−26·77	16	−43·85
19	−43·92	21	−24·34	19	+0·98	Oct. 7	−32·14	19	−44·12
26	−42·95	26	−22·05	25	−1·11	9	−32·77	21	−44·58
Mar. 5	−42·37	28	−20·96	27	−1·64	13	−33·49	22	−44·95
6	−42·30	May 1	−19·47	28	−1·79	15	−34·16	24	−46·27
11	−42·42	4	−17·66	29	−1·98	16	−34·60	26	−46·00
14	−41·90	5	−16·35	July 2	−2·43	19	−35·72	28	−50·02
17	−40·64	16	−9·00	9	−4·41	23	−37·23	29	−50·76
23	−38·60	20	−5·34	12	−5·12	24	−37·58	30	−51·63
24	−38·17	23	−3·28	14	−5·61	26	−38·22	31	−52·12
		25	−1·62	17	−6·43				

(a) Jan. 13.—The weight cord of the Brisbane Clock broke, and has been replaced.

ROYAL OBSERVATORY, EDINBURGH.

OBSERVATIONS

MADE WITH

THE MURAL CIRCLE,

AND

CALCULATION

OF

APPARENT NORTH POLAR DISTANCES.

1868.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist. Jan. 1, 1868.
1868.				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
Jan. 9	......	Nadir	......	4 37 0	254 0	1 54·5	59·9	0·500	29·87	37·8	33·1	......	......	......	......	......
	......	Nadir	......	......	254 0	1 65·4	72·6	0·500	......	......	......	......	......	......	......	......
	1623	(a) β Orionis	......	5 8 47	138 15	3 54·0	53·8	0·500	29·97	......	33·0	......	......	7	+64 16 52·7	−13·4
	1703	......	......	5 21 9	113 35	4 1·1	58·7	0·593	29·97	......	33·0	......	......	7	+39 37 1·9	− 9·1
	1751	......	......	5 29 46	64 20	2 28·0	25·0	0·500	29·97	......	32·8	......	......	6	− 9 39 37·0	− 2·3
	2022	......	......	6 10 25	119 55	4 16·0	16·0	0·500	29·97	......	32·8	......	......	8	+45 57 15·2	−10·6
	2060	......	......	6 17 21	125 15	3 52·5	52·4	0·500	29·97	......	32·8	......	......	7	+51 16 51·3	−11·1
	2238	......	......	6 44 34	106 10	3 42·1	40·0	0·500	29·85	......	32·8	......	......	6	+32 11 40·1	−10·0
	2292	......	6·0	6 54 16	119 10	0 9·0	9·2	0·500	29·85	......	32·8	......	......	7	+45 8 7·4	−10·7
	2334	......	......	7 2 26	79 55	4 25·7	23·3	0·405	29·85	......	32·8	......	......	8	+ 5 57 19·8	− 9·3
	2410	δ Geminorum	......	7 12 49	107 45	0 36·6	34·0	0·500	29·85	......	32·8	......	......	8	+33 43 33·7	−10·5
	2463	......	......	7 21 3	102 10	0 6·8	4·1	0·500	29·85	......	32·8	......	......	7	+28 8 3·4	−10·6
	2488	......	......	7 27 41	83 30	1 23·1	20·5	0·500	29·85	......	32·8	......	......	6	+ 9 29 19·3	−10·5
	2522	(b) α Canis Minoris	......	......	124 20	4 41·0	41·6	0·500	29·85	......	32·8	......	......	5	+50 22 40·4	−10·5
	2586	......	......	7 42 21	101 25	2 26·3	27·9	0·560	29·85	......	32·8	......	......	8	+27 25 27·3	−11·4
	......	Nadir	......	7 49 0	254 0	1 53·8	59·9	0·500	29·85	36·0	32·8	......	......	......	......	......
	......	Nadir	......	......	254 0	1 65·3	71·1	0·500	......	......	......	......	......	......	......	......
Jan. 17	......	Nadir	......	6 6 0	254 0	1 54·8	61·0	0·500	29·06	43·0	41·3	......	......	......	......	......
	......	Nadir	......	......	254 0	1 66·2	72·4	0·500	......	......	......	......	......	......	......	......
	2060	......	7·0	6 17 31	125 15	3 58·7	58·3	0·500	29·06	......	41·2	15, S.W.	0	7	+51 16 57·0	−11·9
	2101	......	7·0	6 23 8	107 20	1 2·6	2·0	0·847	29·06	......	41·2	......	......	8	+33 19 9·9	− 9·5
	2184	......	7·0	6 34 30	113 25	2 48·6	48·1	0·430	29·06	......	41·1	......	......	6	+39 25 45·2	−10·5
	2238	(c)	......	6 44 44	106 10	3 46·4	45·0	0·430	29·06	......	41·1	......	......	8	+32 11 42·4	− 9·8
	2292	......	......	6 54 26	119 10	0 16·1	16·0	0·368	29·06	......	41·0	......	......	7	+45 8 10·2	−11·2
	2329	......	......	7 1 23	114 10	4 49·4	49·4	0·617	29·06	......	41·0	......	......	9	+40 12 51·8	−10·6
	2379	......	......	7 9 14	80 15	2 41·2	41·8	0·544	29·05	......	41·0	16, W.	0	7	+ 6 15 39·6	− [illegible]
	2463	......	......	7 21 12	102 10	0 6·4	5·6	0·440	29·05	......	41·0	......	......	9	+28 8 1·6	−10·3
	......	Nadir	......	7 57 0	254 0	1 54·2	61·7	0·500	29·05	42·6	41·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 65·9	73·1	0·500	......	......	......	......	......	......	......	......
Jan. 28	......	Nadir	......	6 40 0	254 0	1 56·0	60·7	0·500	29·18	36·4	32·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 66·6	71·2	0·500	......	......	......	......	......	......	......	......
	2334	......	......	7 2 41	79 55	4 19·7	18·1	0·500	29·18	......	31·6	......	......	......	+ 5 57 16·3	− [illegible]
	2463	......	......	7 21 18	102 10	0 2·1	58·4	0·584	29·52	......	34·9	......	......	7	+28 8 0·5	− [illegible]
	2683	......	6·0	7 57 57	110 45	1 5·8	3·0	0·806	29·52	......	34·7	......	......	7	+27 25 26·5	−10·[illegible]
	......	Nadir	......	8 4 0	254 0	1 55·8	61·3	0·580	29·52	......	34·7	......	......	8	+36 44 4·6	−11·2
	......	Nadir	......	......	254 0	1 66·0	72·0	0·500	29·52	34·9	31·5	......	......	......	......	......
								0·500	......	......	......	......	......	......	......	......
Feb. 3	......	Nadir	......	7 2 0	254 0	1 54·6	59·4	0·500	29·68	36·0	32·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 66·2	72·6	0·500	......	......	......	......	......	......	......	......
	2522	α Canis Minoris	......	7 33 13	124 20	4 41·0	39·6	0·500	29·68	......	32·0	7·5, W.	1	6	+50 22 39·0	−12·7
	2761	......	......	8 7 50	116 30	1 59·4	57·0	0·498	29·68	......	32·0	......	......	7	+42 29 56·6	−11·7
	2867	......	6·5	8 26 18	119 25	2 57·9	55·9	0·500	29·68	......	32·5	......	......	6	+45 25 55·5	−11·4
	......	Nadir	......	8 31 0	254 0	1 53·9	60·7	0·500	29·69	34·8	32·7	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·8	73·2	0·500	......	......	......	......	......	......	......	......
Feb. 10	......	Nadir	......	7 13 0	254 0	1 53·6	60·2	0·500	29·91	45·9	45·8	......	......	......	......	......
	......	Nadir	......	......	254 0	1 67·6	72·9	0·500	......	......	......	......	......	......	......	......
	2586	......	......	7 42 33	101 25	2 29·8	28·0	0·500	29·91	......	45·7	10, W.	0	6	+27 25 26·9	− 9·3

(a) Definition very bad. Stars unsteady. (b) Seen rather late. (c) Stars very well defined.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1868.
1868.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Feb. 10	3053	....	......	8 51 22	120 0	4 52·0	51·4	0·692	29·91	......	43·0	....	......	7	+46 2 55·9	−12·0
	3103	....	......	8 59 38	112 15	5 36·8	35·8	0·250	29·91	......	43·0	....	......	6	+38 18 27·5	−11·5
	3223	α Hydræ..............	......	9 21 53	138 0	2 44·2	45·0	0·840	29·91	......	43·0	....	......	7	+64 0 52·0	−11·5
	3331	ι Leonis..............	......	9 39 9	105 35	1 10·3	9·5	0·500	29·[illegible]	......	43·0	....	......	8	+31 34 7·9	−11·3
	......	Nadir ‖	......	[illegible] 51 0	254 0	1 55·8	60·9	0·500	29·91	43·0	43·0	....	......	......	....	......
	......	Nadir ‖	......	....	254 0	1 66·7	72·0	0·500	......	......	......	....	......	......	....	......
Feb. 11	......	Nadir ‖	......	7 4 0	254 0	1 54·4	61·2	0·500	30·12	43·0	41·8	....	......	......	....	......
	......	Nadir ‖	......	....	254 0	1 65·8	72·4	0·500	......	......	......	....	......	......	....	......
	2463	....	......	7 21 15	102 5	4 58·0	56·8	0·557	30·13	......	41·8	10, W.	0	7	+28 7 57·9	− 8·9
	2522	α Canis Minoris....	......	7 33 11	124 20	4 53·2	53·6	0·300	30·13	......	41·6	....	......	8	+50 22 46·9	−13·2
	2586	....	......	7 42 33	101 25	2 27·4	25·2	0·500	30·13	......	41·4	....	......	7	+27 25 24·6	− 9·3
	2683	....	......	7 57 54	110 45	1 7·4	5·4	0·499	30·13	......	41·1	....	......	8	+36 44 4·8	−11·0
	2746	....	......	8 5 46	115 30	5 2·3	1·6	0·500	30·13	......	41·0	....	......	6	+41 33 1·5	−11·8
	2971	ι Hydræ..............	......	8 40 35	123 0	4 24·1	23·7	0·500	30·13	......	41·0	....	......	7	+49 2 22·8	−12·3
	3053	....	......	8 51 21	120 0	4 59·9	60·7	0·330	30·1[illegible]	......	41·0	....	......	6	+46 2 54·8	−12·0
	3103	....	......	8 59 38	112 15	5 24·6	22·0	0·670	30·13	......	41·0	....	......	8	+38 18 27·4	−11·5
	3242	θ Ursæ Majoris......	......	9 24 48	77 40	2 51·5	51·1	0·666	30·1[illegible]	......	41·0	....	......	7	+ 3 40 53·2	− 9·5
	3331	ι Leonis..............	......	9 39 8	105 35	1 12·9	12·0	0·500	30·13	......	40·9	....	......	9	+31 34 10·7	−11·3
	3350	....	......	9 47 34	123 20	3 32·6	31·4	0·938	30·13	......	40·9	....	......	9	+49 21 42·8	−11·2
	......	Nadir ‖	......	9 55 0	254 0	1 54·6	61·0	0·500	30·13	41·1	40·9	....	......	......	....	......
	......	Nadir ‖	......	....	254 0	1 66·0	72·4	0·500	......	......	......	....	......	......	....	......
Feb. 13	......	Nadir ‖	......	7 15 0	254 0	1 54·6	59·4	0·500	29·67	45·8	46·2	....	......	......	....	......
	......	Nadir ‖	......	....	254 0	1 65·3	70·3	0·500	......	......	......	....	......	......	....	......
	2488	....	......	7 27 42	83 30	1 15·9	15·3	0·553	29·67	......	46·2	3, W.	2	6	+ 9 29 14·7	− 5·1
Feb. 17	......	Nadir ‖	......	8 17 [illegible]	254 0	1 54·5	60·5	0·500	29·76	43·1	42·0	....	......	......	....	......
	......	Nadir ‖	......	....	254 0	1 65·6	72·4	0·500	......	......	......	....	......	......	....	......
	2971	ι Hydræ..............	......	8 40 31	123 0	4 20·4	21·2	0·738	29·76	......	42·0	7, W.	2	6	+49 2 26·0	−12·7
	3083	....	......	8 56 43	78 35	3 37·1	36·3	0·578	29·76	......	42·3	....	......	7	+ 4 36 36·1	− 7·1
	3439	....	......	9 58 45	94 15	5 39·4	39·2	0·521	29·74	......	42·2	....	......	7	+20 18 38·2	−10·5
	3484	....	7·0	10 7 20	97 50	4 26·2	26·4	0·500	29·74	......	42·2	....	......	6	+23 52 24·7	−10·[illegible]
	......	Nadir ‖	......	10 25 [illegible]	254 0	1 53·8	61·4	0·500	29·74	42·9	42·2	....	......	......	....	......
	......	Nadir ‖	......	....	254 0	1 66·2	74·6	0·500	......	......	......	....	......	......	....	......
Feb. 19	......	Nadir ‖	......	7 35 0	254 0	1 54·5	60·4	0·500	29·70	41·8	39·8	....	......	......	....	......
	......	Nadir ‖	......	....	254 0	1 66·9	73·9	0·500	......	......	......	....	......	......	....	......
	2683	....	......	7 57 52	110 45	1 8·8	7·4	0·445	29·70	......	39·8	1, N.W.	0	7	+36 44 4·7	−10·8
	2761	....	......	8 7 45	116 30	2 0·0	0·0	0·522	29·70	......	40·0	....	......	6	+42 29 58·9	−12·0
	2867	....	......	8 26 14	119 25	2 59·1	59·[illegible]	0·500	29·70	......	39·9	....	......	8	+45 25 57·4	−12·4
	2971	ι Hydræ..............	......	8 40 32	123 0	4 21·9	20·9	0·738	29·70	......	39·8	....	......	7	+49 2 26·5	−12·7
	3013	....	......	8 46 10	124 5	3 26·1	26·5	0·382	29·70	......	39·8	....	......	8	+50 6 21·2	−12·8
	3083	....	......	8 56 45	78 35	3 39·8	38·6	0·500	29·70	......	39·8	....	......	9	+ 4 36 36·4	− 6·7
	3223	α Hydræ..............	......	9 21 51	138 0	2 52·5	53·4	0·500	29·70	......	39·8	....	......	8	+64 0 51·0	−12·8
	3331	ι Leonis..............	......	9 39 6	105 35	1 12·0	10·4	0·500	29·70	......	39·7	....	......	7	+31 34 9·1	−10·9
	3375	....	......	9 46 28	94 20	3 3·3	2·5	0·600	29·70	......	39·7	....	......	7	+20 21 0·7	−10·1
	3420	....	......	9 55 8	97 45	4 8·6	8·1	0·500	29·69	......	39·7	....	......	7	+23 47 6·6	−10·5
	3484	....	7·5	10 7 10	97 50	4 28·4	27·2	0·500	29·69	......	39·7	....	......	7	+23 52 26·1	−10·6
	3592	....	......	10 23 42	127 45	3 5·3	6·3	0·500	29·68	......	39·6	....	......	7	+53 46 3·8	−10·8
	......	Nadir ‖	......	10 35 [illegible]	254 0	1 55·3	62·7	0·500	29·68	41·2	39·6	....	......	......	....	......
	......	Nadir ‖	......	....	254 0	1 65·0	71·6	0·500	......	......	......	....	......	......	....	......

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South
1868.				h. m. s.	° '	° '	'	revs.	inches.	°	°				° ' "
Feb. 21	......	Nadir	......	7 45 0	254 0	1 54·6	61·4	0·500	29·27	43·9	43·8	....	......	......	....
	......	Nadir	......	....	254 0	1 64·8	72·6	0·500	......	......	......	....	......	......	....
	2688	....	......	....	102 0	4 54·1	52·7	0·500	29·26	......	43·8	5, S.W.	0	7	+28 2 52·0
	2988	....	......	8 43 58	74 30	2 54·2	53·2	0·510	29·26	......	43·8	....	......	8	+ 0 30 50·7
	3223	α Hydræ	2·0	9 21 51	138 0	2 57·5	58·9	0·500	29·25	......	44·0	....	......	7	+64 0 56·2
	......	Nadir	......	9 56 0	254 0	1 54·8	61·9	0·500	29·18	44·6	44·6	....	......	......	....
	......	Nadir	......	....	254 0	1 64·6	72·2	0·500	......	......	......	....	......	......	....
Feb. 26	......	Nadir		8 0 0	254 0	1 54·3	60·9	0·500	29·46	48·8	49·0	....	......	......	....
	......	Nadir	......	....	254 0	1 66·2	73·8	0·500	......	......	......	....	......	......	....
	2867	....	......	8 26 12	119 25	3 1·0	0·9	0·470	29·45	......	48·9	18, W.	0	7	+45 25 58·6
	2971	(a) ι Hydræ	......	8 40 30	123 0	4 34·6	34·0	0·305	29·45	......	48·9	25, W.	......	8	+49 2 27·5
	3053	....	......	8 51 18	120 5	0 0·0	0·8	0·500	29·45	......	50·0	....	......	7	+46 2 53·0
	3083	....	......	8 56 43	75 35	3 34·0	33·6	0·604	29·45	......	50·0	35, W.	......	9	+ 4 36 33·8
	3157	....	......	9 11 4	69 35	4 32·8	30·2	0·442	29·43	......	48·6	....	......	6	− 4 22 33·4
	3223	α Hydræ	......	9 21 50	138 0	2 53·0	55·2	0·678	29·43	......	48·8	....	......	7	+64 0 57·0
	3331	ε Leonis	......	9 39 4	105 35	1 13·7	12·7	0·458	29·43	......	48·7	....	......	8	+31 34 9·9
	3375	(b)	......	9 46 28	94 20	3 2·2	2·0	0·466	29·12	......	48·7	....	......	6	+20 20 59·0
	3418	....	8·5	9 54 43	120 20	3 33·7	31·2	0·455	29·41	......	48·7	40, W.S.W.	0	5	+46 21 31·1
	3484	....	7·0	10 7 18	97 50	4 28·6	28·9	0·423	29·40	......	48·7	....	......	6	+23 52 25·0
	3592	....	......	10 23 39	127 45	3 6·0	8·2	0·500	29·40	......	48·7	45	......	6	+53 46 5·2
Mar. 4	......	Nadir	......	9 17 0	254 0	1 55·0	62·0	0·500	29·12	47·0	47·4	....	......	......	....
	......	Nadir	......	....	254 0	1 63·9	72·6	0·500	......	......	......	....	......	......	....
	3331	ε Leonis	......	9 39 4	105 35	1 11·0	10·8	0·500	29·12	......	47·2	....	......	6	+31 34 8·7
	......	Nadir	......	10 7 0	254 0	1 54·3	63·1	0·500	29·12	47·9	47·0	....	......	......	....
	......	Nadir	......	....	254 0	1 64·2	71·7	0·500	......	......	......	....	......	......	....
Mar. 6	......	Nadir	......	8 50 0	254 0	1 54·9	62·9	0·500	......	......	......	....	......	......	....
	......	Nadir	......	....	254 0	1 64·2	72·8	0·500	......	......	......	....	......	......	....
	3223	α Hydræ	......	9 21 50	138 0	3 1·8	1·8	0·500	29·27	41·1	38·8	....	......	7	+64 0 59·3
	3375	....	......	9 46 27	94 20	2 55·3	52·4	0·750	29·27	......	38·3	....	......	6	+20 20 58·0
	3484	....	......	10 7 17	97 50	4 31·2	28·4	0·500	29·27	......	38·0	....	......	5	+23 52 27·4
	3662	....	......	....	118 30	3 1·3	0·1	0·333	29·27	......	37·8	....	......	6	+44 30 53·9
	3726	....	......	10 46 10	128 10	4 45·9	45·7	0·500	29·27	......	37·7	....	......	7	+54 12 43·8
	3780	....	......	....	121 40	0 57·3	58·4	0·472	29·27	......	37·6	....	......	6	+47 38 54·4
	......	Nadir	......	11 9 0	254 0	1 55·8	63·4	0·500	29·27	39·6	37·5	....	......	......	....
	......	Nadir	......	....	254 0	1 65·9	74·3	0·500	......	......	......	....	......	......	....
Mar. 8	......	Nadir	......	10 6 0	254 0	1 55·1	62·6	0·500	29·26	41·2	37·9	....	......	......	....
	......	Nadir	......	....	254 0	1 73·0	64·8	0·500	......	......	......	....	......	......	....
	......	Nadir	......	11 31 0	254 0	1 56·1	63·2	0·500	29·27	37·6	37·6	....	......	......	....
	......	Nadir	......	....	254 0	1 66·6	73·7	0·500	......	......	......	....	......	......	....
Mar. 10	......	Nadir	......	8 36 0	254 0	1 54·4	61·6	0·500	29·00	42·3	42·0	....	......	......	....
	......	Nadir	......	....	254 0	1 65·0	73·4	0·500	......	......	......	....	......	......	....
	3053	....	......	8 51 17	120 5	0 0·0	0·0	0·472	29·00	......	41·8	7, W.	0	6	+46 2 56·9
	3157	....	......	9 11 3	69 35	4 27·7	25·6	0·538	29·00	......	41·0	....	......	7	− 4 22 36·0
	......	Nadir	......	10 3 0	254 0	1 53·9	62·0	0·500	29·00	42·0	40·8	....	......	......	....
	......	Nadir	......	....	254 0	1 66·1	72·6	0·500	......	......	......	....	......	......	....

(a) Wind increasing. (b) $\left\{ \iota_b{}^{a}{}_{u} \right\}$ a observed.

Date.	Star or other Object Observed: No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1868.
1868.				h m s	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Mar. 11	......	Nadir	......	9 30 0	254 0	1 54·8	60·4	0·500	28·52	44·5	46·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·6	72·4	0·500	......	......	......	......	......	......	......	......
	3420	......	......	9 55 7	97 45	4 8·4	8·2	0·524	28·53	......	45·8	9, S.W.	1	6	+23 47 7·3	− 7·9
	3528	(a)	......	10 15 23	46 45	1 19·7	18·8	0·500	28·53	......	46·0	......	......	......	−27 15 45·5	+ 0·4
	......	Nadir	......	10 40 0	254 0	1 53·7	62·2	0·500	28·52	45·2	46·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 65·3	72·6	0·500	......	......	......	......	......	......	......	......
Mar. 17	......	Nadir	......	9 51 0	254 0	1 54·2	61·3	0·500	29·83	44·0	40·3	......	......	......	......	......
	......	Nadir	......	......	254 0	1 66·0	74·0	0·500	......	......	......	......	......	......	......	......
	3528	......	5·0	10 16 20	46 45	1 18·4	18·4	0·500	29·83	......	40·2	......	......	6	−27 15 46·3	+ 2·2
	3662	......	......	10 35 25	118 30	2 56·4	55·8	0·500	29·83	......	40·1	......	......	7	+44 30 54·7	−10·7
	3780	......	......	......	121 40	0 54·5	53·8	0·500	29·87	......	40·0	......	......	5	+47 38 53·3	−10·7
	......	Nadir	......	12 13 0	254 0	1 54·0	61·9	0·500	29·87	42·8	40·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·9	72·8	0·500	......	......	......	......	......	......	......	......
Mar. 23	......	Nadir	......	10 0 0	254 0	1 52·0	62·0	0·500	29·42	39·0	33·7	......	......	......	......	......
	......	Nadir	......	......	254 0	1 65·7	72·4	0·500	......	......	......	......	......	......	......	......
	3996	......	......	11 42 59	124 0	2 56·8	57·9	0·688	29·42	......	33·1	......	......	7	+50 1 0·9	− 9·8
	4153	......	......	12 14 20	102 35	2 36·3	35·3	0·500	29·48	......	36·0	......	......	7	+28 35 34·1	− 8·0
	4199	......	......	......	103 15	5 26·6	25·2	0·413	29·48	......	35·8	......	......	6	+29 18 22·2	− 8·1
	4231	......	......	12 27 36	104 45	3 15·7	14·5	0·567	29·48	......	35·8	......	......	7	+30 46 15·5	− 8·2
	......	Nadir	......	12 40 0	254 0	1 54·1	62·6	0·500	29·48	36·0	35·8	......	......	......	......	......
	......	Nadir	......	......	254 0	1 65·1	73·0	0·500	......	......	......	......	......	......	......	......
Mar. 24	......	Nadir	......	10 6 0	254 0	1 54·9	62·2	0·500	29·70	40·0	35·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 65·7	72·2	0·500	......	......	......	......	......	......	......	......
	3662	......	......	......	118 30	2 55·2	54·4	0·500	29·70	......	35·0	1, N.W.	0	6	+44 30 53·4	−10·4
	3821	......	......	11 4 22	61 0	0 29·0	25·0	0·568	29·70	......	34·9	......	......	7	−13 1 35·6	− 0·4
	3869	......	......	11 16 13	111 45	3 58·9	58·7	0·792	29·70	......	34·8	......	......	7	+37 47 5·7	− 9·0
	3996	......	......	11 43 0	124 0	3 2·8	4·0	0·500	29·70	......	34·8	......	......	8	+50 1 1·7	− 9·8
	4111	......	7·0	12 6 11	51 45	4 27·6	24·0	0·500	29·70	......	34·6	......	......	5	−22 12 38·3	− 1·7
	......	Nadir	......	12 30 0	254 0	1 53·9	60·1	0·500	29·70	36·1	34·1	......	......	......	......	......
	......	Nadir	......	......	254 0	1 65·3	71·6	0·500	......	......	......	......	......	......	......	......
Mar. 26	......	Nadir	......	10 2 0	254 0	1 55·5	63·1	0·500	29·60	46·2	46·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 67·4	74·2	0·500	......	......	......	......	......	......	......	......
	3528	......	......	10 15 17	46 45	1 16·2	15·8	0·497	29·60	......	46·0	8, S.W.	0	6	−27 15 49·6	+ 4·7
	3592	......	......	10 23 33	127 45	3 5·2	6·0	0·500	29·60	......	45·9	......	......	7	+53 46 3·0	−12·3
	3662	......	......	10 35 22	118 30	2 57·1	57·3	0·500	29·60	......	45·9	......	......	6	+44 30 55·0	−10·3
	3726	......	......	10 46 4	128 10	4 44·4	44·6	0·623	29·60	......	46·0	......	......	7	+54 12 45·6	−11·7
	3780	......	......	10 57 26	121 40	0 58·8	59·4	0·500	29·60	......	46·0	......	......	6	+47 38 56·4	−10·5
	3869	......	......	11 16 12	111 45	4 11·0	11·2	0·500	29·60	......	45·9	......	......	7	+37 47 9·2	− 8·8
	3996	......	......	11 43 0	124 0	3 0·2	1·4	0·713	29·60	......	45·9	......	......	8	+50 1 4·2	− 9·7
	4153	......	......	12 14 17	102 35	2 39·4	37·4	0·500	29·60	......	45·9	......	......	7	+28 35 35·9	− 7·6
	4205	......	......	12 22 40	103 0	1 34·4	33·8	0·543	29·60	......	45·8	......	......	6	+28 59 32·6	− 7·7
	4244	......	7·5	12 29 31	92 50	0 8·6	9·5	0·500	29·60	......	45·8	......	......	6	+18 49 5·6	− 6·9
	......	Nadir	......	12 46 0	254 0	1 55·7	63·3	0·500	29·60	44·2	45·7	......	......	......	......	......
	......	Nadir	......	......	254 0	1 66·0	72·3	0·500	......	......	......	......	......	......	......	......

(a) Cloudy.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Corr. Mean N. P. D. Jan 1, 1868.
				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
1868. Mar. 27	......	Nadir ‖ ǀ	......	10 0 0	254 0	1 54.7	62.3	0.500	30.07	47.1	44.3	....	......	......	....	......
	......	Nadir ǀ ‖	......	....	254 0	1 67.9	74.4	0.500	......	......	......	....	......	......	....	......
	3528	....	......	10 15 30	46 45	1 16.9	16.0	0.500	30.07	......	44.3	....	......	5	−27 15 49.1	+ 5.0
	3592	....	......	10 23 33	127 45	3 0.0	0.6	0.644	30.07	......	44.3	....	......	7	+53 46 1.7	−12.3
	3662	....	......	10 35 20	118 30	2 55.2	55.0	0.500	30.07	......	44.0	....	......	6	+44 30 52.9	−11.3
	3726	....	......	10 46 5	128 10	4 10.0	40.3	0.680	30.07	......	44.0	....	......	7	+54 12 42.9	−11.7
	3780	....	......	10 57 27	121 40	0 54.8	55.2	0.578	30.07	......	43.9	....	......	6	+47 38 54.4	−10.4
	3821	....	......	11 4 20	61 0	0 26.4	24.1	0.500	30.07	......	43.9	....	......	5	−13 1 40.1	+ 0.5
	3869	....	......	11 16 12	111 45	4 9.4	9.4	0.500	30.07	......	43.8	....	......	8	+37 47 7.5	− 8.7
	3996	....	......	11 42 58	124 0	3 5.8	7.4	0.367	30.07	......	43.7	....	......	7	+50 1 0.4	− 9.7
	4199	....	......	12 21 40	103 20	0 24.6	24.2	0.500	30.07	......	43.0	....	......	8	+29 18 21.6	− 7.4
	4231	....	......	12 27 35	104 45	3 17.4	18.0	0.539	30.07	......	43.0	....	......	7	+30 46 16.5	− 7.5
	......	Nadir ‖ ǀ	......	12 46 0	254 0	1 54.8	61.0	0.500	30.07	45.0	42.9	....	......	......	....	......
	......	Nadir ǀ ‖	......	....	254 0	1 66.0	72.3	0.500	......	......	......	....	......	......	....	......
April 2	......	Nadir ‖ ǀ	......	10 37 0	254 0	1 55.7	62.0	0.500	29.99	47.1	45.0	....	......	......	....	......
	......	Nadir ǀ ‖	......	....	254 0	1 65.8	73.3	0.500	......	......	......	....	......	......	....	......
	4111	....	7.0	12 6 3	51 45	4 21.8	20.0	0.500	29.99	......	45.0	....	......	6	−22 12 43.7	+ 1.8
	......	Nadir ‖ ǀ	......	13 19 0	254 0	1 55.0	60.8	0.500	29.99	47.9	44.8	....	......	......	....	......
	......	Nadir ǀ ‖	......	....	254 0	1 65.9	71.9	0.500	......	......	......	....	......	......	....	......
April 13	......	Nadir ‖ ǀ	......	11 40 0	254 0	1 54.0	59.8	0.500	29.85	43.7	41.2	....	......	......	....	......
	......	Nadir ǀ ‖	......	....	254 0	1 65.7	72.2	0.500	......	......	......	....	......	......	....	......
	4153	....	......	12 14 10	102 35	2 31.4	30.4	0.570	29.85	......	41.0	1, N.E.	......	7	+28 35 31.1	− 5.3
	4199	....	......	12 21 30	103 20	0 21.9	21.9	0.500	29.85	......	41.0	....	......	6	+29 18 19.8	− 4.5
	4231	....	......	12 27 25	104 45	3 14.8	14.0	0.587	29.85	......	40.8	....	......	7	+30 46 15.3	− 4.2
	4364	....	......	12 55 35	107 55	4 55.0	53.9	0.500	29.85	......	40.7	....	......	6	+33 57 53.3	− 3.4
	4421	β Comæ	......	13 6 10	101 25	1 10.4	10.0	0.405	29.85	......	40.1	....	......	8	+27 24 5.4	− 4.7
	4457	....	......	13 13 28	94 5	4 44.2	44.2	0.500	29.85	......	40.0	....	......	7	+20 7 42.5	− 4.3
	4503	....	......	13 23 2	125 20	4 55.3	56.9	0.468	29.85	......	39.9	....	......	6	+51 22 53.8	− 6.5
	4650	....	......	13 31 48	76 35	2 44.7	43.1	0.344	29.85	......	39.7	....	......	5	+ 2 35 36.5	− 2.4
	4652	....	......	13 50 47	97 15	3 23.8	24.4	0.458	29.85	......	39.6	....	......	7	+23 16 21.1	− 4.7
	......	Nadir ‖ ǀ	......	14 0 0	254 0	1 55.0	62.7	0.500	29.85	43.0	39.6	....	......	......	....	......
	......	Nadir ǀ ‖	......	....	254 0	1 63.0	69.9	0.500	......	......	......	....	......	......	....	......
April 14	......	Nadir ‖ ǀ	......	11 32 0	254 0	1 53.0	60.0	0.500	29.93	47.5	48.0	....	......	......	....	......
	......	Nadir ǀ ‖	......	....	254 0	1 64.0	71.9	0.500	......	......	......	....	......	......	....	......
	4627	....	......	13 45 42	94 30	3 31.3	30.9	0.500	29.93	......	47.7	....	......	6	+20 31 29.7	− 4.2
	4676	....	......	13 55 55	97 45	1 51.5	51.1	0.500	29.93	......	47.7	....	......	7	+23 44 49.7	− 4.6
	4723	....	......	14 8 30	100 15	0 37.9	37.9	0.500	29.93	......	47.7	....	......	8	+26 13 36.2	− 4.5
	......	Nadir ‖ ǀ	......	14 21 0	254 0	1 53.9	60.2	0.500	29.93	47.6	47.6	....	......	......	....	......
	......	Nadir ǀ ‖	......	....	254 0	1 64.6	72.1	0.500	......	......	......	....	......	......	....	......
April 15	......	Nadir ‖ ǀ	......	11 31 0	254 0	1 53.7	60.7	0.500	29.78	52.0	49.0	....	......	......	....	......
	......	Nadir ǀ ‖	......	....	254 0	1 64.6	72.1	0.500	......	......	......	....	......	......	....	......
	3996	....	......	11 42 46	124 0	3 0.6	2.8	0.600	29.78	......	49.0	6, W.	0	7	+50 1 3.3	− 9.0
	4153	....	......	12 14 7	102 35	2 35.0	33.0	0.600	29.77	......	48.9	....	......	8	+28 35 35.6	− 4.4
	4199	....	......	12 21 26	103 20	0 20.6	19.8	0.578	29.77	......	48.8	....	......	6	+29 18 20.8	− 4.6
	4244	....	......	12 29 10	92 50	0 0.7	0.9	0.500	29.77	......	48.7	....	......	5	+18 47 58.7	− 2.5
	4421	β Comæ	7.5	13 6 8	101 25	1 3.9	2.7	0.600	29.76	......	48.7	....	......	7	+27 24 4.5	− 4.4
	4457	....	......	13 13 26	94 5	4 50.0	49.0	0.500	29.76	......	48.7	....	......	7	+20 7 43.3	− 3.5

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1868.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
April 15	4503	......	......	13 22 58	125	4 58·6	59·4	0·461	29·76	......	48·8	......	......	6	+ 51 22 57·0	− 6·3
	4555	......	......	13 32 27	76 40	3 21·7	21·7	0·700	29·76	......	48·8	......	......	8	+ 2 41 24·7	− 1·6
	4632	......	......	13 46 24	94 50	3 12·3	11·7	0·500	29·76	......	48·8	......	......	6	+ 20 51 10·5	− 4·0
	4694	......	......	14 1 1	98 30	0 9·2	8·8	0·500	29·76	......	48·8	......	......	6	+ 24 28 7·1	− 4·4
	......	Nadir ‖|	......	14 12 0	254 0	1 51·2	60·7	0·500	29·76	48·6	48·8	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 65·0	74·0	0·500	......	......	......	......	......	......	......	......
April 21	......	Nadir ‖|	......	12 38 0	254 0	1 54·4	61·1	0·500	28·94	47·5	47·0	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 65·0	71·6	0·500	......	......	......	......	......	......	......	......
	4364	......	......	12 55 32	108 0	0 0·0	0·2	0·500	28·95	......	47·1	20, W.	0	7	+ 33 57 58·7	− 4·3
	4421	β Comæ	......	13 6 7	101 25	1 5·7	5·6	0·500	28·95	......	47·0	......	......	6	+ 27 24 4·0	− 3·3
	4503	......	......	13 22 57	125 25	0 1·2	2·0	0·500	28·95	......	47·0	......	......	7	+ 51 22 59·9	− 6·0
	4550	......	......	13 31 43	76 35	2 38·6	38·7	0·574	28·95	......	47·0	25, W.	......	8	+ 2 35 38·0	− 0·1
	4606	......	......	13 42 47	97 55	0 25·4	26·4	0·621	28·95	......	47·0	30, W.	......	6	+ 23 53 27·4	− 3·0
	4676	......	......	13 55 55	97 45	1 50·6	50·4	0·548	28·95	......	46·8	......	......	8	+ 23 44 50·2	− 3·1
	4723	(a)	......	14 8 27	100 15	0 38·4	38·2	0·482	28·95	......	46·6	......	......	6	+ 26 13 36·1	− 3·4
	......	Nadir ‖|	......	14 30 0	254 0	1 54·8	61·3	0·500	28·95	46·5	46·5	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 63·9	72·1	0·500	......	......	......	......	......	......	......	......
April 27	......	Nadir ‖|	......	23 30 0	254 0	1 52·0	59·2	0·500	29·55	46·7	45·1	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 66·2	74·4	0·500	......	......	......	......	......	......	......	......
April 28	......	Nadir ‖|	......	13 8 0	254 0	1 54·0	61·8	0·500	29·35	49·4	47·9	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 63·4	70·4	0·500	......	......	......	......	......	......	......	......
	4575	......	......	13 37 52	106 35	1 52·4	51·8	0·400	29·35	......	48·0	......	......	6	+ 32 34 48·2	− 2·7
	4676	......	......	13 55 51	97 45	1 48·2	48·6	0·400	29·35	......	48·0	......	......	7	+ 23 44 44·0	− 1·6
	4723	......	......	14 8 24	100 15	0 33·7	33·4	0·487	29·35	......	47·8	......	......	7	+ 26 13 31·6	− 2·0
	4809	......	......	14 26 51	102 40	3 9·5	8·3	0·609	29·35	......	47·5	......	......	6	+ 28 41 10·8	− 2·3
	4863	......	......	14 37 40	92 35	4 55·2	55·3	0·500	29·35	......	47·5	......	......	7	+ 18 37 53·9	− 1·6
	......	Nadir ‖|	......	15 0 0	254 0	1 51·7	62·3	0·500	29·35	47·4	47·4	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 62·9	71·1	0·500	......	......	......	......	......	......	......	......
May 1	......	Nadir ‖|	......	12 1 0	254 0	1 52·8	61·0	0·500	29·76	51·2	47·7	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 62·8	71·4	0·500	......	......	......	......	......	......	......	......
	4153	......	6·0	12 14 1	102 35	2 27·3	26·2	0·682	29·76	......	47·7	10, W.	2	6	+ 28 35 30·6	− 1·9
	4205	......	......	12 22 22	103 0	1 27·3	26·3	0·500	29·76	......	47·6	......	......	7	+ 28 59 25·4	− 1·9
	4364	......	......	12 55 27	107 55	4 52·8	52·0	0·638	29·76	......	47·6	......	......	8	+ 33 57 55·6	− 2·7
	4421	β Comæ	......	13 6 3	101 25	1 6·4	6·0	0·398	29·76	......	47·4	15	......	7	+ 27 24 1·8	− 1·4
	4462	......	......	13 14 13	124 25	2 2·6	4·2	0·542	29·76	......	47·3	......	......	6	+ 50 25 3·2	− 5·4
	4503	......	......	13 22 53	125 20	4 57·3	57·6	0·500	29·76	......	47·3	......	......	6	+ 51 22 56·5	− 5·3
	4575	......	......	13 37 49	106 35	1 51·8	51·2	0·463	29·74	......	47·0	......	......	7	+ 32 34 49·3	− 2·2
	4621	......	......	13 44 8	110 40	1 35·6	34·2	0·500	29·74	......	47·0	......	......	8	+ 36 39 33·8	− 2·7
	4652	......	......	13 50 38	97 15	3 21·7	22·1	0·500	29·74	......	47·0	......	......	8	+ 23 16 20·6	− 0·8
	4676	......	......	13 55 51	97 45	1 45·8	46·2	0·594	29·74	......	47·0	......	......	7	+ 23 44 47·0	− 0·9
	4694	......	......	14 0 55	98 30	0 4·6	5·1	0·500	29·74	......	46·9	......	......	8	+ 24 28 3·0	− 1·1
	4723	......	......	14 8 21	100 15	0 32·8	33·5	0·527	29·75	......	46·7	......	......	7	+ 26 13 32·2	− 1·3
	4797	......	......	14 23 7	93 10	1 48·8	49·4	0·500	29·75	......	46·6	......	......	6	+ 19 9 47·3	− 0·7
	4863	......	......	14 37 38	92 35	4 54·8	55·9	0·500	29·75	......	46·5	......	......	6	+ 18 37 54·1	− 0·8
	4934	......	......	14 51 20	88 15	3 59·0	60·4	0·618	29·74	......	46·2	......	......	7	+ 14 17 1·2	− 0·7
	4965	......	......	14 58 46	84 45	4 33·7	33·1	0·500	29·75	......	46·1	......	......	8	+ 10 47 31·6	− 0·7
	......	Nadir ‖|	......	15 7 0	254 0	1 54·4	62·4	0·500	29·75	46·2	46·1	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 64·9	73·3	0·500	......	......	......	......	......	......	......	......

(a) Wind increasing.

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1868.				h m s	° ′	r ″	″	revols.	inches						° ′ ″
May 4	......	Nadir ‖	......	12 40 0	254 0	1 53·8	62·2	0·500	29·85	49·3	43·8	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 61·6	72·4	0·500	......	......	......	......	......	......	......
	4421	β Comae	......	13 6 1	101 25	0 59·0	58·7	0·625	29·85	......	43·8	......	......	7	+27 24 0·4
	4457	......	......	13 13 17	91 5	4 41·0	39·4	0·600	29·85	......	43·0	3, N.	1	6	+20 7 41·0
	4526	......	......	13 26 51	101 55	1 52·3	51·3	0·500	29·85	......	43·0	......	......	7	+30 54 50·4
	4559	......	......	13 33 22	118 30	3 27·0	27·0	0·500	29·85	......	43·0	......	......	8	+44 31 25·9
	4621	......	......	13 44 5	110 40	1 32·0	31·3	0·573	29·85	......	43·0	......	......	7	+36 39 32·3
	4676	......	......	13 55 49	97 45	1 45·4	45·3	0·527	29·85	......	42·9	......	......	6	+23 44 14·3
	4876	ε Boötis	......	14 39 32	102 20	0 59·0	59·4	0·500	29·85	......	42·8	......	......	7	+28 18 57·5
	4934	......	......	14 51 18	88 15	3 56·8	57·9	0·673	29·85	......	42·7	......	......	8	+14 17 0·2
	4992	......	......	15 2 48	71 55	0 24·8	25·8	0·740	29·83	......	42·7	......	......	7	+0 53 28·7
	......	Nadir ‖	......	15 28 0	254 0	1 51·0	62·4	0·500	29·85	46·7	42·0	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 63·9	73·0	0·500	......	......	......	......	......	......	......
May 5	......	Nadir ‖	......	13 0 0	254 0	1 51·0	62·3	0·500	30·04	46·4	40·0	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 65·4	71·9	0·500	......	......	......	......	......	......	......
	4503	......	......	13 22 51	125 20	4 47·0	47·4	0·666	30·04	......	39·5	......	......	5	+51 22 50·6
	4694	......	......	14 0 53	98 30	0 6·0	6·1	0·567	30·04	......	39·9	......	......	6	+24 27 59·7
	4756	......	......	14 14 9	77 20	0 16·9	17·1	0·598	30·03	......	38·2	......	......	7	+3 18 46·5
	4809	......	......	14 26 46	102 10	3 9·7	8·4	0·500	30·03	......	38·1	......	......	6	+28 41 7·5
	4934	......	......	14 51 31	88 15	3 59·0	59·2	0·500	30·03	......	38·0	......	......	7	+14 16 57·0
	4992	......	......	15 2 18	71 55	0 29·2	29·0	0·500	30·03	......	38·1	......	......	8	+0 53 25·8
	5071	......	......	15 16 30	77 30	3 15·7	16·3	0·500	30·03	......	38·0	......	......	6	+3 31 13·3
	......	Nadir ‖	......	15 25 0	254 0	1 53·7	62·6	0·500	30·03	41·9	38·0	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 65·3	71·9	0·500	......	......	......	......	......	......	......
May 7	......	Nadir ‖	......	13 35 0	254 0	1 51·3	62·8	0·500	29·52	51·2	53·0	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 63·3	72·1	0·500	......	......	......	......	......	......	......
	4610	......	......	13 42 57	98 5	3 10·3	10·4	0·500	29·52	......	52·0	1, S W	2	6	+24 6 8·7
	4676	......	......	13 55 47	97 45	1 44·2	44·0	0·500	29·52	......	52·0	......	......	7	+23 44 42·2
	4723	......	......	14 8 18	100 15	0 33·2	33·0	0·500	29·52	......	52·0	......	......	8	+26 13 31·1
	4797	(a)	......	......	93 10	1 41·6	44·1	0·500	29·52	......	51·8	......	......	5	+19 9 42·4
	4934	......	......	14 51 16	88 15	3 58·8	60·4	0·533	29·52	......	51·8	......	......	6	+14 16 38·4
	......	Nadir ‖	......	15 30 0	254 0	1 53·9	62·5	0·500	29·52	52·0	51·8	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 65·8	72·6	0·500	......	......	......	......	......	......	......
May 11	......	Nadir ‖	......	13 14 0	254 0	1 51·0	59·9	0·500	29·42	54·2	51·8	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 64·5	71·6	0·500	......	......	......	......	......	......	......
	4562	......	......	13 31 53	93 0	1 1·6	3·2	0·500	29·42	......	51·8	2, S.W.	2	6	+18 59 0·2
	4756	(b)	5·0	14 14 6	77 20	0 49·4	50·6	0·384	29·42	......	51·7	......	......	7	+3 18 43·6
	4797	......	......	14 23 1	93 10	1 44·3	44·8	0·500	29·42	......	51·7	......	......	8	+19 9 42·5
	4820	......	......	14 28 46	96 50	2 10·4	12·0	0·376	29·42	......	51·7	......	......	8	+22 50 6·0
	4863	......	......	14 37 32	92 35	4 52·5	52·3	0·500	29·42	......	51·5	......	......	6	+18 37 50·8
	4934	......	......	14 51 13	88 15	3 59·5	61·7	0·500	29·42	......	51·2	......	......	9	+14 16 58·5
	4992	......	......	15 2 44	74 55	0 30·3	32·1	0·315	29·42	......	51·1	......	......	7	+0 53 22·8
	5091	......	......	15 20 39	66 10	0 46·9	47·3	0·399	29·42	......	51·0	......	......	7	−7 51 10·6
	5284	χ Serpentis	......	15 50 35	113 50	2 57·8	58·4	0·500	29·42	......	50·8	......	......	8	+39 50 57·1
	......	Nadir ‖	......	15 57 0	254 0	1 53·8	60·2	0·500	29·42	52·1	50·7	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 66·0	73·1	0·500	......	......	......	......	......	......	......
May 12	......	Nadir |‖|	......	13 3 0	254 0	1 52·8	61·4	0·500	29·55	53·0	52·0	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 65·6	74·2	0·500	......	......	......	......	......	......	......

(a) Sky getting cloudy. (b) Definition very good.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1868.
1868.				h. m. s.	° ′	r ″	″	revols.	inches.	°	°				° ′ ″	″
May 12	4575	......	......	13 37 44	106 35	1 46·6	46·4	0·500	29·55	......	52·0	2, S.W.	0	6	+32 34 45·1	− 0·3
	5071	......	......	15 16 25	77 30	3 9·0	11·8	0·642	29·55	......	51·7	......	......	8	+ 3 31 11·6	+ 2·6
	5284	γ Serpentis	......	15 50 34	113 50	2 56·4	57·2	0·500	29·55	......	51·4	......	......	6	+39 50 55·8	+ 0·1
	......	Nadir	......	16 8 0	254 0	1 53·1	61·6	0·500	29·55	54·0	51·3	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·9	74·6	0·500	......	......	......	......	......	......	......	......
May 13	......	Nadir	......	14 6 0	254 0	1 52·1	59·9	0·500	29·67	54·5	54·4	......	......	......	......	......
	......	Nadir	......	......	254 0	1 65·4	73·1	0·500	......	......	......	......	......	......	......	......
	4797	(a)	......	14 22 59	93 10	1 45·3	47·1	0·475	29·66	......	54·4	7, W.	1	6	+19 9 43·4	+ 1·7
	4992	......	......	15 2 41	74 55	0 25·0	27·2	0·527	29·66	......	54·2	......	......	7	+ 0 53 23·5	+ 3·6
	5071	(b)	......	15 16 24	77 30	3 7·3	10·4	0·673	29·66	......	54·2	......	......	5	+ 3 31 10·9	+ 2·9
	......	Nadir	......	15 33 0	254 0	1 52·3	60·3	0·500	29·66	54·1	54·1	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·7	74·7	0·500	......	......	......	......	......	......	......	......
June 29	......	Nadir	......	16 41 0	254 0	1 55·3	62·7	0·500	30·10	59·3	55·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 65·0	72·0	0·500	......	......	......	......	......	......	......	......
	5716	......	6·0	16 52 42	114 15	4 13·0	14·8	0·500	30·10	......	55·0	......	......	6	+40 17 12·2	+ 9·6
	5776	......	......	17 1 21	80 55	4 51·4	52·1	0·500	30·10	......	55·0	......	......	7	+ 6 57 48·6	+13·2
Aug. 4	......	Nadir	......	18 29 0	254 0	1 55·7	63·0	0·500	29·64	71·0	70·7	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·8	72·7	0·500	......	......	......	......	......	......	......	......
	6528	ζ Aquilæ	......	18 59 34	116 15	3 2·7	4·8	0·500	29·64	......	70·4	7, E.	0	6	+42 16 2·1	+18·1
	6762	......	......	19 38 42	103 5	4 19·0	18·9	0·500	29·64	......	70·2	......	......	7	+29 7 16·9	+18·0
	6852	......	......	19 51 23	70 35	2 35·9	34·7	0·500	29·64	......	70·0	......	......	8	− 3 24 28·6	+17·4
	7006	......	......	20 13 43	93 15	3 30·0	32·2	0·500	29·65	......	69·8	......	......	......	+19 16 28·5	+17·0
	7161	......	......	20 35 6	84 45	1 54·9	53·8	0·500	29·65	......	69·6	......	......	7	+10 44 51·5	+15·7
	......	Nadir	......	20 52 0	254 0	1 55·7	62·9	0·500	29·65	70·6	69·5	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·3	72·4	0·500	......	......	......	......	......	......	......	......
Aug. 6	......	Nadir	......	19 23 0	254 0	1 54·0	59·6	0·500	29·28	64·0	61·5	......	......	......	......	......
	......	Nadir	......	......	254 0	1 63·2	70·4	0·500	......	......	......	......	......	......	......	......
	6791	......	......	19 42 25	118 35	1 1·3	1·5	0·528	29·28	......	61·5	7, S.W.	4	7	+44 34 0·8	+17·4
	7150	......	......	20 32 54	119 20	0 42·6	45·8	0·524	29·28	......	61·3	......	......	6	+45 18 43·5	+17·3
	......	Nadir	......	20 40 0	254 0	1 55·9	63·2	0·500	29·28	......	61·1	......	......	......	......	......
	......	Nadir	......	......	254 0	1 63·8	73·5	0·500	......	......	......	......	......	......	......	......
Sept. 10	......	Nadir	......	20 25 0	254 0	1 54·6	62·9	0·500	29·83	60·3	58·4	......	......	......	......	......
	......	Nadir	......	......	254 0	1 63·6	70·7	0·500	......	......	......	......	......	......	......	......
	7268	......	......	20 51 44	83 0	4 8·0	7·2	0·400	29·84	......	58·1	1, W.	0	6	+ 9 2 2·6	+25·3
	7368	ζ Cygni	......	21 7 42	100 15	2 21·7	19·3	0·468	29·83	......	58·0	......	......	6	+26 15 18·4	+23·7
	7430	......	......	21 17 31	69 45	2 21·2	18·7	0·497	29·83	......	58·0	......	......	7	− 4 14 43·0	+24·0
	7561	ι Pegasi	......	21 38 6	120 40	1 44·2	43·2	0·505	29·83	......	57·9	......	......	6	+46 39 42·9	+21·4
	7644	......	......	21 50 46	58 5	2 20·6	14·2	0·500	29·83	......	57·7	......	......	7	−15 54 46·3	+20·9
	7688	α Aquarii	......	21 59 24	130 55	0 9·7	9·4	0·500	29·83	......	57·5	......	......	8	+56 53 8·6	+20·0
	7759	......	......	22 8 1	69 50	2 41·7	39·8	0·605	29·63	......	56·0	......	......	7	− 4 9 19·2	+20·6
	7908	ζ Pegasi	......	22 35 16	119 45	4 27·7	26·8	0·500	29·83	......	55·5	......	......	9	+45 47 26·1	+20·2
	7977	......	7·0	22 47 31	128 45	4 10·4	8·0	0·544	29·83	......	56·2	......	......	8	+54 47 9·1	+19·8
	......	Nadir	......	22 57 0	254 0	1 51·5	57·9	0·500	29·83	57·1	56·1	......	......	......	......	......
	......	Nadir	......	......	254 0	1 61·2	72·8	0·500	......	......	......	......	......	......	......	......
Sept. 25	......	Nadir	......	20 51 0	254 0	1 52·7	59·7	0·500	29·28	54·1	50·3	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·8	72·1	0·500	......	......	......	......	......	......	......	......

(a) Clouds gathering. (b) Imperfectly seen at time of transit.

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Date.	Star or other Object Observed: No. in British Asso. Catalogue.	Star or other Object Observed: Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.
1868.				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″
Sept. 25	7336	61 Cygni …………	……	21 4 28	91 50	2 30·7	30·3	0·436	29·28	……	50·3	6, N.E.	5	6	+17 50 27·1
	7590	…………	……	21 41 13	113 20	3 4·3	4·5	0·500	29·27	……	50·0	…………	……	7	+39 21 3·9
	……	Nadir ‖ …………	……	21 53 0	254 0	1 53·1	59·4	0·500	29·27	52·9	50·0	…………	……	……	…………
	……	Nadir ‖ …………	……	………	254 0	1 65·2	71·8	0·500	……	……	……	…………	……	……	…………
Sept. 28	……	Nadir ‖ …………	……	21 42 0	254 0	1 51·9	59·1	0·500	29·00	55·0	52·9	…………	……	……	…………
	……	Nadir ‖ …………	……	………	254 0	1 62·9	71·0	0·500	……	……	……	…………	……	……	…………
	7688	α Aquarii …………	……	21 59 30	130 55	0 10·6	13·5	0·504	29·00	……	52·8	2, S.W.	6	7	+56 53 11·8
	……	Nadir ‖ …………	……	22 10 0	254 0	1 52·1	60·2	0·500	29·00	51·2	52·7	…………	……	……	…………
	……	Nadir ‖ …………	……	………	254 0	1 62·1	69·9	0·500	……	……	……	…………	……	……	…………
Sept. 30	……	Nadir ‖ …………	……	22 0 0	254 0	1 52·0	58·6	0·500	29·39	52·0	46·0	…………	……	……	…………
	……	Nadir ‖ …………	……	………	254 0	1 63·9	70·1	0·500	……	……	……	…………	……	……	…………
	8024	…………	……	22 56 27	73 35	0 11·1	11·2	0·651	29·39	……	45·8	3, N.N.E.	3	7	− 0 26 46·4
	8083	…………	……	23 7 25	73 30	2 36·9	35·8	0·675	29·39	……	45·8	…………	……	8	− 0 29 20·6
	8147	…………	……	23 16 43	110 5	3 10·3	9·2	0·500	29·39	……	45·6	…………	……	7	+36 6 9·7
	……	Nadir ‖ …………	……	23 21 0	254 0	1 51·8	60·4	0·500	29·39	48·7	45·4	…………	……	……	…………
	……	Nadir ‖ …………	……	………	254 0	1 64·3	69·5	0·500	……	……	……	…………	……	……	…………
Oct. 7	……	Nadir ‖ …………	……	21 16 0	254 0	1 54·5	61·1	0·500	29·58	50·0	49·7	7, S.W.	1	……	…………
	……	Nadir ‖ …………	……	………	254 0	1 61·3	69·7	0·500	……	……	……	…………	……	……	…………
	7977	…………	7·0	22 47 41	128 45	4 8·3	9·4	0·500	29·57	……	49·3	…………	……	5	+54 47 8·1
	8034	α Pegasi …………	……	22 56 41	115 25	3 30·5	30·3	0·437	29·55	……	49·0	…………	……	7	+41 26 28·6
	8083	…………	……	23 7 30	73 30	2 38·6	39·3	0·500	29·55	……	48·7	…………	……	8	− 0 29 23·1
	8139	…………	……	23 15 30	92 5	2 1·7	1·0	0·676	29·55	……	48·5	…………	……	6	+18 5 5·8
	8247	…………	……	23 36 23	112 0	2 10·0	10·7	0·450	29·54	……	48·2	…………	……	7	+38 0 8·7
	8315	(a) …………	……	23 49 27	122 25	3 35·0	36·8	0·613	29·55	……	47·3	12	……	7	+48 26 38·5
	83	…………	……	0 18 33	77 40	0 6·4	7·4	0·500	29·55	……	47·1	…………	……	6	+ 3 38 4·9
	……	Nadir ‖ …………	……	0 44 0	254 0	1 53·5	63·8	0·500	29·55	47·5	47·0	…………	……	……	…………
	……	Nadir ‖ …………	……	………	254 0	1 60·9	71·3	0·500	……	……	……	…………	……	……	…………
Oct. 9	……	Nadir ‖ …………	……	21 35 0	254 0	1 52·8	61·2	0·500	29·53	52·7	51·0	…………	……	……	…………
	……	Nadir ‖ …………	……	………	254 0	1 64·1	72·3	0·500	……	……	……	…………	……	……	…………
	7688	α Aquarii …………	……	21 59 31	130 55	0 10·0	12·4	0·500	29·53	……	51·0	1, S.W.	0	7	+56 53 9·9
	7759	…………	6·0	22 8 44	69 50	2 31·8	33·4	0·584	29·54	……	51·0	…………	……	7	− 4 9 26·4
	7908	ζ Pegasi …………	……	22 35 26	119 45	4 26·0	27·2	0·500	29·54	……	50·9	…………	……	8	+45 47 25·0
	7977	…………	……	22 47 41	128 45	4 14·5	15·9	0·282	29·54	……	50·9	…………	……	8	+54 47 8·2
	8024	…………	……	22 56 29	73 30	5 12·7	13·6	0·466	29·54	……	50·8	…………	……	7	− 0 26 50·1
	8093	…………	……	23 2 28	126 30	3 7·8	9·3	0·444	29·54	……	50·6	…………	……	6	+54 31 5·9
	8135	…………	……	23 7 31	73 30	2 37·3	37·7	0·500	29·54	……	50·6	…………	……	6	− 0 29 25·0
	8204	…………	……	23 15 4	86 35	0 5·7	5·4	0·500	29·54	……	50·2	…………	……	9	+12 33 3·7
	8247	…………	……	23 27 28	58 40	2 58·8	56·4	0·400	29·54	……	50·1	…………	……	7	−15 19 7·7
	15	…………	……	23 36 25	112 0	2 3·0	3·1	0·747	29·56	……	49·9	…………	……	6	+38 0 9·2
	57	…………	……	0 4 15	71 0	2 49·8	48·2	0·500	29·57	……	49·7	…………	……	9	− 2 59 13·8
	83	…………	……	0 11 34	120 0	0 24·2	25·0	0·543	29·57	……	49·6	…………	……	7	+54 58 24·5
	113	…………	……	0 18 33	77 40	0 6·8	8·0	0·500	29·57	……	49·5	…………	……	8	+ 3 38 4·9
	……	Nadir ‖ …………	……	0 23 55	125 50	0 6·6	7·4	0·417	29·57	……	49·5	…………	……	6	+51 49 3·5
	……	Nadir ‖ …………	……	0 31 0	254 0	1 53·3	61·7	0·500	……	50·9	……	…………	……	……	…………
				………	254 0	1 63·7	73·0	0·500	……	……	……	…………	……	……	…………
Oct. 13	……	Nadir ‖ …………	……	21 52 0	254 0	1 53·4	59·6	0·500	……	51·3	……	…………	……	……	…………
	……	Nadir ‖ …………	……	………	254 0	1 65·0	72·8	0·500	……	……	……	…………	……	……	…………

(a) Wind increasing rapidly.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1868.
1868.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Oct. 13	7908	ζ Pegasi	......	22 35 27	119 45	4 25·2	25·4	0·500	29·86	......	45·0	......	......	5	+45 47 21·3	+22·7
	7977	......	......	22 47 42	128 45	4 5·6	6·8	0·560	29·86	......	44·9	......	......	6	+54 47 6·5	+20·7
	8034	α Pegasi	......	22 58 46	115 25	3 22·5	22·3	0·526	29·86	......	44·8	......	......	7	+41 26 22·3	+22·9
	8135	......	......	23 15 4	86 35	0 4·0	3·5	0·526	29·86	......	44·4	......	......	7	+12 33 2·3	+25·2
	8247	......	......	23 36 25	112 0	2 7·8	7·8	0·500	29·86	......	44·2	......	......	8	+38 0 6·8	+21·9
	8315	......	......	23 49 28	122 25	3 35·4	36·0	0·500	29·86	......	44·1	......	......	7	+48 26 34·5	+20·1
	8364	......	......	23 58 42	72 10	1 14·0	14·0	0·512	29·86	......	44·0	......	......	6	− 1 50 47·9	+21·7
	42	......	6·5	0 9 45	126 25	1 44·3	43·7	0·567	29·86	......	44·0	......	......	7	+52 24 44·5	+18·9
	83	......	......	0 18 33	77 40	0 5·4	6·0	0·500	29·86	......	44·0	......	......	6	+ 3 38 3·0	+20·0
	177	......	......	0 34 58	121 20	0 0·5	0·7	0·500	29·86	......	44·0	......	......	7	+47 17 59·3	+18·3
	259	......	......	0 50 2	92 10	1 48·0	48·0	0·500	29·86	......	44·0	......	......	6	+18 9 46·2	+17·6
	314	μ Cassiopeæ	......	1 0 6	75 40	2 50·0	50·6	0·500	29·85	......	44·2	......	......	......	+ 1 40 47·6	+15·7
	......	Nadir ‖ |	......	1 7 0	254 0	1 54·3	63·0	0·500	29·85	46·2	44·2	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 64·8	72·8	0·500	......	......	......	......	......	......	......	......
Oct. 15	......	Nadir ‖ |	......	21 58 0	254 0	1 52·4	61·0	0·500	29·10	50·3	46·2	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 63·7	72·2	0·500	......	......	......	......	......	......	......	......
	7759	......	......	22 8 14	69 50	2 32·1	32·0	0·657	29·10	......	46·2	15, S.W.	0	7	− 4 0 25·8	+30·1
	7908	ζ Pegasi	......	22 35 28	119 45	4 26·4	26·5	0·500	29·10	......	46·1	......	......	7	+45 47 25·6	+22·7
	7977	......	......	22 47 42	128 45	4 10·2	10·8	0·534	29·10	......	46·4	......	......	6	+54 47 10·4	+20·6
	8024	......	......	22 56 32	73 35	0 7·1	8·4	0·650	29·10	......	46·4	......	......	8	− 0 26 50·9	+27·3
	8083	......	......	23 7 32	73 30	2 36·2	35·6	0·500	29·10	......	46·3	......	......	6	− 0 29 26·7	+26·5
	8135	......	......	23 15 4	86 35	0 4·8	4·6	0·516	29·10	......	46·1	......	......	7	+12 33 3·1	+25·6
	8247	......	......	23 36 26	112 0	2 10·1	10·5	0·500	29·10	......	46·0	......	......	9	+38 0 9·6	+22·1
	8269	(a)	......	23 41 35	126 25	3 1·9	2·2	0·500	29·10	......	46·0	......	......	5	+52 26 1·0	+19·9
	8315	......	......	23 49 28	122 25	3 38·5	38·2	0·569	29·10	......	46·0	......	......	6	+48 26 39·4	+20·2
	8355	(b)	......	23 56 28	64 35	2 24·6	23·3	0·527	29·10	......	46·0	......	......	7	− 9 24 38·4	+22·1
	57	......	......	0 11 36	129 0	0 28·1	29·4	0·475	29·10	......	45·8	......	......	6	+54 58 26·7	+18·6
	113	(c)	......	0 23 56	125 50	0 7·1	8·4	0·517	29·10	......	45·8	......	......	8	+51 48 7·0	+18·4
	218	η Cassiopeæ	......	......	72 50	2 17·4	17·5	0·500	29·10	......	45·7	......	......	5	− 1 9 45·3	+18·0
	259	......	......	0 50 2	92 10	1 49·9	51·0	0·500	29·10	......	45·7	......	......	7	+18 9 48·8	+18·0
	299	......	......	0 57 51	101 0	1 26·0	25·4	0·500	29·10	......	45·6	......	......	7	+26 59 21·4	+17·5
	......	Nadir ‖ |	......	1 12 0	254 0	1 55·0	63·0	0·500	29·10	46·2	45·6	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 63·7	71·3	0·500	......	......	......	......	......	......	......	......
Oct 16	......	Nadir ‖ |	......	22 17 0	254 0	1 53·0	59·9	0·500	28·95	46·4	41·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 64·0	71·4	0·500	......	......	......	......	......	......	......	......
	7908	ζ Pegasi	......	22 35 28	119 45	4 25·7	24·8	0·540	28·95	......	40·8	15, S.W.	0	7	+45 47 25·9	+22·8
	7977	......	......	22 47 42	128 45	4 7·9	8·0	0·593	28·95	......	40·7	......	......	6	+54 47 9·6	+20·6
	8024	(d)	......	22 56 32	73 35	0 8·8	8·9	0·594	28·95	......	40·7	......	......	8	− 0 26 51·0	+27·5
	8247	......	......	23 36 26	112 0	2 7·0	7·4	0·560	28·95	......	40·7	......	......	6	+38 0 8·5	+22·2
	8270	(e)	......	23 41 41	126 30	1 14·5	14·3	0·500	28·95	......	40·0	......	......	7	+52 29 13·6	+19·9
	8315	......	......	23 49 28	122 25	3 37·8	37·4	0·596	28·95	......	39·1	......	......	7	+48 26 39·7	+20·2
	8350	(f) 85 Pegasi	......	......	103 35	0 27·7	26·0	0·500	28·95	......	39·0	......	......	4	+29 33 26·0	+22·0
	18	(g)	7·0	0 4 16	71 0	2 47·9	44·9	0·559	28·95	......	39·0	......	......	5	− 2 59 14·4	+22·0
	57	......	......	0 11 36	129 0	0 27·3	27·9	0·500	28·95	......	39·0	......	......	6	+54 58 26·7	+18·5
	98	......	......	0 21 16	114 40	0 38·2	38·6	0·420	28·95	......	39·9	......	......	6	+40 38 35·9	+19·6
	149	......	......	0 29 41	117 25	4 1·7	2·4	0·458	28·95	......	40·0	......	......	7	+43 27 0·5	+18·9
	357	......	......	1 6 11	98 35	1 13·4	13·2	0·564	28·95	......	39·6	......	......	......	+24 34 14·2	+16·9
	......	Nadir ‖ |	......	1 12 0	254 0	1 52·0	58·5	0·500	28·95	42·0	39·6	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 66·5	72·0	0·500	......	......	......	......	......	......	......	......

(a) $\left|{}^{*a}{}_{*b}\right\{$ a observed. (b) Double. (c) Wind increasing. (d) Occasional showers. (e) $\left\}{}_{*b}{}^{*a}\right\{$ b observed.
(f) Seen rather late. (g) Stars unsteady.

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Date.	Star or other Object Observed. No. in British Assn. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer Fahr.	Exterior Thermometer Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	
				h m s	° '	r ″	″	r.	inches	°	°				° ' ″	
1868. Oct. 19	......	Nadir ‖	......	22 57 0	254 0	1 52.0	58.7	0.500	29.62	43.2	40.8	....	......	......	....	
	......	Nadir ∣‖	......	....	254 0	1 63.7	71.2	0.500	......	......	......	....	......	......	....	
	8083	....	......	23 7 34	73 30	2 33.3	32.5	0.636	29.62	......	40.8	....	......	7	− 0 29 25.9	+
	83	....	......	0 18 37	77 40	0 5.3	5.3	0.500	29.64	......	40.0	....	......	7	+ 3 38 3.5	+
	133	....	8.0	0 27 23	110 15	1 1.3	0.7	0.573	29.64	......	40.0	....	......	6	+ 36 14 2.9	+
	177	....	......	0 35 0	121 20	0 0.7	1.1	0.500	29.64	......	40.0	....	......	5	+ 47 18 0.5	+
	218	(a) η Cassiopeæ	......	0 41 46	72 50	2 13.3	13.0	0.500	29.64	......	40.0	....	......	8	− 1 9 46.1	+
	259	....	......	0 50 5	92 10	1 47.4	46.8	0.573	29.64	......	40.0	....	......	6	+ 18 9 48.2	+
	290	....	......	0 57 16	76 25	4 16.3	15.3	0.500	29.64	......	40.0	....	......	7	+ 2 27 14.4	−
	455	....	......	1 25 33	113 40	1 51.0	50.8	0.663	29.61	......	39.7	....	......	7	+ 39 39 55.4	+
	......	Nadir ‖	......	1 35 0	254 0	1 53.1	59.9	0.500	29.61	41.7	39.5	....	......	......	....	
	......	Nadir ∣‖	......	....	251 0	1 62.4	69.5	0.500	......	......	......	....	......	......	....	
Oct. 21	......	Nadir ‖	......	22 24 0	254 0	1 52.9	60.3	0.500	29.43	44.0	40.8	....	......	......	....	
	......	Nadir ∣‖	......	....	254 0	1 61.8	70.8	0.500	......	......	......	....	......	......	....	
	7977	....	......	22 47 45	128 45	1 8.4	9.2	0.500	29.43	......	40.8	5, W.	0	7	+ 54 47 7.9	+
	8024	....	......	22 56 33	73 35	0 4.7	5.7	0.684	29.43	......	40.7	....	......	8	− 0 28 52.2	+
	8083	....	......	23 7 35	73 30	2 32.2	31.2	0.618	29.43	......	40.6	....	......	7	− 0 29 27.3	+
	8139	....	......	23 15 31	92 5	2 3.7	3.7	0.558	29.45	......	40.6	....	......	9	+ 18 5 4.0	+
	8247	....	......	23 36 29	112 0	2 7.2	7.6	0.500	29.45	......	40.5	....	......	6	+ 38 0 6.9	+
	8364	....	......	23 58 47	72 10	1 15.7	14.7	0.500	29.45	......	40.6	....	......	7	− 1 50 47.4	−
	83	....	......	0 18 37	77 40	0 4.9	5.3	0.500	29.45	......	40.5	....	......	6	+ 3 38 2.9	−
	237	....	......	0 45 8	127 15	2 10.1	11.1	0.607	29.45	......	40.5	....	......	7	+ 53 15 42.7	+
	290	....	......	0 57 9	76 25	1 18.2	17.7	0.450	29.46	......	40.5	....	......	6	+ 2 27 14.5	+
	367	....	......	1 6 14	98 35	1 14.0	14.2	0.500	29.46	......	40.5	....	......	7	+ 24 34 13.1	+1
	456	....	......	1 25 35	113 40	1 57.1	57.0	0.500	29.46	......	40.5	....	......	8	+ 39 39 56.6	+1
	......	Nadir ‖	......	1 32 0	254 0	1 54.8	61.6	0.500	29.46	44.1	40.5	....	......	......	....	
	......	Nadir ∣‖	......	....	254 0	1 65.0	72.8	0.500	......	......	......	....	......	......	....	
Oct. 23	......	Nadir ‖	......	22 58 0	251 0	1 52.0	59.2	0.500	29.32	44.7	38.7	....	......	......	....	
	......	Nadir ∣‖	......	....	251 0	1 65.7	72.0	0.500	......	......	......	....	......	......	....	
	8247	....	......	23 36 30	112 0	2 7.2	7.2	0.500	29.32	......	38.9	7, W.	1	6	+ 38 0 6.7	+1
	28	....	......	0 7 18	89 40	0 24.0	23.8	0.500	29.32	......	38.8	....	......	7	+ 15 38 22.4	+2
	83	....	......	0 18 37	77 40	0 3.5	3.9	0.500	29.32	......	38.7	....	......	8	+ 3 38 1.5	+2
	218	η Cassiopeæ	4.0	0 41 12	72 50	2 12.8	12.1	0.550	29.32	......	38.6	....	......	6	− 1 9 46.7	+3
	314	μ Cassiopeæ	......	1 0 9	75 40	2 49.1	47.8	0.538	29.32	......	38.6	....	......	7	+ 1 40 47.2	+1
	455	....	......	1 25 36	113 40	1 56.8	54.4	0.500	29.32	......	38.5	....	......	6	+ 39 39 55.2	+1
	539	....	......	1 40 5	113 10	3 19.3	18.6	0.500	29.32	......	38.5	....	......	7	+ 39 11 16.7	+1
	......	Nadir ‖	......	1 47 0	254 0	1 54.4	61.6	0.500	29.32	40.0	38.5	....	......	......	....	
	......	Nadir ∣‖	......	....	254 0	1 63.0	70.3	0.500	......	......	......	....	......	......	....	
Oct. 26	......	Nadir ‖	......	0 4 0	254 0	1 54.2	61.0	0.500	29.35	43.8	40.0	....	......	......	....	
	......	Nadir ∣‖	......	....	254 0	1 65.1	72.0	0.500	......	......	......	....	......	......	....	
	57	....	......	0 11 40	129 0	0 25.2	25.4	0.548	29.35	......	40.0	....	......	6	+ 54 58 25.2	+18
	98	....	......	0 21 19	114 40	0 35.3	35.1	0.500	29.35	......	40.0	....	......	7	+ 40 38 34.5	+20
	133	....	......	0 27 26	110 15	1 3.4	3.0	0.500	29.35	......	40.0	....	......	6	+ 36 14 2.4	+20
	197	....	......	0 37 48	82 50	0 31.7	30.7	0.500	29.35	......	40.0	....	......	7	+ 8 48 29.1	+21
	237	....	......	0 45 10	127 15	2 45.6	45.2	0.373	29.35	......	39.8	....	......	8	+ 53 15 40.7	+17
	259	....	......	0 50 7	92 10	1 47.2	46.5	0.500	29.35	......	39.8	....	......	7	+ 18 9 45.2	+20
	290	....	......	0 57 11	76 25	4 15.0	14.8	0.510	29.35	......	39.7	....	......	8	+ 2 27 12.7	+19
	357	(b)	......	1 6 15	98 35	1 16.2	16.4	0.356	29.37	......	39.7	....	......	6	+ 24 34 11.0	+18

(a) Bright aurora in N.W.

(b) Double.

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1868.
1868.				h. m. s.	° ′	′ ″	″	revols.	inches	°	°				° ′ ″	″
Oct. 26	516	......	......	1 35 7	95 20	4 4·8	4·2	0·500	29·37	......	39·7	......	......	6	+21 22 3·1	+15·9
	......	Nadir ‖ǀ	......	1 52 0	254 0	1 53·3	60·5	0·500	29·37	41·1	39·6	......	......	......	......	......
	......	Nadir ǀ‖	......	......	254 0	1 64·2	72·0	0·500	......	......	......	......	......	......	......	......
Oct. 27	......	Nadir ‖ǀ	......	22 56 0	254 0	1 55·0	62·0	0·500	29·81	43·2	40·0	......	......	......	......	......
	......	Nadir ǀ‖	......	......	254 0	1 65·4	72·8	0·500	......	......	......	......	......	......	......	......
	8147	......	......	23 16 51	110 5	3 9·0	8·1	0·500	29·81	......	40·0	......	......	7	+36 6 7·5	+24·1
	8269	(a)	......	......	126 25	3 0·3	0·1	0·498	29·81	......	39·9	......	......	6	+52 25 58·6	+19·8
	8338	......	......	23 54 40	68 30	2 32·8	31·2	0·614	29·81	......	39·9	......	......	7	− 5 29 26·3	+25·8
	18	......	......	0 4 20	71 0	2 46·0	43·6	0·500	29·81	......	39·8	......	......	8	− 2 59 18·5	+25·0
	68	......	......	0 15 6	62 50	3 47·2	43·3	0·639	29·81	......	39·8	......	......	6	−11 8 14·6	+23·8
	125	......	......	0 26 10	59 40	4 6·8	5·7	0·602	29·81	......	39·8	......	......	7	−14 17 54·9	+22·6
	197	......	......	0 37 48	82 50	0 31·7	31·0	0·500	29·82	......	39·6	......	......	6	+ 8 48 28·9	+21·7
	259	......	......	0 50 7	92 10	1 45·4	44·4	0·617	29·82	......	39·6	......	......	7	+18 9 46·2	+20·3
	290	......	......	0 57 10	76 25	4 17·0	15·0	0·490	29·82	......	39·6	......	......	8	+ 2 27 12·9	+19·8
	455	......	......	1 25 36	113 40	1 56·7	55·1	0·498	29·82	......	39·5	......	......	7	+39 39 54·7	+16·3
	547	......	......	1 41 45	82 40	4 44·0	41·8	0·588	29·82	......	39·4	......	......	6	+ 8 42 43·0	+15·2
	588	......	......	1 50 39	66 0	0 43·0	41·7	0·602	29·82	......	39·4	......	......	8	− 8 1 18·4	+13·2
	......	Nadir ‖ǀ	......	1 57 0	254 0	1 53·2	60·4	0·500	29·82	41·2	39·4	......	......	......	......	......
	......	Nadir ǀ‖	......	......	254 0	1 65·5	72·4	0·500	......	......	......	......	......	......	......	......
Oct. 29	......	Nadir ‖ǀ	......	23 7 0	254 0	1 51·7	60·3	0·500	29·37	43·2	40·0	......	......	......	......	......
	......	Nadir ǀ‖	......	......	254 0	1 64·8	71·4	0·500	......	......	......	......	......	......	......	......
	8217	......	......	23 36 31	112 0	2 4·2	4·1	0·638	29·37	......	39·9	10, W.	0	7	+38 0 6·8	+23·0
	8298	......	......	23 46 20	53 5	2 15·0	13·4	0·617	29·37	......	39·9	......	......	6	−20 54 46·7	+26·7
	8338	......	......	23 54 42	68 30	2 33·7	33·3	0·500	29·37	......	40·0	......	......	9	− 5 29 29·9	+26·3
	8372	......	......	23 60 3	72 15	2 1·1	1·0	0·521	29·37	......	40·0	......	......	7	− 1 45 1·7	+25·8
	98	......	......	0 21 20	114 40	0 36·8	36·4	0·500	29·37	......	40·0	......	......	6	+40 38 35·5	+20·3
	218	η Cassiopeæ	......	0 41 49	72 50	2 12·0	11·1	0·543	29·41	......	40·5	......	......	7	− 1 9 50·4	+21·9
	290	......	......	0 57 10	76 25	4 9·3	9·0	0·744	29·41	......	40·7	......	......	8	+ 2 27 13·0	+20·3
	335	......	......	1 3 36	66 25	4 17·9	16·7	0·466	29·41	......	40·7	......	......	7	− 7 32 47·1	+19·4
	376	......	......	1 9 41	57 45	3 36·9	34·8	0·464	29·41	......	40·8	......	......	6	−16 13 29·3	+18·3
	455	......	......	1 25 38	113 40	1 56·9	55·3	0·500	29·41	......	40·8	......	......	8	+39 39 55·0	+16·4
	514	......	......	1 34 53	100 35	1 1·8	1·0	0·384	29·41	......	40·8	......	......	6	+26 33 56·5	+16·3
	547	......	......	1 41 43	82 40	4 44·9	42·7	0·558	29·41	......	40·8	......	......	9	+ 8 42 43·1	+15·6
	588	......	......	1 50 39	66 0	0 42·0	41·2	0·617	29·41	......	40·8	......	......	7	− 8 1 18·7	+13·8
	......	Nadir ‖ǀ	......	2 0 0	254 0	1 54·4	62·1	0·500	29·43	41·1	40·7	......	......	......	......	......
	......	Nadir ǀ‖	......	......	254 0	1 65·0	72·3	0·500	......	......	......	......	......	......	......	......
Nov. 4	......	Nadir ‖ǀ	......	23 20 0	254 0	1 53·7	62·2	0·500	28·95	44·4	35·8	......	......	......	......	......
	......	Nadir ǀ‖	......	......	254 0	1 64·8	73·7	0·500	......	......	......	......	......	......	......	......
	8269	......	8·0	23 41 41	126 25	2 58·9	59·9	0·559	28·95	......	35·7	7, W.	1	5	+52 25 59·5	+19·6
	8315	......	......	23 49 34	122 25	3 39·8	40·2	0·477	28·95	......	35·7	......	......	6	+48 26 38·0	+20·3
	8364	......	......	23 58 50	72 10	1 11·4	10·6	0·610	28·95	......	35·7	......	......	7	− 1 50 49·7	+27·3
	26	γ Pegasi	......	0 7 9	115 30	1 16·2	15·0	0·500	28·95	......	35·8	......	......	8	+41 29 14·0	+21·0
	113	......	......	0 24 3	125 50	0 5·6	5·0	0·497	28·95	......	35·9	......	......	7	+51 48 3·5	+18·2
	197	......	......	0 37 48	82 50	0 30·8	29·2	0·520	28·95	......	35·9	......	......	7	+ 8 48 27·5	+23·4
	263	......	9·0	0 50 51	103 40	1 26·3	24·7	0·527	28·95	......	35·9	......	......	5	+29 39 24·4	+20·4
	299	......	8·0	0 57 58	101 0	1 20·5	17·7	0·650	28·97	......	35·8	......	......	6	+26 59 21·1	+20·1
	645	......	......	1 59 55	104 45	1 39·1	37·0	0·559	28·98	......	36·0	......	......	7	+30 44 38·0	+14·6
	......	Nadir ‖ǀ	......	2 13 0	254 0	1 54·0	62·7	0·500	28·98	38·1	35·9	......	......	......	......	......
	......	Nadir ǀ‖	......	......	254 0	1 65·3	73·6	0·500	......	......	......	......	......	......	......	......

(a) $\left\{ {}^{*}a \; {}^{*}b \right\}$ b observed.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. P. D. Jan. 1, 1868.
1868.				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
Nov. 5	......	Nadir	......	23 42 0	254 0	1 54·0	60·4	0·500	29·38	41·0	36·2	....	......	......	....	......
	......	Nadir	......	....	254 0	1 64·5	71·7	0·500	......	......	......	....	......	......	....	......
	8364	....	......	23 58 49	72 10	1 9·5	8·9	0·627	29·38	......	36·2	3, W.	0	6	− 1 50 50·8	−27·5
	26	γ Pegasi	......	0 7 8	115 30	1 10·4	10·4	0·654	29·38	......	36·1	....	......	7	+41 29 13·3	−[illegible]
	83	....	......	0 18 41	77 40	0 0·0	0·1	0·670	29·38	......	35·9	....	......	8	+ 3 36 1·5	+25·6
	125	....	......	0 26 10	59 40	4 7·1	5·6	0·500	29·38	......	35·8	....	......	7	−14 17 57·2	+25·5
	177	....	......	0 35 5	121 20	0 0·7	0·6	0·518	29·38	......	35·4	....	......	5	+47 17 59·3	+15·6
	218	α Cassiopeæ	4·0	0 41 51	72 50	2 12·8	11·6	0·478	29·38	......	35·2	....	......	6	− 1 9 51·6	+21·7
	......	Nadir	......	1 12 0	254 0	1 53·8	59·8	0·500	29·39	36·8	35·0	....	......	......	....	......
	......	Nadir	......	....	254 0	1 65·0	72·8	0·500	......	......	......	....	......	......	....	......
Nov. 6	......	Nadir	......	1 1 0	254 0	1 55·0	62·3	0·500	29·63	36·4	33·3	....	......	......	....	......
	......	Nadir	......	....	254 0	1 66·3	73·4	0·500	......	......	......	....	......	......	....	......
	455	....	7·0	1 25 39	113 40	1 54·7	53·3	0·498	29·63	......	33·2	10, N.W.	2	6	+39 39 52·3	+15·[illegible]
	482	....	......	....	72 40	0 59·9	58·9	0·500	29·63	......	33·2	....	......	5	− 1 21 4·5	+18·4
	514	....	......	1 34 55	100 35	0 58·1	56·7	0·486	29·63	......	33·2	....	......	7	+26 33 54·6	+17·3
	547	....	......	1 41 48	82 40	4 41·8	40·4	0·566	29·63	......	32·8	....	......	6	+ 8 42 40·5	−17·4
	588	....	......	1 50 38	66 0	0 37·3	37·0	0·748	29·61	......	32·8	....	......	7	− 8 1 20·3	+16·2
	645	....	......	1 59 57	104 45	1 39·4	37·6	0·479	29·61	......	32·8	....	......	6	+30 44 35·9	+14·5
	694	....	......	2 9 23	66 10	0 41·1	39·8	0·500	29·61	......	32·8	....	......	7	− 7 51 23·9	+13·5
	725	....	......	2 14 24	73 10	2 17·7	16·2	0·682	29·61	......	32·8	....	......	8	− 0 49 41·7	+13·4
	764	....	......	2 23 15	120 55	4 39·8	40·2	0·480	29·61	......	32·7	....	......	6	+46 57 38·1	+13·1
	......	Nadir	......	2 28 0	254 0	1 54·6	61·2	0·500	29·61	36·8	32·6	....	......	......	....	......
	......	Nadir	......	....	254 0	1 65·7	73·3	0·500	......	......	......	....	......	......	....	......
Nov. 10	......	Nadir	......	23 36 0	254 0	1 54·7	62·3	0·500	29·92	41·0	38·2	....	......	......	....	......
	......	Nadir	......	....	254 0	1 63·4	71·1	0·500	......	......	......	....	......	......	....	......
	8355	....	......	23 56 35	64 35	2 20·0	20·0	0·500	29·92	......	38·2	....	......	6	− 9 24 43·6	+23·1
	26	γ Pegasi	......	0 7 10	115 30	1 14·6	14·4	0·500	29·92	......	38·2	....	......	7	+41 29 13·1	+21·1
	68	....	......	0 15 7	62 50	3 44·0	41·8	0·679	29·92	......	38·2	....	......	8	−11 8 15·7	+17·6
	98	....	......	0 21 22	114 40	0 32·9	32·7	0·617	29·92	......	38·1	....	......	7	+40 38 34·7	+[illegible]
	177	....	......	0 35 6	121 20	0 1·0	2·5	0·500	29·92	......	38·1	....	......	9	+47 18 0·0	+[illegible]
	218	α Cassiopeæ	......	0 41 52	72 50	2 11·1	11·4	0·500	29·92	......	38·1	....	......	7	− 1 9 52·0	+[illegible]
	259	....	......	0 50 10	92 10	1 42·9	43·0	0·584	29·92	......	38·2	....	......	6	+18 9 43·3	−[illegible]
	299	....	......	0 57 59	101 0	1 21·4	20·2	0·500	29·92	......	38·2	....	......	9	+26 59 18·9	+[illegible]
	357	....	8·0	1 6 18	98 35	1 10·1	10·5	0·500	29·92	......	38·2	....	......	6	+24 34 6·4	+[illegible]
	455	....	......	1 25 38	113 40	1 56·9	56·8	0·456	29·92	......	38·2	....	......	7	+39 39 54·5	+16·4
	514	....	......	1 34 56	100 35	0 52·8	52·9	0·607	29·92	......	38·2	....	......	7	+26 33 53·8	+[illegible]
	547	....	......	1 41 49	82 40	4 43·6	42·0	0·500	29·92	......	38·2	....	......	6	+ 8 42 40·9	+[illegible]
	588	....	......	1 50 41	66 0	0 38·6	38·4	0·640	29·92	......	38·2	....	......	9	− 8 1 21·5	+[illegible]
	645	....	......	1 59 57	104 45	1 38·5	37·4	0·460	29·92	......	38·2	....	......	10	+30 44 35·5	+[illegible]
	764	....	7·0	2 23 16	120 55	4 39·4	41·0	0·500	29·92	......	38·1	....	......	7	+46 57 39·4	+12·4
	834	....	......	2 36 56	104 50	4 8·2	7·1	0·473	29·92	......	38·0	....	......	6	+30 52 5·9	+11·6
	......	Nadir	......	2 50 0	254 0	1 54·4	61·9	0·500	29·92	41·2	38·0	....	......	......	....	......
	......	Nadir	......	....	254 0	1 64·4	71·6	0·500	......	......	......	....	......	......	....	......
Dec. 1	......	Nadir	......	1 57 0	254 0	1 53·9	60·7	0·500	29·36	43·8	45·8	....	......	......	....	......
	......	Nadir	......	....	254 0	1 64·6	71·3	0·500	......	......	......	....	......	......	....	......
	694	....	......	2 9 25	66 10	0 28·3	27·8	0·730	29·36	......	45·8	....	......	5	− 7 51 29·2	+20·[illegible]
	764	....	......	2 23 17	120 55	4 43·4	43·8	0·462	29·36	......	45·6	....	......	7	+46 57 48·2	+11·4
	834	....	......	2 36 56	104 50	4 7·2	6·6	0·487	29·36	......	45·2	....	......	6	+30 52 6·2	+13·1

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Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1868.
1868.				h. m. s.	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Dec. 1	920	......	......	2 52 4	108 50	3 19·0	17·0	0·500	29·36	......	45·0	......	......	7	+34 51 17·6	+11·1
	980	......	......	3 3 22	103 35	0 20·5	18·9	0·500	29·36	......	44·7	......	......	6	+29 33 18·2	+10·7
	1055	......	......	3 17 39	108 20	4 25·6	23·5	0·459	29·36	......	44·5	......	......	7	+34 22 23·2	+ 8·7
	1101	......	......	3 28 10	98 40	4 38·4	37·8	0·478	29·37	......	44·3	......	......	8	+24 42 36·9	+ 8·6
	1166	η Tauri	......	3 40 23	106 15	2 2·3	1·9	0·500	29·37	......	44·3	......	......	7	+32 15 1·1	+ 6·5
	......	Nadir ‖|	......	4 22 0	254 0	1 52·0	58·8	0·500	29·37	44·4	44·1	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 64·8	72·4	0·500	......	......	......	......	......	......	......	......
Dec. 3	......	Nadir ‖|	......	3 37 0	254 0	1 51·7	59·4	0·500	29·00	45·4	46·9	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 65·3	72·7	0·500	......	......	......	......	......	......	......	......
	1166	(a) η Tauri	......	3 40 24	106 15	1 57·8	56·3	0·618	29·00	......	46·9	......	......	7	+32 14 59·6	+ 6·0
	1282	......	......	4 4 41	81 10	4 9·0	9·3	0·455	29·00	......	47·0	5, W.	0	8	+ 7 12 6·3	+ 5·2
	......	Nadir ‖|	......	4 21 0	254 0	1 54·0	61·0	0·500	29·00	46·6	46·9	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 63·8	71·2	0·500	......	......	......	......	......	......	......	......
Dec. 4	......	Nadir ‖|	......	3 1 0	254 0	1 53·7	60·8	0·500	28·57	50·2	51·3	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 64·2	72·3	0·500	......	......	......	......	......	......	......	......
	1318	......	......	4 11 54	73 45	3 10·8	11·7	0·597	28·57	......	51·2	......	......	7	− 0 13 48·5	+ 4·6
	1434	......	......	4 31 32	117 40	3 50·9	51·9	0·500	28·57	......	51·0	......	......	6	+43 41 51·0	+ 1·2
Dec. 14	......	Nadir ‖|	......	2 7 0	254 0	1 51·8	59·0	0·500	28·65	46·1	49·0	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 65·3	72·8	0·500	......	......	......	......	......	......	......	......
	1101	......	......	3 28 11	98 40	4 37·9	37·4	0·442	28·65	......	48·9	15, S.	0	7	+24 42 35·4	+ 9·5
	1166	η Tauri	......	3 40 21	106 15	2 1·7	2·4	0·500	28·65	......	48·9	......	......	7	+32 15 1·0	+ 6·9
	......	Nadir ‖|	......	5 7 0	254 0	1 52·7	59·9	0·500	28·65	46·6	47·7	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 65·8	73·9	0·500	......	......	......	......	......	......	......	......
Dec. 15	......	Nadir ‖|	......	3 44 0	254 0	1 53·7	60·1	0·500	28·95	46·3	45·7	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 66·1	74·0	0·500	......	......	......	......	......	......	......	......
	1282	......	......	4 4 44	81 10	4 2·7	2·5	0·600	28·94	......	45·7	......	......	7	+ 7 12 3·4	+ 8·7
	1351	......	......	4 16 41	113 35	4 26·7	23·5	0·600	28·94	......	45·5	......	......	6	+39 37 27·6	+ 1·9
	1434	......	......	4 31 33	117 40	3 52·4	51·2	0·500	28·94	......	45·5	......	......	7	+43 41 51·1	− 0·2
	1491	......	......	4 44 10	121 15	3 8·3	9·1	0·419	28·94	......	45·4	......	......	6	+47 16 5·4	− 0·8
	1623	β Orionis	......	5 8 58	138 15	3 47·4	48·1	0·627	28·94	......	45·3	......	......	9	+64 16 50·2	− 3·7
	......	Nadir ‖|	......	5 16 0	254 0	1 52·8	60·8	0·500	28·94	45·8	44·0	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 65·0	73·0	0·500	......	......	......	......	......	......	......	......
Dec. 18	......	Nadir ‖|	......	2 27 0	254 0	1 52·4	58·8	0·500	29·25	46·2	45·1	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 66·2	73·2	0·500	......	......	......	......	......	......	......	......
	920	......	......	2 52 6	108 50	3 16·7	14·9	0·528	29·25	......	44·9	4, S.W.	1	7	+34 51 16·1	+11·3
	962	(b) ι Persei	......	3 0 21	60 50	2 37·9	37·3	0·500	29·25	......	44·8	......	......	8	+ 6 50 35·5	+16·0
	......	Nadir ‖|	......	3 30 0	254 0	1 52·2	59·3	0·500	29·25	45·7	44·6	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 65·9	74·1	0·500	......	......	......	......	......	......	......	......
Dec. 21	......	Nadir ‖|	......	3 17 0	254 0	1 53·8	60·0	0·500	28·61	44·0	46·9	......	......	......	......	......
	......	Nadir |‖	......	......	254 0	1 65·7	72·0	0·500	......	......	......	......	......	......	......	......
	1166	η Tauri	3·0	3 40 26	106 15	2 1·0	0·0	0·500	28·60	......	46·3	7, S.W.	1	7	+32 14 59·6	+ 7·1
	1282	(a)	......	4 4 44	81 10	4 3·5	3·7	0·500	28·60	......	46·1	......	......	8	+ 7 12 2·2	+ 8·4
	1318	......	5·0	4 11 56	73 45	3 16·0	16·3	0·300	28·60	......	46·0	......	......	8	− 0 13 51·5	+ 8·2
	1459	......	......	4 38 8	74 35	2 31·0	31·0	0·622	28·60	......	46·0	......	......	7	+ 0 35 31·9	+ 4·5
	1501	......	......	4 46 44	74 20	2 49·2	49·0	0·638	28·60	......	46·0	12	......	9	+ 0 20 50·5	+ 3·3

(a) Good definition. (b) Sky getting overcast.

Date.	Star or other Object Observed. No. in British Assn. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	C… N. P. … 18…
1868				h. m. s.	° ′	r. ″	″	revs.	inches	°	°				° ′ ″	
Dec. 21	1623	β Orionis	......	5 8 59	138 15	3 51·6	53·7	0·500	28·60	......	46·0	....	......	7	+64 16 51·9	-
	1656	....	......	5 15 19	121 40	0 43·9	45·9	0·500	28·60	......	46·0	....	......	8	+47 38 43·6	-
	1703	....	......	5 21 19	113 35	4 3·8	3·5	0·500	28·60	......	46·0	....	......	7	+39 37 3·5	-
	......	Nadir ‖‖	......	5 35 0	254 0	1 51·1	58·8	0·500	28·60	46·0	46·0	....	......	......	....	
	......	Nadir ‖	......	....	254 0	1 66·9	74·2	0·500	......	......	......	....	......	......	....	
Dec. 22	......	Nadir ‖	......	2 28 0	254 0	1 51·0	57·5	0·500	28·63	45·8	45·8	....	......	......	....	
	......	Nadir ‖	......	....	254 0	1 66·0	73·2	0·500	......	......	......	....	......	......	....	
	891	....	......	2 46 28	121 0	2 13·5	44·8	0·504	28·63	......	45·5	5, S.W.	4	7	+50 0 43·8	+
	1434	....	......	4 31 31	117 40	3 52·7	54·0	0·500	28·63	......	45·5	....	......	6	+43 41 53·5	+
	1483	....	......	5 18 52	95 40	2 45·4	45·5	0·458	28·63	......	45·3	....	......	6	+21 40 43·4	-
	1751	....	......	5 30 2	64 20	2 22·6	22·0	0·558	28·63	......	45·0	....	......	7	- 9 39 39·4	-
	1813	....	......	5 39 34	61 30	3 59·3	58·1	0·602	28·63	......	45·0	....	......	7	-12 28 1·0	-
	......	Nadir ‖	......	5 45 0	254 0	1 50·9	57·3	0·500	28·63	45·6	45·0	....	......	......	....	
	......	Nadir ‖	......	......	254 0	1 66·0	73·7	0·500	......	......	......	....	......	......	....	
Dec. 23	......	Nadir ‖	......	4 0 0	254 0	1 51·9	58·3	0·500	28·62	44·5	42·5	....	......	......	....	
	......	Nadir ‖	......	....	254 0	1 64·2	71·1	0·500	......	......	......	....	......	......	....	
	1282 (a)	....	......	....	81 10	4 2·8	2·7	0·500	28·62	......	42·5	10, S.S.W.	2	4	+ 7 12 1·6	+ 8
	1347 (b)	....	......	4 16 20	105 50	3 4·4	3·3	0·500	28·61	......	42·8	....	......	6	+31 51 3·6	+ 3
	......	Nadir ‖	......	5 37 0	254 0	1 52·3	59·2	0·500	28·61	43·7	42·7	....	......	......	....	
	......	Nadir ‖	......	....	254 0	1 65·0	70·9	0·500	......	......	......	....	......	......	....	
Dec. 29	......	Nadir ‖	......	3 12 0	254 0	1 52·5	59·6	0·500	28·64	39·0	35·4	....	......	......	....	
	......	Nadir ‖	......	....	254 0	1 64·9	72·7	0·500	......	......	......	....	......	......	....	
	1166	η Tauri	......	3 40 33	106 15	1 55·8	52·9	0·649	28·84	......	35·4	0 0	7	7	+32 14 57·9	+ 7
	1501	....	......	4 46 53	74 20	2 51·0	50·0	0·500	28·84	......	35·9	....	......	6	+ 0 20 48·4	+ 4
	1623	β Orionis	......	5 9 5	138 15	3 48·3	49·0	0·677	28·85	......	34·8	....	......	7	+64 16 53·1	- 6
	1703	....	......	5 21 27	113 35	4 2·4	1·3	0·500	28·85	......	34·7	....	......	6	+39 37 2·0	- 4
	1772	....	......	5 31 50	100 50	0 50·7	49·7	0·523	28·85	......	34·5	....	......	9	+26 48 49·7	- 3
	1826	....	......	5 40 31	120 30	0 14·8	16·0	0·493	28·85	......	34·4	....	......	7	+46 28 14·2	- 6
	......	Nadir ‖	......	6 5 0	254 0	1 51·9	58·7	0·500	28·85	35·1	34·3	....	......	......	....	
	......	Nadir ‖	......	....	254 0	1 65·9	72·2	0·500	......	......	......	....	......	......	....	
Dec. 31	......	Nadir ‖	......	3 10 0	254 0	1 53·7	60·3	0·500	29·63	38·0	35·1	....	......	......	....	
	......	Nadir ‖	......	....	254 0	1 61·8	71·4	0·500	......	......	......	....	......	......	....	
	1166	η Tauri	......	3 40 34	106 15	2 1·3	59·6	0·500	29·63	......	34·8	....	......	7	+32 14 59·7	+ 7·5
	1282	....	......	4 4 53	81 10	4 1·6	0·3	0·510	29·63	......	34·6	....	......	6	+ 7 12 0·6	+ 9·5
	1318	....	......	4 12 4	73 45	3 11·4	9·4	0·456	29·63	......	34·5	....	......	7	- 0 13 53·0	+10·0
	1434	....	......	4 31 43	117 40	3 51·3	50·0	0·540	29·63	......	34·3	....	......	8	+43 41 51·5	0·0
	1501	....	......	4 46 53	74 20	2 50·0	48·3	0·648	29·63	......	34·1	....	......	......	+ 0 20 51·0	+ 5·2
	1656	....	......	5 15 28	121 40	0 42·5	42·0	0·500	29·63	......	34·3	....	......	7	+47 38 41·0	- 4·6
	1826	....	......	5 40 53	120 30	0 13·5	14·2	0·550	29·63	......	34·3	....	......	9	+46 28 13·9	- 6·6
	1907	....	6·0	5 52 23	117 10	0 4·8	3·8	0·500	29·63	......	34·2	....	......	6	+43 8 3·2	- 7·3
	2022	....	6·0	6 10 45	119 55	4 17·7	16·0	0·441	29·63	......	34·4	....	......	......	+45 57 14·9	- 9·1
	......	Nadir ‖	......	6 22 0	254 0	1 53·6	60·9	0·500	29·63	36·2	34·3	....	......	......	....	
	......	Nadir ‖	......	....	254 0	1 65·0	72·2	0·500	......	......	......	....	......	......	....	

(a) Seen rather late. (b) Sky getting cloudy.

ROYAL OBSERVATORY, EDINBURGH.

Individual Observations of Mean North Polar Distances of Stars observed at the Royal Observatory, Edinburgh, in the Year 1868, reduced to January 1, 1868.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1868.
B.A.C. 18.				
			h. m.	° ′ ″
Oct. 9	0·77		0 4	31 3 39·9
16	0·79	7·0		41·4
27	0·82			40·3
B.A.C. 26, γ Pegasi.				
Nov. 4	0·84	(2·0) (*a*)	0 6	75 33 3·0
5	0·85			3·1
10	0·86			3·6
B.A.C. 28.				
Oct. 23	0·81	(6·0)	0 7	49 41 38·8
B.A.C. 42.				
Oct. 13	0·78	6·5	0 9	86 28 56·4
B.A.C. 57.				
Oct. 9	0·77	(6·5)	0 11	89 2 41·7
15	0·79			43·3
16	0·79			43·9
26	0·82			43·1
B.A.C. 68.				
Oct. 27	0·82	(7·0)	0 14	22 54 34·4
Nov. 10	0·86			37·0
B.A.C. 83.				
Oct. 7	0·77	(6·0)	0 18	37 41 3·8
9	0·77			4·2
13	0·78			3·5
19	0·80			5·6
21	0·80			5·5
B.A.C. 83.				
			h. m.	° ′ ″
Oct. 23	0·81	(6·0)	0 18	37 41 4·5
Nov. 5	0·85			7·6
B.A.C. 98.				
Oct. 16	0·79	(7·0)	0 21	74 42 21·6
26	0·82			21·4
29	0·83			22·6
Nov. 10	0·86			23·3
B.A.C. 113.				
Oct. 9	0·77	(7·0)	0 23	85 52 11·7
15	0·79			14·6
Nov. 4	0·84			12·0
B.A.C. 125.				
Oct. 27	0·82	(7·0)	0 25	19 44 49·4
Nov. 5	0·85			49·8
B.A.C. 133.				
Oct. 19	0·80	(8·0)	0 27	70 17 42·7
26	0·82			42·2
B.A.C. 149.				
Oct. 16	0·79	(6·0)	0 29	77 30 50·6
B.A.C. 177.				
Oct. 13	0·78	(7·0)	0 34	81 21 58·2
19	0·80			59·6
Nov. 5	0·85			58·4
10	0·86			59·8
B.A.C. 197.				
			h. m.	° ′ ″
Oct. 26	0·82	(6·5)	0 37	42 51 36·4
27	0·82			36·6
Nov. 4	0·84			36·7
B.A.C. 218, η Cassiopeæ.				
Oct. 15	0·79	(4·0)	0 41	32 53 8·3
19	0·80			8·4
23	0·81			7·2
29	0·83			7·1
Nov. 5	0·85			7·7
10	0·86			8·4
B.A.C. 237.				
Oct. 21	0·80	(7·5)	0 44	87 19 55·0
26	0·82			52·6
B.A.C. 259, μ Andromedæ.				
Oct. 13	0·78	(4·0)	0 49	52 12 59·9
15	0·79			62·3
19	0·80			63·1
26	0·82			61·2
27	0·82			62·7
Nov. 10	0·86			62·1
B.A.C. 263.				
Nov. 4	0·84	9·0	0 50	63 42 51·6
B.A.C. 290.				
Oct. 19	0·80	(7·0)	0 56	36 30 11·4
21	0·80			12·1

(*a*) Magnitudes in parenthesis are the tabular ones of the British Association Catalogue.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1868.
B.A.C. 290.				
Oct. 26	0·82	(7·0)	h m 0 56	° ′ ″ 36 30 11·6
27	0·82			12·0
29	0·83			12·6
B.A.C. 299.				
Oct. 15	0·79	6·0	0 57	61 2 47·7
Nov. 4	0·84			47·5
10	0·86			46·7
B.A.C. 314, μ Cassiopeæ.				
Oct. 13	0·78	(5·5)	0 59	35 43 41·8
23	0·81			44·2
B.A.C. 335.				
Oct. 29	0·83	(6·5)	1 3	26 30 1·4
B.A.C. 357				
Oct. 16	0·79	(9·0)	1 6	58 37 34·2
21	0·80			34·3
26	0·82			32·9
Nov. 10	0·86			32·8
B.A.C. 455.				
Oct. 19	0·80	(8·0)	1 25	73 43 36·9
21	0·80			37·8
23	0·81			36·4
27	0·82			36·9
29	0·83			36·5
Nov. 6	0·85			
10	0·86			35·3
				37·6
B.A.C. 482.				
Nov. 6	0·85	(6·0)	1 29	32 41 49·7
B.A.C. 514.				
Oct. 29	0·83	(6·5)	1 34	60 37 18·7
Nov. 6	0·85			18·5
10	0·86			18·1
B.A.C. 516.				
Oct. 26	0·82	(5·5)	h m 1 35	° ′ ″ 55 25 18·6
B.A.C. 538.				
Oct. 23	0·81	(6·5)	1 40	73 14 58·1
B.A.C. 547.				
Oct. 27	0·82	(6·0)	1 41	42 45 44·1
29	0·83			44·4
Nov. 6	0·85			43·8
10	0·86			45·0
B.A.C. 558.				
Oct. 27	0·82	(6·5)	1 50	26 1 23·3
29	0·83			23·7
Nov. 6	0·85			24·3
10	0·86			24·2
B.A.C. 645				
Nov. 4	0·84	(6·0)	1 59	64 48 3·9
6	0·85			3·0
10	0·86			2·9
B.A.C. 694				
Nov. 6	0·85	(7·5)	2 8	26 11 18·5
Dec. 1	0·92			20·2
B.A.C. 725.				
Nov. 6	0·85	(8·0)	2 14	33 13 7·6
B.A.C. 764.				
Nov. 6	0·85	(7·0)	2 22	81 1 30·7
10	0·86			31·9
Dec. 1	0·92			32·0
B.A.C. 834.				
Nov. 10	0·86	(6·5)	2 36	64 55 30·1
Dec. 1	0·92			30·5
B.A.C. 891.				
Dec. 22	0·97	(8·0)	h m 2 46	° ′ ″ 64 4 35·4
B.A.C. 920.				
Dec. 1	0·92	(7·0)	2 51	68 54 47·5
18	0·96			44·2
B.A.C. 962, ι Persei.				
Dec. 18	0·96	(4·0)	3 0	40 53 35·4
B.A.C. 980.				
Dec. 1	0·92	(6·5)	3 3	63 35 18·4
B.A.C. 1055.				
Dec. 1	0·92	(7·5)	3 17	68 25 48·[illegible]
B.A.C. 1101.				
Dec. 1	0·92	(6·5)	3 27	58 45 49·5
14	0·95			47·4
B.A.C. 1166, ε Tauri.				
Dec. 1	0·92	(3·0)	3 40	66 18 [illegible]
3	0·92			19·1
14	0·95			19·3
21	0·97			19·2
29	0·99			18·2
31	1·00			21·3
B.A.C. 1282.				
Dec. 3	0·92	(6·0)	4 4	41 14 55·5
15	0·96			56·1
21	0·97			54·5
23	0·98			54·2
31	1·00			54·0
B.A.C. 1318.				
Dec. 4	0·93	5·0	4 11	33 45 53·7
21	0·97			53·3
31	1·00			53·7

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1868.
B.A.C. 1347.				
			h m	° ′ ″
Dec. 23	0·98	(8·0)	4 15	65 54 19·0
B.A.C. 1351.				
Dec. 15	0·96	(6·5)	4 16	73 40 53·2
B.A.C. 1434.				
Dec. 4	0·93	(5·0)	4 31	77 45 21·9
15	0·96			22·9
22	0·97			20·5
31	1·00			25·1
B.A.C. 1459.				
Dec. 21	0·97	(6·5)	4 37	34 38 13·8
B.A.C. 1491.				
Dec. 15	0·96	(5·0)	4 44	81 19 42·8
B.A.C. 1501.				
Dec. 21	0·97	(6·0)	4 46	34 23 30·9
29	0·99			30·4
31	1·00			33·4
B.A.C. 1623, β Orionis.				
Jan. 9	0·02	(1·0)	5 8	98 21 20·8
Dec. 15	0·96			20·6
21	0·97			19·8
29	0·99			23·3
B.A.C. 1656.				
Dec. 21	0·97	(6·0)	5 15	81 42 18·0
31	1·00			18·4
B.A.C. 1683.				
Dec. 22	0·97	(6·0)	5 18	55 43 44·8
B.A.C. 1703.				
Jan. 9	0·02	(7·0)	5 20	73 40 19·5
Dec. 21	0·97			22·8
29	0·99			22·7
B.A.C. 1751.				
			h m	° ′ ″
Jan. 9	0·02	(5·5)	5 29	24 22 47·2
Dec. 22	0·97			45·5
B.A.C. 1772.				
Dec. 29	0·99	(6·0)	5 31	60 51 52·0
B.A.C. 1813.				
Dec. 22	0·97	(6·0)	5 39	21 34 19·7
B.A.C. 1826.				
Dec. 29	0·99	(6·0)	5 40	80 31 45·5
31	1·00			46·6
B.A.C. 2022.				
Jan. 9	0·02	6·0	6 10	80 0 43·5
Dec. 31	1·00			44·0
B.A.C. 2060.				
Jan. 9	0·02		6 17	85 20 32·2
17	0·04	7·0		33·5
B.A.C. 2101.				
Jan. 17	0·04	7·0	6 22	67 22 15·0
B.A.C. 2154.				
Jan. 17	0·04	7·0	6 34	73 28 56·8
B.A.C. 2238.				
Jan. 9	0·02	(6·0)	6 44	66 14 44·7
17	0·04			45·6
B.A.C. 2292.				
Jan. 9	0·02	6·0	6 54	79 11 33·8
17	0·04			33·5
B.A.C. 2329.				
Jan. 17	0·04	(7·0)	7 1	74 16 6·4
B.A.C. 2334.				
			h m	° ′ ″
Jan. 9	0·02	(6·0)	7 2	39 59 53·6
28	0·07			53·2
B.A.C. 2379.				
Jan. 17	0·04	(5·0)	7 9	40 18 14·7
B.A.C. 2410, δ Geminorum.				
Jan. 9	0·02	(3·0)	7 12	67 46 40·1
B.A.C. 2463.				
Jan. 9	0·02	(7·0)	7 20	62 10 61·7
17	0·04			59·0
28	0·07			59·1
Feb. 11	0·11			57·6
B.A.C. 2488.				
Jan. 9	0·02	(6·0)	7 27	43 31 55·6
Feb. 13	0·12			56·1
B.A.C. 2522, α Canis Minoris.				
Jan. 9	0·02	(1·0)	7 32	84 26 19·2
Feb. 3	0·09			15·3
11	0·11			22·4
B.A.C. 2586.				
Jan. 9	0·02	(7·0)	7 42	61 28 24·3
28	0·07			24·1
Feb. 10	0·11			24·8
11	0·11			23·0
B.A.C. 2683.				
Jan. 28	0·07	6·0	7 57	70 47 14·4
Feb. 11	0·11			15·1
19	0·13			14·5
B.A.C. 2688.				
Feb. 21	0·14	(7·0)	7 57	62 5 50·5

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1868.
B.A.C. 2748.				
Feb. 11	0·11	(7·0)	h. m. 8 5	° ′ ″ 75 36 19·3
B.A.C. 2761.				
Feb. 3	0·09	(7·0)	8 7	76 33 16·5
19	0·13			17·6
B.A.C. 2867.				
Feb. 3	0·09	6·5	8 25	79 29 21·2
19	0·13			21·6
26	0·15			21·1
B.A.C. 2971, ι Hydræ.				
Feb. 11	0·11	(4·0)	8 40	83 5 55·9
17	0·13			57·7
19	0·13			58·4
26	0·15			57·3
B.A.C. 2988.				
Feb. 21	0·14	(7·5)	8 43	34 33 22·9
B.A.C. 3013.				
Feb. 19	0·13	(6·0)	8 46	84 9 55·6
B.A.C. 3053.				
Feb. 10	0·11	(6·0)	8 51	80 6 21·8
11	0·11			21·4
26	0·15			21·7
Mar. 10	0·19			20·7
B.A.C. 3083.				
Feb. 17	0·13	(6·5)	8 56	38 39 10·5
19	0·13			11·3
26	0·15			10·0
B.A.C. 3103.				
Feb. 10	0·11	(7·5)	8 59	72 21 39·2
11	0·11			39·6
B.A.C. 3157.				
Feb. 26	0·15	(7·0)	h. m. 9 10	° ′ ″ 29 39 54·7
Mar. 10	0·19			55·2
B.A.C. 3223, α Hydræ.				
Feb. 10	0·11	(2·0)	9 21	98 5 17·7
19	0·13			15·3
21	0·14			17·5
26	0·15			17·2
Mar. 6	0·18			20·4
B.A.C. 3242, θ Ursæ Majoris.				
Feb. 11	0·11	(3·0)	9 23	37 43 24·3
B.A.C. 3331, ε Leonis.				
Feb. 10	0·11	(3·0)	9 38	65 37 9·6
11	0·11			12·8
19	0·13			11·2
26	0·15			11·5
Mar. 4	0·17			10·4
B.A.C. 3375.				
Feb. 19	0·13	(6·5)	9 46	54 23 49·3
26	0·15			47·9
Mar. 6	0·18			48·5
B.A.C. 3380.				
Feb. 11	0·11	(6·0)	9 47	83 25 17·8
B.A.C. 3418.				
Feb. 26	0·15	8·5	9 54	80 24 56·2
B.A.C. 3420.				
Feb. 19	0·13	(7·0)	9 54	57 49 58·9
Mar. 11	0·19			60·8
B.A.C. 3439.				
Feb. 17	0·13	(7·0)	9 57	54 21 46·7
B.A.C. 3484.				
Feb. 17	0·13	7·0	h. m. 10 7	° ′ ″ 57 55 16·6
19	0·13	7·5		18·4
26	0·15			17·2
Mar. 6	0·18			21·2
B.A.C. 3528.				
Mar. 11	0·19	(5·5)	10 15	6 46 21·9
17	0·21			22·2
26	0·23			22·0
27	0·24			22·2
B.A.C. 3592.				
Feb. 19	0·13	(6·0)	10 23	87 49 50·0
26	0·15			48·7
Mar. 26	0·23			46·5
27	0·24			46·7
B.A.C. 3662.				
Mar. 6	0·18	(7·5)	10 35	78 34 17·0
17	0·21			18·9
24	0·23			18·3
26	0·23			18·5
27	0·24			17·5
B.A.C. 3726.				
Mar. 6	0·18	(6·0)	10 45	88 16 30·0
26	0·23			31·0
27	0·24			29·9
B.A.C. 3780.				
Mar. 6	0·18	(7·5)	10 57	81 42 24·5
17	0·21			24·3
26	0·23			26·2
27	0·24			25·6
B.A.C. 3821.				
Mar. 24	0·23	(6·0)	11 4	21 0 47·0
27	0·24			43·5

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension. (h. m.)	Mean North Polar Distance, January 1, 1868. (° ′ ″)
B.A.C. 3869.				
Mar. 24	0·23	(6·0)	11 16	71 50 19·6
26	0·23			22·1
27	0·24			21·4
B.A.C. 3996.				
Mar. 23	0·22	(6·0)	11 42	84 4 38·4
24	0·23			39·5
26	0·23			40·4
27	0·24			38·0
April 15	0·29			40·1
B.A.C. 4111.				
Mar. 24	0·23	7·0	12 6	11 49 32·5
April 2	0·25			30·2
B.A.C. 4153.				
Mar. 23	0·22	(6·0)	12 14	62 38 35·0
26	0·23			36·7
April 13	0·28			31·8
15	0·29			39·5
May 1	0·33			37·1
B.A.C. 4199.				
Mar. 23	0·[illegible]	(7·0)	12 21	63 21 24·0
27	0·24			24·2
April 13	0·28			24·9
15	0·29			25·5
B.A.C. 4205.				
Mar. 26	0·23	(6·0)	12 22	63 2 33·9
May 1	0·33			32·5
B.A.C. 4231.				
Mar. 23	0·22	(7·0)	12 27	64 49 19·2
27	0·24			20·9
April 13	0·28			22·1
B.A.C. 4244. (a)				
Mar. 26	0·23	(Neb.)	12 29	52 50 55·3
April 15	0·29			52·5
B.A.C. 4364.				
April 13	0·28	(6·0)	12 55	68 1 4·4
21	0·30			9·3
May 1	0·33			8·8
B.A.C. 4421, β Comæ.				
April 13	0·28	(4·5)	13 6	61 27 8·2
15	0·29			6·9
21	0·30			6·8
May 1	0·33			7·3
4	0·34			6·8
B.A.C. 4457.				
April 13	0·28	(6·5)	13 13	54 10 37·0
15	0·29			42·9
May 4	0·34			40·6
B.A.C. 4462.				
May 1	0·33	(7·0)	13 14	84 28 44·8
B.A.C. 4503.				
April 13	0·28	(7·0)	13 23	85 20 38·1
15	0·29			39·9
21	0·30			41·4
May 1	0·33			40·7
5	0·34			36·8
B.A.C. 4526.				
May 4	0·34	(6·5)	13 27	64 58 1·0
B.A.C. 4550.				
April 13	0·28	(7·5)	13 31	36 38 13·6
21	0·30			17·3
B.A.C. 4552.				
May 11	0·36	5·0	13 32	53 1 58·8
B.A.C. 4555.				
April 15	0·29	(7·5)	13 32	36 44 2·4
B.A.C. 4559.				
May 4	0·34	(6·0)	13 33	78 34 56·9
B.A.C. 4575.				
April 28	0·32	(6·0)	13 37	66 37 58·9
May 1	0·33			61·0
12	0·36			58·2
B.A.C. 4606.				
April 21	0·30	(7·0)	13 42	57 56 26·2
B.A.C. 4610.				
May 7	0·35	(6·0)	13 43	58 9 11·5
B.A.C. 4621.				
May 1	0·33	(6·0)	13 44	70 42 51·2
4	0·34			50·7
B.A.C. 4627.				
April 14	0·28	(7·0)	13 45	54 34 24·1
B.A.C. 4632.				
April 15	0·29	(6·0)	13 46	54 54 5·4
B.A.C. 4652.				
April 13	0·28	(7·0)	13 50	57 19 18·7
May 1	0·33			21·[illegible]
B.A.C. 4676.				
April 14	0·28	(7·0)	13 56	57 47 47·6
21	0·30			48·8
28	0·32			44·3
May 1	0·33			48·5
4	0·34			46·7
7	0·35			44·5

(a) Differs from Tab. N. P. D. by 2′.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1868.
B.A.C. 4694.				
April 15	0·29	(7·0)	h. m. 14 1	° ′ ″ 58 31 5·9
May 1	0·33			5·2
5	0·34			3·4
B.A.C. 4723.				
April 14	0·28	(7·0)	14 8	60 16 37·0
21	0·30			37·4
28	0·32			34·6
May 1	0·33			36·4
7	0·35			36·0
B.A.C. 4756.				
May 5	0·34	(6·0)	14 14	37 21 29·5
11	0·36			27·9
B.A.C. 4797.				
May 1	0·33	(6·0)	14 23	53 12 43·6
7	0·35			39·9
11	0·36			40·8
13	0·36			41·8
B.A.C. 4809.				
April 28	0·32	(6·0)	14 26	62 44 16·7
May 5	0·34			16·2
B.A.C. 4820.				
May 11	0·36	(6·0)	14 29	56 53 8·0
B.A.C. 4863.				
April 28	0·32	(6·0)	14 37	52 40 48·4
May 1	0·33			49·7
11	0·36			48·4
B.A.C. 4876, ε Bootis.				
May 4	0·34	(3·0)	14 39	62 22 4·8
B.A.C. 4934.				
May 1	0·33	(6·5)	14 51	48 19 52·1
4	0·34			52·0
5	0·34			49·3
7	0·35			50·5
11	0·36			51·7
B.A.C. 4965.				
May 1	0·33	(5·5)	h. m. 14 58	° ′ ″ 44 50 18·8
B.A.C. 4992.				
May 4	0·34	(5·5)	15 3	34 56 7·3
5	0·34			4·7
11	0·36			3·5
13	0·36			4·8
B.A.C. 5071. (a)				
May 5	0·34	(6·0)	15 16	37 33 54·3
12	0·36			54·5
13	0·36			54·1
B.A.C. 5091.				
May 11	0·36	(6·0)	15 20	26 11 12·4
B.A.C. 5284, γ Serpentis.				
May 11	0·36	(3·0)	15 50	73 54 21·6
12	0·36			20·5
B.A.C. 5716.				
June 29	0·49	6·0	16 53	74 20 47·6
B.A.C. 5776.				
June 29	0·49	(6·0)	17 1	41 0 45·7
B.A.C. 6528, ζ Aquilæ.				
Aug. 4	0·59	(3·0)	18 59	76 19 47·5
B.A.C. 6762.				
Aug. 4	0·59	(6·0)	19 38	63 10 42·5
B.A.C. 6791.				
Aug. 6	0·60	(7·5)	19 42	78 37 49·7
B.A.C. 6852.				
Aug. 4	0·59	(5·5)	19 51	30 38 22·3
B.A.C. 7161.				
Aug. 4	0·59	(7·0)	h. m. 20 35	° ′ ″ 44 47 54·5
B.A.C. 7268.				
Sept. 10	0·69	(6·5)	20 51	43 5 13·5
B.A.C. 7336, 61¹ Cygni.				
Sept. 25	0·73	(5·5)	21 1	51 53 52·2
B.A.C. 7368, ζ Cygni.				
Sept. 10	0·69	(3·0)	21 7	60 18 47·0
B.A.C. 7430.				
Sept. 10	0·69	(6·0)	21 17	29 48 13·6
B.A.C. 7561, ε Pegasi.				
Sept. 10	0·69	(2·5)	21 37	80 43 41·5
B.A.C. 7590.				
Sept. 25	0·73	(7·5)	21 41	73 24 51·1
B.A.C. 7644.				
Sept. 10	0·69	(7·0)	21 50	18 7 55·1
B.A.C. 7688, α Aquarii.				
Sept. 10	0·69	(3·0)	21 59	90 57 32·7
28	0·74			34·8
Oct. 9	0·77			34·9
B.A.C. 7759.				
Sept. 10	0·69	(6·0)	22 8	29 53 34·0
Oct. 9	0·77			33·0
15	0·79			37·0
B.A.C. 7906, ζ Pegasi.				
Sept. 10	0·69	(3·0)	22 35	79 51 21·9
Oct. 9	0·77			24·1

(a) Differs from Tab. N. P. D. by 2′.

B.A.C. 7908, ζ Pegasi.

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension	Mean North Polar Distance, January 1, 1868
Oct. 13	0·78	(3·0)	h. m. 22 35	° ′ ″ 79 51 24·0
15	0·79			23·6
16	0·79			24·4

B.A.C. 7977.

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension	Mean North Polar Distance, January 1, 1868
Sept. 10	0·69	(7·5)	22 47	88 51 26·6
Oct. 7	0·77			26·9
9	0·77			26·7
13	0·78			26·8
15	0·79			28·3
16	0·79			28·2
21	0·80			27·6

B.A.C. 8024.

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension	Mean North Polar Distance, January 1, 1868
Sept. 30	0·75	(6·5)	22 56	33 36 13·3
Oct. 9	0·77			12·1
15	0·79			12·8
16	0·79			12·9
21	0·80			12·9

B.A.C. 8034, α Pegasi.

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension	Mean North Polar Distance, January 1, 1868
Oct. 7	0·77	(2·0)	22 58	75 30 18·6
13	0·78			13·7

B.A.C. 8083.

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension	Mean North Polar Distance, January 1, 1868
Sept. 30	0·75	(6·0)	23 7	33 33 38·2
Oct. 7	0·77			37·7
9	0·77			36·3
15	0·79			36·1
19	0·80			38·6
21	0·80			37·0

B.A.C. 8135.

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension	Mean North Polar Distance, January 1, 1868
Oct. 9	0·77	(6·0)	h. m. 23 14	° ′ ″ 46 36 17·7
13	0·78			17·2
15	0·79			18·2

B.A.C. 8139.

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension	Mean North Polar Distance, January 1, 1868
Oct. 7	0·77	(7·5)	23 15	52 8 24·5
21	0·80			26·1

B.A.C. 8147.

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension	Mean North Polar Distance, January 1, 1868
Sept. 30	0·75	(6·5)	23 16	70 9 50·1
Oct. 27	0·82			51·5

B.A.C. 8204.

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension	Mean North Polar Distance, January 1, 1868
Oct. 9	0·77	(7·0)	23 27	18 43 35·9

B.A.C. 8247.

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension	Mean North Polar Distance, January 1, 1868
Oct. 7	0·77	(7·5)	23 36	72 3 51·9
9	0·77			52·4
13	0·78			51·3
15	0·79			53·0
16	0·79			52·3
21	0·80			51·8
23	0·81			51·7
29	0·83			52·1

B.A.C. 8269.

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension	Mean North Polar Distance, January 1, 1868
Oct. 15	0·79	(8·0)	23 41	86 30 11·7
27	0·82			11·9
Nov. 4	0·84			11·1

B.A.C. 8270.

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension	Mean North Polar Distance, January 1, 1868
Oct. 16	0·79	(8·5)	h. m. 23 41	° ′ ″ 86 33 24·9

B.A.C. 8298.

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension	Mean North Polar Distance, January 1, 1868
Oct. 29	0·83	(7·0)	23 46	13 7 54·6

B.A.C. 8315.

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension	Mean North Polar Distance, January 1, 1868
Oct. 7	0·77	(7·0)	23 49	82 30 40·3
13	0·78			37·6
15	0·79			40·6
16	0·79			41·5
Nov. 4	0·84			40·4

B.A.C. 8338.

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension	Mean North Polar Distance, January 1, 1868
Oct. 27	0·82	(7·0)	23 54	28 33 28·5
29	0·83			27·9

B.A.C. 8350, 85 Pegasi.

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension	Mean North Polar Distance, January 1, 1868
Oct. 16	0·79	(6·0)	23 55	63 36 57·4

B.A.C. 8355.

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension	Mean North Polar Distance, January 1, 1868
Oct. 15	0·79	(6·0)	23 56	24 38 11·1
Nov. 10	0·86			12·4

B.A.C. 8364.

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension	Mean North Polar Distance, January 1, 1868
Oct. 13	0·78	(7·0)	23 58	32 12 8·7
21	0·80			11·4
Nov. 4	0·84			12·5
5	0·85			11·6

B.A.C. 8372.

Date: Month and Day	Date: Fraction of Year	Magnitude observed	Approximate Right Ascension	Mean North Polar Distance, January 1, 1868
Oct. 27	0·82	(6·5)	23 59	32 17 59·1

EXPLANATIONS OF THE MURAL CIRCLE OBSERVATIONS IN 1868.

The observations with the Mural Circle in 1868 were taken by Mr Peter Williamson, Second Assistant Astronomer, under the supervision of the Astronomer.

The subjects observed were chiefly stars remarkable for proper motion. They are designated as far as possible by the number in the British Association Catalogue in col. 2, and by proper name or description in col. 3, assisted if necessary by notes at the foot of the page, as well as by approximate estimate of the magnitude in col. 4, and time of transit past centre of field (by an uncorrected sidereal journeyman clock, but showing fairly differences from star to star) in col. 5.

In Polar distance the star was always carefully bisected when crossing the centre of the field, either at the precise instant if its motion was steady, or in its mean path through several seconds if unsteady or undulatory, as was too often the case. Such bisection being performed by bringing the stellar image between two parallel lines about 7 seconds of space apart: the lines being illuminated in a dark field.

The same general principles of observation as in former years have been kept up with improved details described in 1860. The completion of every observation therefore in Polar distance still depends largely on the Telescope micrometer, whose numbers are a necessary addition to the readings both of the Pointer on the Limb of the Circle and of the two horizontal Microscopes A, B; all which numerical particulars are given in columns 6, 7, 8, and 9.

In columns 10 and 12, the readings of the Barometer and exterior thermometer are noted for refraction purposes: the interior thermometer being assumed to be practically the same as the exterior, for all star-observations when a thorough draught was kept up through the observing room, as was always the case during star observations. During observations for the Nadir-point, on the contrary, all shutters and windows were closed to prevent disturbance to the mercury, and then a sensible difference between the thermometers usually occurred, and is shown by the figures in the narrow column 11, compared with those in column 12.

Columns 13, 14, and 15 contain various points connected with the meteorologic and other circumstances of the observations, as they appeared to the observer at the time; and column 16 contains the reduction of the angular observations in columns 6 to 9, to the stage of "Apparent Zenith Distance South."

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To this end, the readings of the Microscopes have been corrected for the error of their runs, as ascertained over 5′ spaces on the limb of the Circle, with the telescope directed first to the Zenith and then to the Nadir: also for the difference between the mean of two and the mean of six Microscopes as ascertained by examination in 1855 (see p. 76, vol. xii.); also for the Telescope micrometer readings converted into arc on the estimate of one revolution being equal to 27·704″, as ascertained by observations in the Mercury trough with the collimating eye-piece, combined with readings of all the six circumferential Microscopes. The Circle positions are then converted into Apparent Zenith Distances, by the application of a reading for the Zenith point derived from observation of the Nadir, as shown by making the bisecting wire cover its illuminated image in the Mercury trough, an observation made generally both at the beginning and conclusion of every series of star measures. The chief data of these several corrections are contained in the following Tables I., II., and III.

TABLE I.

CORRECTION FOR RUNS OF MICROSCOPES IN 1868.

Date.	Thermometer.		Runs Correction observed.				Adopted Runs Correction.	For Period.
	Interior.	Exterior.	Nadir.	Zenith.	Means of Obs.	Collected Means.		
1868.	° F.	° F.	″	″	″	″	″	1868.
							+ 1·2	Jan. 9 to Jan. 17.
Jan. 20	39·9	32·0	+ 1·7	+ 1·8	+ 1·8	+ 1·6	+ 1·6	Jan. 20 to Jan. 26
			+ 1·6	+ 1·8	+ 1·7			
28	34·9	34·4	+ 0·6	+ 2·1	+ 1·4	+ 1·4	+ 1·2	Jan. 28 to Feb. 26.
Mar. 6	39·6	37·5	+ 0·7	+ 0·6	+ 0·6	+ 0·6	+ 0·8	Mar. 4 to May 14.
			+ 0·4	+ 0·7	+ 0·6			
April 27	46·8	45·1	+ 1·7	+ 0·1	+ 0·9	+ 0·8	+ 0·8	
			+ 0·7	+ 0·8	+ 0·8			
June 29	59·2	55·1	− 1·0	− 0·4	− 0·7	− 0·2	− 0·2	June 29 to Aug. 7-
			− 0·1	+ 0·9	+ 0·4			
Sept. 14	53·0	50·0	− 0·6	+ 0·2	− 0·2	− 0·4	− 0·4	Sept. 2 to Sept. 30.
			− 0·8	− 0·3	− 0·6			
			− 1·2	− 0·1	− 0·1			
			− 0·5	+ 0·4	0·0			
							+ 0·3	Oct. 7 to Oct. 29.
Nov. [illegible]	42·8	39·9	+ 1·6	+ 0·3	+ 1·0	+ 1·0	+ 1·0	Nov. 4 to Nov. 24.
			+ 0·7	+ 1·2	+ 1·0			
							+ 1·3	Dec. 1 to Dec. 31.

TABLE II.

CORRECTION TO REDUCE THE MEAN OF THE TWO HORIZONTAL, TO THE MEAN OF THE WHOLE SIX, MICROSCOPES FOR THE YEAR 1868.

Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.
0° & 180°	+1·0	30° & 210°	+0·2	60° & 240°	+0·5	90° & 270°	+2·4	120° & 300°	+3·1	150° & 330°	+2·4
1 181	+0·9	31 211	+0·2	61 241	+0·6	91 271	+2·4	121 301	+3·1	151 331	+2·4
2 182	+0·8	32 212	+0·1	62 242	+0·7	92 272	+2·5	122 302	+3·0	152 332	+2·3
3 183	+0·8	33 213	+0·1	63 243	+0·7	93 273	+2·5	123 303	+3·0	153 333	+2·3
4 184	+0·7	34 214	0·0	64 244	+0·8	94 274	+2·6	124 304	+2·9	154 334	+2·2
5 185	+0·6	35 215	0·0	65 245	+0·9	95 275	+2·6	125 305	+2·9	155 335	+2·2
6 186	+0·6	36 216	0·0	66 246	+0·9	96 276	+2·6	126 306	+2·9	156 336	+2·1
7 187	+0·6	37 217	+0·1	67 247	+1·0	97 277	+2·7	127 307	+2·9	157 337	+2·1
8 188	+0·5	38 218	+0·1	68 248	+1·0	98 278	+2·7	128 308	+2·8	158 338	+2·0
9 189	+0·5	39 219	+0·2	69 249	+1·1	99 279	+2·8	129 309	+2·8	159 339	+2·0
10 190	+0·5	40 220	+0·2	70 250	+1·1	100 280	+2·8	130 310	+2·8	160 340	+1·9
11 191	+0·4	41 221	+0·2	71 251	+1·2	101 281	+2·9	131 311	+2·8	161 341	+1·9
12 192	+0·4	42 222	+0·2	72 252	+1·2	102 282	+2·9	132 312	+2·8	162 342	+1·9
13 193	+0·3	43 223	+0·1	73 253	+1·3	103 283	+3·0	133 313	+2·7	163 343	+1·8
14 194	+0·3	44 224	+0·1	74 254	+1·3	104 284	+3·0	134 314	+2·7	164 344	+1·8
15 195	+0·2	45 225	+0·1	75 255	+1·4	105 285	+3·1	135 315	+2·7	165 345	+1·8
16 196	+0·2	46 226	+0·2	76 256	+1·5	106 286	+3·1	136 316	+2·7	166 346	+1·7
17 197	+0·2	47 227	+0·2	77 257	+1·6	107 287	+3·2	137 317	+2·7	167 347	+1·6
18 198	+0·2	48 228	+0·3	78 258	+1·7	108 288	+3·2	138 318	+2·8	168 348	+1·6
19 199	+0·2	49 229	+0·3	79 259	+1·8	109 289	+3·3	139 319	+2·8	169 349	+1·5
20 200	+0·2	50 230	+0·4	80 260	+1·9	110 290	+3·3	140 320	+2·8	170 350	+1·4
21 201	+0·2	51 231	+0·4	81 261	+1·9	111 291	+3·3	141 321	+2·8	171 351	+1·4
22 202	+0·2	52 232	+0·3	82 262	+2·0	112 292	+3·3	142 322	+2·8	172 352	+1·3
23 203	+0·2	53 233	+0·3	83 263	+2·0	113 293	+3·4	143 323	+2·7	173 353	+1·3
24 204	+0·2	54 234	+0·2	84 264	+2·1	114 294	+3·4	144 324	+2·7	174 354	+1·2
25 205	+0·2	55 235	+0·2	85 265	+2·1	115 295	+3·4	145 325	+2·7	175 355	+1·2
26 206	+0·2	56 236	+0·3	86 266	+2·2	116 296	+3·3	146 326	+2·6	176 356	+1·2
27 207	+0·2	57 237	+0·3	87 267	+2·2	117 297	+3·3	147 327	+2·6	177 357	+1·1
28 208	+0·2	58 238	+0·4	88 268	+2·3	118 298	+3·2	148 328	+2·5	178 358	+1·1
29 209	+0·2	59 239	+0·4	89 269	+2·3	119 299	+3·2	149 329	+2·5	179 359	+1·0

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TABLE III.

NADIR AND ZENITH POINTS ON MURAL CIRCLE IN 1868.

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1868.				
Jan. 9	36°·9	254° 2′ 18″·9 18·3	74° 2′ 18″·6	18″·8
17	42·8	19·4 19·6	19·5	19·3
28	35·6	19·4 19·6	19·5	19·4
Feb. 3	35·4	19·0 19·0	19·0	19·2
10	44·4	19·4 19·7	19·6	19·3
11	42·0	19·2 19·3	19·2	19·0
13	45·8	18·2	18·2	18·7
17	43·0	19·0 19·8	19·4	19·3
19	41·5	19·7 19·4	19·6	19·4
21	44·2	19·2 19·2	19·2	19·4
26	48·8	19·6	19·6	19·4
Mar. 4	47·4	19·0 19·0	19·0	19·4
6	40·4	19·3 20·4	19·8	19·7
8	39·4	19·4 20·5	20·0	19·8
10	42·2	19·2 19·3	19·2	19·3
11	44·8	18·6 19·1	18·8	19·0
1868.				
Mar. 17	43°·4	254° 2′ 19″·5 19·0	74° 2′ 19″·2	19″·0
23	37·5	18·6 19·3	19·0	19·0
24	38·0	19·4 18·3	18·8	19·0
26	45·2	20·6 20·0	20·3	19·8
27	46·0	20·4 19·2	19·8	19·8
April 2	47·5	19·8 19·0	19·4	19·5
13	43·4	18·6 18·2	18·4	19·0
14	47·6	17·8 18·3	18·0	18·5
15	50·3	18·4 19·0	18·7	18·5
21	47·0	18·6 18·6	18·6	18·5
27	46·7	18·6	18·6	18·5
28	48·4	18·0 18·4	18·2	18·5
May 1	48·7	17·6 19·4	18·5	18·5
4	48·0	18·8 18·9	18·8	18·7
5	44·2	19·0 19·0	19·0	18·8

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1868.				
May 7	51°·6	254° 2′ 18″·8 18·8	74° 2′ 18″·8	18″·8
11	53·2	18·2 18·9	18·6	18·8
12	53·5	19·1 19·2	19·2	18·8
13	54·1	18·2 18·6	18·4	18·8
June 29	59·3	19·0	19·0	18·8
Aug. 4	70·6	19·3 19·0	19·2	18·8
6	64·0	17·0 19·3	18·2	18·5
Sept. 10	58·7	18·1 16·7	17·4	17·7
25	53·5	17·4 17·4	17·4	17·5
28	54·6	16·6 16·4	16·5	17·0
30	50·4	16·4 16·6	16·5	17·0
Oct. 7	48·8	17·8 17·8	17·8	17·6
9	51·8	18·0 18·4	18·2	18·0
13	48·8	18·1 19·1	18·6	18·3
15	48·2	17·8 18·6	18·2	18·1
16	44·2	17·4 17·6	17·5	17·7
19	42·4	16·8 16·6	16·7	17·4
21	41·1	16·8 19·0	17·9	17·8
23	42·4	17·6 17·7	17·6	17·8
1868.				
Oct. 26	42°·4	254° 2′ 18″·5 17·9	74° 2′ 18″·2	18″·1
27	42·2	19·2 18·3	18·8	18·5
29	42·2	17·4 18·8	18·1	18·5
Nov. 4	41·2	19·3 19·6	19·4	19·0
5	38·9	18·4 18·6	18·5	18·8
6	36·6	19·9 19·4	19·6	19·3
10	41·1	18·6 18·8	18·7	18·8
Dec. 1	44·1	18·5 17·8	18·2	18·5
3	46·0	18·2 18·4	18·3	18·5
4	50·2	18·6	18·6	18·5
14	46·4	18·0 18·9	18·4	18·5
15	46·0	19·3 18·8	19·0	18·8
18	46·0	18·5 18·8	18·6	18·6
21	46·0	18·7 18·7	18·7	18·4
22	45·7	17·8 17·8	17·8	18·0
23	44·1	17·2 17·8	17·5	18·0
29	38·6	18·2 18·0	18·1	18·1
31	37·1	18·4 18·8	18·6	18·3

For the remaining reductions, the refractions have been computed by Bessel's Table, as represented in the Rev. R. Sheepshank's compendious forms; the Latitude of the Observatory has been assumed as in former years $=55° 57' 23''\cdot2$; and the *Apparent* N. Polar Distances on the day of observation have been converted into *Mean* North Polar Distances for the beginning of the year of observation, by applying the corrections for precession, nutation, aberration, and proper motions, taken from the elements and subsidiary tables given in the Nautical Almanac and the British Association Catalogue; and whose sum is represented in the last column of each observation-page. The individual results for magnitude and place of each star are collected on pp. 687 to 693.

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ROYAL OBSERVATORY, EDINBURGH.

CATALOGUE

OF

THE MEAN PLACES OF ALL STARS

OBSERVED WITH

EITHER THE TRANSIT INSTRUMENT OR MURAL CIRCLE,

DURING

THE YEAR, AND

REDUCED TO JANUARY 1,

1868.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.			h. m. s.		° ′ ″		R. A.	N. P. D.
4	α Andromedæ	(1·0) (a)	......	0 1 34·11	0·66	61 38 ...	......	10	0
18	......	......	7·0	0 4 ...	......	31 3 40·5	0·79	0	3
26	γ Pegasi	(2·0)	......	0 6 26·46	0·72	75 33 3·2	0·85	9	3
28	......	......	(6·0)	0 7 ...	......	49 41 38·8	0·81	0	1
42	......	......	6·5	0 9 ...	......	86 28 56·4	0·78	0	1
57	......	......	(6·5)	0 11 ...	......	89 2 43·0	0·79	0	4
68	......	......	(7·0)	0 14 ...	......	22 54 35·7	0·84	0	2
83	......	......	(6·0)	0 18 ...	......	37 41 5·0	0·80	0	7
98	......	......	(7·0)	0 21 ...	......	74 42 22·2	0·82	0	4
112	12 Ceti	(6·0)	......	0 23 18·08	0·81	94 41 ...	......	4	0
113	......	......	(7·0)	0 23 ...	......	85 52 12·8	0·80	0	3
125	......	......	(7·0)	0 25 ...	......	19 44 49·6	0·84	0	2
133	......	......	(8·0)	0 27 ...	......	70 17 42·4	0·81	0	2
149	......	......	(6·0)	0 29 ...	......	77 30 50·6	0·79	0	1
177	......	......	(7·0)	0 34 ...	......	81 21 59·0	0·82	0	4
197	......	......	(6·5)	0 37 ...	......	42 51 36·6	0·83	0	3
218	η Cassiopeæ	......	(4·0)	0 41 ...	......	32 53 7·9	0·82	0	6
237	......	......	(7·5)	0 44 ...	......	87 19 53·8	0·81	0	2
259	μ Andromedæ	......	(4·0)	0 49 ...	......	52 13 1·9	0·81	0	6
263	......	......	9·0	0 50 ...	......	63 42 54·6	0·84	0	1
288	ε Piscium	(4·0)	......	0 56 5·61	0·83	82 49 ...	......	6	0
290	......	......	(7·0)	0 56 ...	......	36 30 11·9	0·81	0	5
299	......	......	8·0	0 57 ...	......	61 2 47·3	0·83	0	3
314	μ Cassiopeæ	......	(5·5)	0 59 ...	......	35 43 43·0	0·80	0	2
355	......	......	(6·5)	1 3 ...	......	26 30 1·4	0·83	0	1
357	......	......	(9·0)	1 6 ...	......	58 37 33·6	0·82	0	4
420	θ¹ Ceti	(3·0)	......	1 17 25·49	0·82	98 52 ...	......	4	0
455	......	......	(8·0)	1 25 ...	......	73 43 36·8	0·82	0	7
482	......	......	(6·0)	1 29 ...	......	32 41 49·7	0·85	0	1
514	......	......	(6·5)	1 34 ...	......	60 37 18·4	0·85	0	3
516	......	......	(5·5)	1 35 ...	......	55 25 18·6	0·82	0	1
518	ν Piscium	(5·0)	......	1 34 33·80	0·84	85 11 ...	......	6	0
538	......	......	(6·5)	1 40 ...	......	73 14 58·1	0·81	0	1
547	......	......	(6·0)	1 41 ...	......	42 45 44·3	0·84	0	4
577	β Arietis	(3·0)	......	1 47 21·14	0·84	69 50 ...	......	5	0
588	......	......	(6·5)	1 50 ...	......	26 1 23·9	0·84	0	4
645	......	......	(6·0)	1 59 ...	......	64 48 3·3	0·85	0	3
648	α Arietis	(2·0)	......	1 59 44·22	0·76	67 10 ...	......	5	0
694	......	......	(7·5)	2 8 ...	......	26 11 19·4	0·88	0	2
704	67 Ceti	(6·0)	......	2 10 23·96	0·88	97 2 ...	......	2	0
725	......	......	(8·0)	2 14 ...	......	33 13 7·6	0·85	0	1
764	......	......	(7·0)	2 22 ...	......	81 1 31·5	0·88	0	3
834	......	......	(6·5)	2 36 ...	......	64 55 30·3	0·89	0	2
837	γ Ceti	(3·0)	......	2 36 27·71	0·88	87 19 ...	......	4	0
891	......	......	(8·0)	2 46 ...	......	84 4 35·2	0·97	0	1
920	......	......	(7·0)	2 51 ...	......	68 54 44·9	0·94	0	2
949	α Ceti	(2·5)	......	2 55 22·82	0·88	86 26 ...	......	4	0
962	ι Persei	......	(4·0)	3 0 ...	......	40 53 35·2	0·96	0	1
980	......	......	(6·5)	3 3 ...	......	63 36 38·4	0·92	0	1
986	δ Arietis	(4·0)	......	3 4 5·14	0·92	70 46 ...	......	1	0
1055	......	......	(7·5)	3 17 ...	......	68 25 48·1	0·92	0	1

(a) Numbers in parenthesis are the magnitudes of the British Association Catalogue.

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Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
1101	....	......	(6·5)	3 27 ...	......	58 45 48·2	0·94	0	2
1166	η Tauri..................	(3·0)	......	3 39 38·49	0·95	66 18 19·6	0·96	5	6
1282	....	......	(6·0)	4 4 ...	......	41 14 54·9	0·97	0	5
1318	....	......	5·0	4 11 ...	......	33 48 53·2	0·97	0	3
1347	....	......	(8·0)	4 15 ...	......	65 54 19·0	0·98	0	1
1351	....	......	(6·5)	4 16 ...	......	73 40 53·2	0·96	0	1
1376	ι Tauri..................	(3·5)	......	4 20 54·70	0·97	71 7 ...	......	10	0
1420	α Tauri..................	(1·0)	......	4 28 20·90	0·90	73 46 ...	......	13	0
1434	....	......	(5·0)	4 31 ...	......	77 45 22·6	0·96	0	4
1459	....	......	(6·5)	4 37 ...	......	34 38 13·8	0·97	0	1
1491	....	......	(5·0)	4 44 ...	......	81 19 42·8	0·96	0	1
1501	....	......	(6·0)	4 46 ...	......	34 23 31·6	0·99	0	3
1520	ι Aurigæ..................	(4·0)	......	4 48 24·03	0·81	57 3 ...	......	11	0
1623	β Orionis..................	(1·0)	......	5 8 11·68	0·52	98 21 21·1	0·74	2	4
1626	....	......	(7·5)	5 9 27·65	0·02	49 41 ...	......	1	0
1656	....	......	(6·0)	5 14 32·34	0·02	81 42 18·2	0·98	1	2
1681	β Tauri..................	(2·0)	......	5 17 56·94	0·82	61 30 ...	......	12	0
1683	....	......	(6·0)	5 18 ...	......	55 43 44·8	0·97	0	1
1703	....	......	(7·0)	5 20 32·74	0·02	73 40 21·7	0·66	1	3
1730	δ Orionis..................	(2·0)	......	5 25 15·80	0·77	90 24 ...	......	9	0
1751	....	......	(5·5)	5 29 ...	......	24 22 40·4	0·50	0	2
1765	ε Orionis..................	(2·5)	......	5 29 30·90	0·86	91 17 ...	......	8	0
1772	....	......	(6·0)	5 31 ...	......	60 51 52·0	0·99	0	1
1813	....	......	(6·0)	5 39 ...	......	21 34 19·7	0·97	0	1
1826	....	......	(6·0)	5 40 ...	......	80 31 46·0	1·00	0	2
1883	α Orionis..................	(1·0)	......	5 48 1·53	0·83	82 37 ...	......	6	0
1958	ν Orionis..................	(4·5)	......	6 0 2·15	0·34	75 13 ...	......	3	0
2022	....	......	6·0	6 10 ...	......	80 0 43·8	0·51	0	2
2047	μ Geminorum..................	(3·0)	......	6 14 58·61	0·99	67 25 ...	......	1	0
2060	....	......	7·0	6 17 ...	......	85 20 32·8	0·03	0	2
2101	....	......	7·0	6 22 ...	......	67 22 15·0	0·04	0	1
2163	γ Geminorum..................	(2·5)	......	6 30 5·16	0·02	73 29 ...	......	1	0
2184	....	......	7·0	6 34 ...	......	73 28 58·8	0·04	0	1
2238	....	......	(6·0)	6 44 ...	......	66 14 45·2	0·03	0	2
2292	....	......	6·0	6 54 ...	......	79 11 33·6	0·03	0	2
2329	....	......	(7·0)	7 1 ...	......	74 16 6·4	0·04	0	1
2334	....	......	(6·0)	7 2 ...	......	39 59 53·4	0·04	0	2
2379	....	......	(5·0)	7 9 ...	......	40 18 14·7	0·04	0	1
2410	δ Geminorum..................	......	(3·0)	7 12 14·34	0·02	67 46 40·1	0·02	3	1
2463	....	......	(7·0)	7 20 ...	......	62 10 59·4	0·06	0	4
2485	α^2 Geminorum..................	(1·5)	......	7 26 10·45	0·14	57 50 ...	......	5	0
2488	....	......	(6·0)	7 27 ...	......	43 31 55·8	0·07	0	2
2522	α Canis Minoris..................	(1·0)	......	7 32 23·43	0·07	84 26 19·0	0·07	4	3
2555	β Geminorum..................	(2·0)	......	7 37 14·12	0·07	61 39 ...	......	6	0
2586	....	......	(7·0)	7 42 ...	......	61 28 24·0	0·08	0	4
2672	6 Cancri..................	(5·5)	......	7 55 24·50	0·06	61 50 ...	......	2	0
2683	....	7·0	6·0	7 57 7·57	0·13	70 47 14·7	0·10	1	3
2688	....	(7·0)	......	7 57 31·45	0·11	62 5 50·5	0·14	1	1
2737	....	7·0	......	8 3 33·92	0·12	74 59 ...	......	2	0
2748	....	7·0	......	8 4 59·07	0·13	75 36 19·3	0·11	1	1
2761	....	7·0	......	8 7 0·67	0·12	76 33 17·0	0·11	2	2

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.			h m s		° ′ ″		R. A.	N. P. D.
2778	β Cancri	4·0	......	8 9 21·37	0·12	80 25 ...	......	2	0
2862	η Cancri	(6·0)	......	8 26 4·34	0·13	69 7 ...	......	3	0
2867	....	7·5	6·5	8 25 29·03	0·13	79 29 21·3	0·12	1	3
2882	....	6·0	......	8 28 23·95	0·13	29 36 ...	......	1	0
2937	γ Cancri	5·0	......	8 35 38·69	0·12	68 3 ...	......	2	0
2971	θ Hydræ	(4·0)	......	8 39 46·98	0·14	83 5 57·3	0·13	4	4
2988	....	7·2	......	8 43 13·21	0·16	34 33 22·9	0·14	2	1
3013	....	6·5	......	8 45 25·83	0·14	84 9 55·6	0·13	3	1
3053	....	6·0	......	8 50 31·81	0·14	80 6 21·4	0·14	3	4
3083	....	6·5	......	8 56 0·52	0·16	38 39 10·6	0·14	2	3
3103	....	7·5	......	8 58 51·45	0·14	72 21 39·4	0·11	2	2
3111	κ Cancri	(5·0)	......	9 0 35·62	0·12	78 48 ...	......	2	0
3133	....	6·7	......	9 5 19·02	0·14	85 36 ...	......	3	0
3157	....	7·2	......	9 10 21·60	0·16	29 39 55·0	0·17	2	2
3171	83 Cancri	(6·0)	......	9 11 36·66	0·13	71 44 ...	......	2	0
3223	α Hydræ	......	(2·0)	9 21 ...	......	98 5 17·6	0·14	0	5
3242	θ Ursæ Majoris	4·0	......	9 21 0·66	0·16	37 43 21·3	0·11	2	1
3312	ο Leonis	4·0	......	9 34 6·22	0·14	79 30 ...	......	3	0
3331	ε Leonis	(3·0)	......	9 38 21·25	0·14	65 37 11·1	0·13	6	5
3371	μ Leonis	(3·0)	......	9 45 15·13	0·14	63 22 ...	......	2	0
3375	....	......	(6·5)	9 46 ...	......	54 23 48·6	0·15	0	3
3380	....	6·0	......	9 46 47·02	0·16	83 25 17·8	0·11	2	1
3415	π Leonis	(4·5)	......	9 53 14·16	0·16	81 19 ...	......	6	0
3418	....	8·0	8·5	9 54 1·12	0·16	80 24 56·2	0·15	2	1
3420	....	......	(7·0)	9 54 ...	......	57 49 59·8	0·16	0	2
3430	....	8·8	......	9 56 18·38	0·16	81 8 ...	......	3	0
3438	....	7·0	......	9 57 53·97	0·11	84 22 ...	......	1	0
3439	....	7·5	......	9 58 1·93	0·18	54 21 46·7	0·13	1	1
3459	α Leonis	(1·0)	......	10 1 20·40	0·19	77 23 ...	......	13	0
3484	....	7·0	7·2	10 6 35·22	0·16	57 55 18·4	0·15	2	4
3523	γ[1] Leonis	(2·0)	......	10 12 41·52	0·20	69 30 ...	......	7	0
3528	....	......	(5·5)	10 15 ...	......	6 46 22·1	0·22	0	4
3529	....	7·3	......	10 13 37·65	0·18	82 54 ...	......	3	0
3592	....	7·2	......	10 22 55·69	0·17	87 49 48·0	0·19	3	4
3609	ρ Leonis	(4·0)	......	10 25 51·53	0·20	80 1 ...	......	7	0
3662	....	(7·5)	......	10 34 43·66	0·20	78 34 18·0	0·22	2	5
3667	34 Sextantis	6·0	......	10 35 48·37	0·24	85 44 ...	......	2	0
3708	l Leonis	(6·0)	......	10 42 19·03	0·23	78 45 ...	......	4	0
3726	....	6·0	......	10 45 26·68	0·21	88 16 30·3	0·22	3	3
3768	d Leonis	(5·0)	......	10 53 44·45	0·21	85 40 ...	......	3	0
3780	....	7·0	......	10 56 49·48	0·27	81 42 25·2	0·22	2	4
3788	χ Leonis	(4·5)	......	10 58 12·37	0·24	81 57 ...	......	7	0
3821	....	6·0	......	11 3 43·31	0·22	21 0 45·2	0·24	4	2
3834	δ Leonis	(2·5)	......	11 7 8·11	0·24	68 45 ...	......	12	0
3869	....	7·0	......	11 15 34·39	0·23	71 50 21·0	0·23	3	3
3900	τ Leonis	4·0	......	11 21 8·67	0·23	86 25 ...	......	3	0
3946	υ Leonis	(4·5)	......	11 30 11·40	0·24	90 6 ...	......	11	0
3995	β Leonis	(2·5)	......	11 42 19·49	0·24	74 41 ...	......	10	0
3996	....	......	(6·0)	11 42 ...	......	84 4 39·3	0·24	0	5
4005	....	6·0	......	11 44 8·83	0·23	76 59 ...	......	3	0
4052	π Virginis	5·5	......	11 54 6·50	0·23	82 39 ...	......	3	0

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
4111	......	......	7·0	12 6 ...	......	11 49 31·4	0·24	0	2
4145	η Virginis......	(3·5)	......	12 13 9·13	0·26	89 56 ...	......	5	0
4153	......	6·3	......	12 13 41·37	0·26	62 58 36·0	0·27	3	5
4199	......	7·5	......	12 21 2·13	0·24	63 21 24·6	0·26	3	1
4205	......	6·0	......	12 22 2·50	0·30	63 2 33·2	0·28	3	2
4231	......	7·5	......	12 26 57·56	0·25	64 49 20·7	0·25	3	3
4244	(a)	6·5	......	12 28 44·03	0·27	52 50 53·9	0·26	3	2
4268	γ' Virginis......	(4·0)	......	12 34 58·25	0·[illegible]	90 44 ...	......	1	0
4340	δ Virginis......	4·0	......	12 48 57·24	0·29	85 53 ...	......	3	0
4364	......	7·0	......	12 55 7·48	0·28	68 1 7·5	0·30	2	3
4401	θ Virginis......	(4·5)	......	13 3 7·02	0·29	94 50 ...	......	7	0
4421	β Comæ......	......	(4·5)	13 6 ...	......	61 27 7·2	0·31	0	5
4457	......	6·0	......	13 12 59·99	0·32	54 10 40·2	0·30	4	3
4462	......	......	(7·0)	13 14 ...	......	84 28 44·8	0·33	0	1
4468	......	6·8	......	13 14 52·11	0·32	75 9 ...	......	4	0
4480	α Virginis......	(1·0)	......	13 18 14·48	0·29	100 28 ...	......	10	0
4503	......	7·0	......	13 22 32·85	0·30	85 26 39·4	0·31	1	5
4513	......	7·0	......	13 24 36·78	0·30	65 5 ...	......	4	0
4526	......	6·0	......	13 26 32·93	0·31	64 58 1·0	0·34	2	1
4532	ζ Virginis......	(4·0)	......	13 27 58·08	0·32	89 55 ...	......	9	0
4550	......	6·7	......	13 31 21·48	0·31	36 38 15·4	0·29	4	2
4552	......	......	5·0	13 32 ...	......	53 1 58·8	0·36	0	1
4555	......	......	(7·5)	13 32 ...	......	36 44 2·4	0·29	0	1
4559	......	6·0	......	13 33 4·12	0·29	78 34 56·9	0·34	1	1
4575	......	6·2	......	13 37 31·03	0·30	66 37 53·4	0·34	4	3
4597	......	4·8	......	13 40 59·42	0·30	71 53 ...	......	4	0
4606	......	(7·0)	......	13 42 23·28	0·34	57 56 26·2	0·30	1	1
4610	......	......	(6·0)	13 43 ...	......	58 9 11·5	0·35	0	1
4621	......	6·8	......	13 43 48·32	0·30	70 42 51·0	0·34	2	2
4627	......	6·0	......	13 45 15·05	0·32	54 34 24·1	0·28	3	1
4632	......	......	(6·0)	13 46 ...	......	54 54 5·4	0·29	0	1
4648	η Bootis......	(3·0)	......	13 48 23·99	0·33	70 56 ...	......	12	0
4652	(b)	6·0	......	13 50 18·92	0·32	57 19 20·2	0·30	2	2
4672	τ Virginis......	(4·5)	......	13 54 55·80	0·31	87 49 ...	......	8	0
4676	......	......	(7·0)	13 55 31·07	0·34	57 47 46·7	0·32	1	6
4678	......	7·0	......	13 56 41·92	0·32	57 42 ...	......	2	0
4694	......	7·2	......	14 0 35·02	0·32	58 31 4·8	0·32	2	3
4716	κ Virginis......	(4·0)	......	14 5 51·54	0·32	99 40 ...	......	1	0
4723	......	7·0	......	14 8 2·52	0·32	60 16 36·3	0·32	1	5
4729	α Bootis......	(1·0)	......	14 9 38·50	0·36	70 8 ...	......	12	0
4756	......	......	(6·0)	14 14 ...	......	37 21 28·7	0·35	0	2
4797	......	6·0	......	14 22 48·52	0·32	53 12 41·5	0·35	1	4
4808	ρ Bootis......	(4·0)	......	14 26 8·46	0·38	59 3 ...	......	6	0
4809	......	(6·0)	......	14 26 29·77	0·34	62 44 16·4	0·33	1	2
4820	......	6·0	......	14 28 34·86	0·33	56 53 8·0	0·36	3	1
4863	......	7·2	......	14 37 19·19	0·33	52 40 48·8	0·34	3	3
4876	ε Bootis......	(3·0)	......	14 39 13·35	0·38	62 22 4·8	0·34	14	1
4934	......	7·0	......	14 51 1·54	0·33	48 19 51·1	0·34	1	5
4942	......	6·0	......	14 54 22·26	0·32	49 50 ...	......	2	0
4965	......	......	(5·5)	14 58 27·04	0·33	44 50 18·8	0·33	1	1
4969	ψ Bootis......	(5·0)	......	14 58 47·43	0·40	62 32 ...	......	8	0

(a) Tab. N. P. D. differs by 2″. (b) Tab. R. A. differs by 28 secs.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
4992	....	5·0	......	15 2 30·77	0·34	34 56 5·1	0·35	2	4
5000	....	7·0	......	15 5 18·14	0·34	56 25 ...	......	2	0
5034	β Libræ..............................	(2·5)	......	15 9 54·36	0·41	98 54 ...	......	6	0
5071	(a)	6·0	......	15 16 12·34	0·33	37 33 54·3	0·35	1	3
5091	....	6·0	......	15 20 26·92	0·34	26 11 12·4	0·36	2	1
5143	α Coronæ Borealis..........	(2·5)	......	15 29 5·99	0·43	62 50 ...	......	17	0
5196	α Serpentis........................	(2·5)	......	15 37 46·02	0·44	83 9 ...	......	16	0
5284	γ Serpentis........................	......	(3·0)	15 50 ...	......	73 54 21·0	0·36	0	2
5414	δ Ophiuchi..........................	(3·0)	......	16 7 25·75	0·46	93 21 ...	......	12	0
5604	ζ Herculis..........................	(3·0)	......	16 36 18·64	0 48	58 9 ...	......	8	0
5708	κ Ophiuchi	(4·0)	......	16 51 25·26	0·52	80 25 ...	......	5	0
5716	....	......	6·0	16 53 ...	......	74 20 47·6	0·49	0	1
5776	....	......	(6·0)	17 1 ...	......	41 0 45·7	0·49	0	1
5821	α Herculis..........................	(3·5)	......	17 8 37·76	0·51	75 27 ...	......	17	0
5941	α Ophiuchi..........................	(2·0)	......	17 28 48·47	0·51	77 20 ...	......	18	0
6021	μ Herculis..........................	(4·0)	......	17 41 17·58	0·58	62 12 ...	......	3	0
6355	α Lyræ..............................	(1·0)	......	18 32 28·14	0·56	51 20 ...	......	5	0
6429	β Lyræ..............................	(3·0)	......	18 45 12·40	0·57	56 47 ...	......	6	0
6528	ζ Aquilæ............................	(3 0)	......	18 59 20·60	0·59	76 19 47·5	0·59	3	1
6595	ω Aquilæ	(5·0)	......	19 11 37·25	0·60	78 38 ...	......	1	0
6646	δ Aquilæ............................	(3·5)	......	19 18 50·52	0·60	87 9 ...	......	2	0
6762	....	......	(6·0)	19 38 ...	......	63 10 42·5	0·59	0	1
6772	γ Aquilæ	(3·0)	......	19 39 59·03	0·63	79 42 ...	......	5	0
6791	....	......	(7·5)	19 42 ...	......	78 37 49·7	0·60	0	1
6802	α Aquilæ............................	(1·5)	......	19 44 20·53	0·66	81 29 ...	......	3	0
6833	β Aquilæ............................	(3·5)	......	19 45 49·73	0·64	83 55 ...	......	4	0
6852	....	......	(5·5)	19 51 ...	......	30 38 22·3	0·59	0	1
7161	....	......	(7·0)	20 35 ...	......	44 47 54·5	0·59	0	1
7256	32 Vulpeculæ....................	(4·5)	......	20 48 56·15	0·69	62 27 ...	......	1	0
7268	....	......	(6·5)	20 51 ...	......	43 5 13·3	0·69	0	1
7336	61¹ Cygni..........................	......	(5·5)	21 1 ...	......	51 53 52·2	0·73	0	1
7368	ζ Cygni..............................	(3·0)	......	21 7 19·16	0·72	60 18 47·0	0·69	2	1
7430	....	......	(6·0)	21 17 ...	......	29 48 13·6	0·69	0	1
7478	β Aquarii............................	(3·0)	......	21 24 36·41	0·74	96 9 ...	......	1	0
7561	ε Pegasi..............................	(2·5)	......	21 37 42·15	0·69	80 43 41·5	0·69	1	1
7590	....	......	(7·5)	21 41 ...	......	73 24 51·1	0·73	0	1
7627	16 Pegasi............................	(5·5)	......	21 47 3·38	0·69	64 42 ...	......	1	0
7644	....	......	(7·0)	21 50 ...	......	18 7 55·1	0·69	0	1
7688	α Aquarii............................	(3·0)	......	21 59 0·09	0·74	90 57 34·1	0·78	1	3
7759	....	......	(6·0)	22 8 ...	......	29 53 35·3	0·75	0	3
7773	θ Aquarii	(4·5)	......	22 9 52·03	0·77	98 26 ...	......	1	0
7868	η Aquarii............................	(4·0)	......	22 28 34·30	0·77	90 48 ...	......	1	0
7909	ζ Pegasi..............................	(3·0)	......	22 34 52·67	0·77	79 51 23·6	0·76	4	5
7977	....	......	(7·5)	22 47 ...	......	88 51 27·3	0·77	0	7
8024	....	......	(6·5)	22 56 ...	......	33 36 12·8	0·78	0	5
8034	α Pegasi..............................	(2·0)	......	22 58 11·20	0·77	75 30 16·2	0·78	5	2
8083	....	......	(6·0)	23 7 ...	......	33 33 37·3	0·78	0	6
8105	γ Piscium..........................	4·5	......	23 10 19·35	0·82	87 26 ...	......	1	0
8135	....	......	(6·0)	23 14 ...	......	46 36 17·7	0·78	0	3
8139	....	......	(7·5)	23 15 ...	......	52 8 25·3	0·78	0	2
8147	....	......	(6·5)	23 16 ...	......	70 9 50·8	0·78	0	2

(a) Differs from Tab. N. P. D. by 2″.

Digitized by

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.			h. m. s.		° ′ ″		R. A.	N. P. D.
8204	....	......	(7·0)	23 27 ...	......	18 43 35·9	0·77	0	1
8233	ι Piscium	(4·5)	......	23 33 9·71	0·79	85 5 ...	......	5	0
8247	....	......	(7·5)	23 36 ...	......	72 3 52·1	0·79	0	8
8269	....	......	(8·0)	23 41 ...	......	86 30 11·6	0·82	0	3
8270	....	......	(8·5)	23 41 ...	......	86 33 24·9	0·79	0	1
8298	....	......	(7·0)	23 46 ...	......	13 7 54·5	0·83	0	1
8315	....	......	(7·0)	23 49 ...	......	82 30 40·1	0·79	0	5
8331	ω Piscium	(4·5)	......	23 52 32·04	0·80	83 52 ...	......	4	0
8338	....	......	(7·0)	23 54 ...	......	28 33 28·2	0·82	0	2
8350	85 Pegasi	......	(6·0)	23 55 ...	......	63 36 57·4	0·79	0	1
8355	....	......	(6·0)	23 56 ...	......	24 38 11·8	0·82	0	2
8364	....	......	(7·0)	23 58 ...	......	32 12 11·0	0·82	0	4
8372	....	......	(6·5)	23 59 ...	......	32 17 59·1	0·82	0	1

ROYAL OBSERVATORY, EDINBURGH.

OBSERVATIONS

MADE WITH

THE TRANSIT INSTRUMENT.

AND

CALCULATION

OF

APPARENT RIGHT ASCENSIONS.

1869.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1869.
1869.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Jan. 4	1420	α Tauri	....	73 45	2·9	11·4	20·0	28·2	29 37·1	4 29 19·92	+ 0·05	− 55·15	− 55·24	− 0·65
	1681	β Tauri	....	61 30	38·0	47·1	56·7	5·8	19 15·5	5 18 56·62	+ 0·04	− 55·22	− 55·25	− 0·67
	1730	δ Orionis	....	90 24	58·2	6·4	15·0	22·8	26 31·2	5 26 14·72	+ 0·05	− 55·27	− 55·26	− 0·62
	1765	ε Orionis	....	91 17	13·2	21·5	30·0	37·9	30 46·5	5 30 29·82	+ 0·05	− 55·28	− 55·27	− 0·61
	1883	α Orionis	....	82 37	44·0	52·4	1·0	8·9	49 17·6	5 49 0·78	+ 0·05	− 55·38	− 55·28	− 0·64
Jan. 5	8034	α Pegasi	....	75 30	51·9	0·4	9·0	17·0	59 26·1	22 59 8·88	+ 0·06	− 55·93	− 55·95	+ 1·17
	4	α Andromedæ	....	61 38	13·8	23·0	32·3	41·2	2 51·2	0 2 32·30	+ 0·04	− 55·86	− 55·96	+ 0·73
	26	γ Pegasi	....	75 32	7·6	16·0	24·6	33·0	7 41·9	0 7 24·62	+ 0·06	− 55·97	− 55·97	+ 0·51
	1520	ι Aurigæ	....	57 3	5·0	14·9	24·6	34·1	49 44·5	4 49 24·62	+ 0·05	− 56·10	− 56·03	− 0·66
	1623	β Orionis	....	98 21	54·5	2·8	11·2	19·4	9 28·0	5 9 11·18	+ 0·05	− 56·08	− 56·04	− 0·61
	1681	β Tauri	....	61 30	38·9	48·1	57·4	6·5	19 16·3	5 18 57·44	+ 0·04	− 56·04	− 56·04	− 0·67
	1730	δ Orionis	....	90 24	59·0	7·2	15·5	23·5	26 32·0	5 26 15·44	+ 0·05	− 55·99	− 56·04	− 0·62
	1765	ε Orionis	....	91 17	14·1	22·3	30·6	38·6	30 47·3	5 30 30·58	+ 0·05	− 56·04	− 56·05	− 0·61
Jan. 6	1730	δ Orionis	....	90 24	59·8	7·8	16·0	24·0	26 32·8	5 26 16·08	+ 0·05	− 56·63	− 56·60	− 0·62
	1765	ε Orionis	....	91 17	14·8	23·0	31·2	39·0	30 47·8	5 30 31·16	+ 0·05	− 56·62	− 56·61	− 0·61
	1883	α Orionis	....	82 37	45·4	53·5	2·0	10·1	49 18·8	5 49 1·96	+ 0·05	− 56·56	− 56·62	− 0·64
	1958	ν Orionis	....	75 13	45·8	54·4	3·0	11·1	1 20·0	6 1 2·86	+ 0·06	− 56·71	− 56·64	− 0·66
	6281	δ Ursæ Minoris S. P.	....	3 24	32·0	0·0	13·0	32·5	19 52·5	6 15 14·00	+ 0·64	....	− 56·65	+ 17·99
	2163	γ Geminorum	....	73 30	48·8	57·2	5·9	14·1	31 23·4	6 31 5·88	+ 0·06	− 56·66	− 56·66	− 0·69
Jan. 15	2410	δ Geminorum	....	67 47	2·7	11·4	20·4	29·0	13 38·5	7 13 20·40	+ 0·03	− 61·79	− 61·87	− 0·75
	2485	α² Geminorum	....	57 50	57·5	7·1	17·0	26·5	27 36·7	7 27 16·96	+ 0·03	− 61·87	− 61·88	− 0·61
	2522	α Canis Minoris	....	84 27	12·6	21·0	29·2	37·1	33 46·0	7 33 29·18	+ 0·01	− 61·78	− 61·88	− 0·75
	2555	β Geminorum	....	61 40	1·8	11·0	20·5	29·5	38 39·4	7 38 20·44	+ 0·03	− 61·89	− 61·89	− 0·75
	2672	6 Cancri	....	61 51	12·0	21·7	31·0	40·0	56 49·9	7 56 30·92	+ 0·03	− 62·08	− 61·90	− 0·76
Jan. 25	2163	γ Geminorum	....	73 30	59·2	7·9	16·5	25·0	31 34·0	6 31 16·52	− 0·03	− 67·17	− 67·13	− 0·72
	2410	δ Geminorum	....	67 47	8·0	17·0	26·0	34·6	13 43·9	7 13 25·90	− 0·02	− 67·19	− 67·13	− 0·80
	2485	α² Geminorum	....	57 50	2·9	12·5	22·3	31·8	27 42·0	7 27 22·30	0·00	− 67·12	− 67·13	− 0·57
	2522	α Canis Minoris	....	84 27	18·0	26·1	34·6	42·4	33 51·1	7 33 34·44	− 0·05	− 66·97	− 67·13	− 0·83
	2555	β Geminorum	....	61 40	7·0	16·4	25·9	35·0	38 44·7	7 38 25·80	− 0·01	− 67·14	− 67·14	− 0·65
	2672	6 Cancri	....	61 51	17·5	27·0	36·2	45·1	56 55·1	7 56 36·18	− 0·01	− 67·21	− 67·14	− 0·65
Jan. 26	1883	α Orionis	....	82 37	56·9	5·0	13·2	21·1	49 30·1	5 49 13·26	− 0·05	− 67·80	− 67·80	− 0·60
	1958	ν Orionis	....	75 13	57·0	5·5	14·0	22·3	1 31·0	6 1 13·96	− 0·03	− 67·74	− 67·81	− 0·64
	6281	δ Ursæ Minoris S. P.	....	3 24	46·0	13·5	28·0	49·0	20 7·0	6 15 28·70	− 0·85	....	− 67·82	+ 15·95
	2163	γ Geminorum	....	73 30	0·0	8·8	17·1	25·5	31 34·5	6 31 17·18	− 0·03	− 67·83	− 67·83	− 0·71
	2485	α² Geminorum	....	57 50	3·5	13·3	23·0	32·5	27 42·8	7 27 23·02	− 0·00	− 67·84	− 67·84	− 0·57
	2522	α Canis Minoris	....	84 27	18·7	27·1	35·3	43·0	33 52·1	7 33 35·24	− 0·05	− 67·72	− 67·85	− 0·83
	2555	β Geminorum	....	61 40	7·9	17·1	26·8	35·8	38 45·4	7 38 26·00	− 0·01	− 67·94	− 67·86	− 0·65
	2672	6 Cancri	....	61 51	18·4	27·7	37·0	46·0	56 55·9	7 56 37·00	− 0·01	− 68·02	− 67·87	− 0·66
Feb. 2	2410	δ Geminorum	....	67 47	9·6	18·8	27·4	36·0	12 45·4	7 12 27·44	− 0·03	− 8·72	− 8·75	− 0·60
	2485	α¹ Geminorum	....	57 50	4·6	14·2	24·0	33·4	26 43·7	7 26 23·98	− 0·01	− 8·78	− 8·75	− 0·68
	2522	α Canis Minoris	....	84 27	19·8	28·0	36·2	44·1	32 53·1	7 32 36·24	− 0·05	− 8·72	− 8·75	− 0·64
	2555	β Geminorum	....	61 40	8·8	18·0	27·6	36·2	37 46·1	7 37 27·34	− 0·03	− 8·64	− 8·75	− 0·57
	2672	6 Cancri	....	61 51	19·2	28·8	38·0	47·0	55 56·7	7 55 37·94	− 0·03	− 8·92	− 8·75	− 0·86
	2971	ι Hydræ	....	83 6	43·2	51·6	0·0	8·0	40 16·7	8 39 59·90	− 0·05	− 8·74	− 8·75	− 0·69

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A., Jan. 1. 1869.
1869.				° ′	s.	s.	s.	s.	m s.	h. m. s.	s.	s.	s.	s.
Feb. 10	1520	ι Aurigæ	....	57 3	14·3	24·2	34·0	43·4	48 53·7	4 48 33·92	− 0·02	− 5·71	− 5·66	− 0·28
	1623	β Orionis	....	98 21	4·0	12·2	20·6	28·7	8 37·2	5 8 20·54	− 0·09	− 5·62	− 5·66	− 0·29
	1681	β Tauri	....	61 30	48·0	57·4	7·0	15·9	18 25·8	5 18 6·82	− 0·03	− 5·63	− 5·66	− 0·39
	2163	γ Geminorum	....	73 30	58·0	6·3	15·0	23·1	30 32·3	6 30 14·94	− 0·04	− 5·67	− 5·66	− 0·63
	2410	δ Geminorum	....	67 47	6·5	15·5	24·4	33·0	12 42·3	7 12 24·34	− 0·04	− 5·64	− 5·66	− 0·77
	2485	α² Geminorum	....	57 50	1·2	11·0	21·0	30·4	26 40·4	7 26 20·80	− 0·02	− 5·61	− 5·66	− 0·86
	2971	ι Hydræ	....	83 6	40·4	48·6	57·0	5·0	40 13·6	8 39 56·92	− 0·06	− 5·72	− 5·66	− 0·92
Feb. 11	4	α Andromedæ	....	61 38	22·8	32·1	41·4	50·4	2 0·3	0 1 41·40	− 0·04	− 5·35	− 5·30	+ 1·20
	2485	α² Geminorum	....	57 50	1·0	10·8	20·4	29·8	26 40·0	7 26 20·10	− 0·03	− 5·21	− 5·21	− 0·85
	2555	β Geminorum	....	61 40	5·0	14·4	24·0	32·9	37 42·8	7 37 23·82	− 0·04	− 5·14	− 5·19	− 0·84
	2672	6 Cancri	....	61 51	15·4	24·9	34·2	43·2	55 53·0	7 55 34·14	− 0·04	− 5·11	− 5·18	− 0·88
	2862	η Cancri	....	69 7	56·1	5·1	14·0	22·5	25 31·9	8 25 13·92	− 0·05	− 5·15	− 5·17	− 0·90
	2971	ι Hydræ	....	82 6	40·0	48·0	56·3	4·4	40 13·1	8 39 56·30	− 0·07	− 5·15	− 5·16	− 0·92
Feb. 12	2522	α Canis Minoris	....	84 27	15·8	24·0	32·1	10·1	32 49·0	7 32 32·20	− 0·08	− 4·68	− 4·74	− 0·81
	2555	β Geminorum	....	61 40	4·7	14·0	23·4	32·5	37 42·3	7 37 23·38	− 0·05	− 4·69	− 4·74	− 0·84
	2672	6 Cancri	....	61 51	15·0	24·4	34·0	43·0	55 52·8	7 55 33·84	− 0·05	− 4·81	− 4·74	− 0·87
	2971	ι Hydræ	....	83 6	39·7	47·7	56·0	3·9	40 12·6	8 39 55·96	− 0·08	− 4·76	− 4·74	− 0·92
Feb. 14	2410	δ Geminorum	....	67 47	4·9	13·7	22·7	31·1	12 40·6	7 12 22·60	− 0·05	− 3·93	− 3·83	− 0·73
	2485	α² Geminorum	....	57 50	59·7	9·2	19·0	28·4	26 38·4	7 26 16·94	− 0·04	− 3·77	− 3·82	− 0·82
	2522	α Canis Minoris	....	84 27	11·9	23·0	31·3	39·2	32 48·0	7 32 31·28	− 0·08	− 3·78	− 3·81	− 0·79
	2555	β Geminorum	....	61 40	3·8	13·1	22·5	31·5	37 41·3	7 37 22·44	− 0·05	− 3·77	− 3·80	− 0·82
Feb. 16	3171	83 Cancri	....	71 45	26·5	35·3	44·0	52·4	12 1·4	9 11 43·92	− 0·06	− 2·95	− 2·85	− 0·93
	3223	α Hydræ	....	98 6	56·3	4·8	13·0	21·0	21 29·8	9 21 12·98	− 0·11	− 2·84	− 2·84	− 1·07
	3331	ι Leonis	....	65 38	10·4	19·5	28·5	37·3	38 46·8	9 38 28·50	− 0·05	− 2·80	− 2·83	− 0·95
	3415	π Leonis	....	81 20	4·6	12·9	21·2	29·2	53 38·0	9 53 21·18	− 0·08	− 2·80	− 2·82	− 0·96
	3459	α Leonis	....	77 24	10·5	19·0	27·4	35·5	1 44·4	10 1 27·36	− 0·08	− 2·75	− 2·81	− 0·94
Feb. 17	2862	η Cancri	....	69 7	53·5	2·4	11·3	19·9	25 29·0	8 25 11·22	− 0·08	− 2·48	− 2·45	− 0·88
	2971	ι Hydræ	....	83 6	37·0	45·4	53·6	1·6	40 10·5	8 39 53·62	− 0·09	− 2·40	− 2·44	− 0·91
	3171	83 Cancri	....	71 45	26·2	34·9	43·6	52·0	12 1·0	9 11 43·54	− 0·06	− 2·57	− 2·43	− 0·93
	3223	α Hydræ	....	98 6	56·0	4·2	12·6	20·5	21 29·3	9 21 12·52	− 0·11	− 2·38	− 2·43	− 1·07
	3415	π Leonis	....	81 20	4·1	12·4	21·0	29·0	53 37·8	9 53 20·86	− 0·08	− 2·48	− 2·42	− 0·96
	3459	α Leonis	....	77 24	10·0	18·5	27·0	35·0	1 44·1	10 1 26·92	− 0·08	− 2·30	− 2·41	− 0·95
Feb. 19	3171	83 Cancri	....	71 45	25·2	33·9	42·8	51·0	12 0·1	9 11 42·60	− 0·07	− 1·61	− 1·52	− 0·94
	3223	α Hydræ	....	98 6	55·0	3·3	11·5	19·8	21 28·5	9 21 11·62	− 0·12	− 1·46	− 1·51	− 1·08
	3331	ι Leonis	....	65 38	9·0	18·2	27·1	36·0	38 45·4	9 38 27·14	− 0·06	− 1·42	− 1·50	− 0·96
	3415	π Leonis	....	81 20	3·3	11·7	20·0	28·0	53 36·9	9 53 19·98	− 0·09	− 1·58	− 1·49	− 0·97
	3459	α Leonis	....	77 24	9·1	17·7	26·1	34·2	1 43·1	10 1 26·01	− 0·08	− 1·41	− 1·48	− 0·96
Feb. 24	2862	η Cancri	....	69 7	50·0	59·0	7·7	16·0	25 25·4	8 25 7·62	− 0·09	+ 1·11	+ 1·18	− 0·85
	2971	ι Hydræ	....	83 6	33·4	41·8	50·0	58·0	40 6·8	8 39 50·00	− 0·11	+ 1·22	+ 1·19	− 0·89
	3171	83 Cancri	....	71 45	22·5	31·1	40·0	48·5	11 57·4	9 11 39·90	− 0·09	+ 1·10	+ 1·20	− 0·93
	3223	α Hydræ	....	98 6	52·2	0·8	9·0	17·0	21 26·0	9 21 9·00	− 0·14	+ 1·17	+ 1·21	− 1·07
	3331	ι Leonis	....	65 38	6·3	15·4	24·5	33·4	38 43·0	9 38 24·52	− 0·08	+ 1·23	+ 1·22	− 0·97
	3415	π Leonis	....	81 20	0·6	9·0	17·2	25·1	53 34·1	9 53 17·20	− 0·11	+ 1·24	+ 1·23	− 0·99
	3459	α Leonis	....	77 24	6·5	15·1	23·4	31·5	1 40·4	10 1 23·38	− 0·10	+ 1·29	+ 1·24	− 0·98

Date.	No. in British Association Catalogue.	OBJECT OBSERVED.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1869.
1869.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Feb. 25	2862	(a) η Cancri	....	69 7	49·9	58·5	7·4	16·0	25 25·1	8 25 7·38	− 0·09	+ 1·34	+ 1·40	− 0·84
	2971	(b) ε Hydræ	....	83 6	33·2	41·5	49·9	57·9	40 7·0	8 39 49·90	− 0·11	+ 1·32	+ 1·40	− 0·89
	3171	83 Cancri	....	71 45	22·4	31·0	39·8	48·1	11 57·0	9 11 39·66	− 0·09	+ 1·34	+ 1·41	− 0·93
	3223	α Hydræ	....	98 6	52·1	0·4	9·0	16·6	21 25·3	9 21 8·72	− 0·14	+ 1·45	+ 1·42	− 1·47
	3331	ε Leonis	....	65 38	6·1	15·3	24·2	33·0	38 42·5	9 38 24·22	− 0·08	+ 1·53	+ 1·43	− 0·97
	3459	α Leonis	....	77 24	6·4	14·9	23·1	31·2	1 40·3	10 1 23·18	− 0·10	+ 1·50	+ 1·44	− 0·99
	3523	γ¹ Leonis	....	69 30	26·9	35·8	44·4	53·0	13 2·1	10 12 44·44	− 0·09	+ 1·43	+ 1·45	− 0·98
Mar. 2	2971	ε Hydræ	....	83 6	32·0	40·2	48·7	56·9	40 5·4	8 39 48·64	− 0·12	+ 2·56	+ 2·50	− 0·86
	3171	83 Cancri	....	71 45	21·3	30·0	38·6	47·1	11 56·3	9 11 38·66	− 0·10	+ 2·34	+ 2·51	− 0·92
	3223	α Hydræ	....	98 6	51·0	59·4	7·7	15·7	21 24·5	9 21 7·66	− 0·15	+ 2·51	+ 2·51	− 1·46
	3331	ε Leonis	....	65 38	5·0	14·1	23·2	32·0	38 41·5	9 38 23·16	− 0·09	+ 2·60	+ 2·52	− 0·97
	3415	π Leonis	....	81 20	59·3	7·4	16·0	24·0	53 32·8	9 53 15·90	− 0·12	+ 2·56	+ 2·52	− 1·01
	3459	α Leonis	....	77 24	5·2	13·8	22·1	30·2	1 39·4	10 1 22·14	− 0·10	+ 2·55	+ 2·53	− 1·00
Mar. 5	648	α Arietis	....	67 9	26·0	34·9	44·0	52·7	0 2·0	1 59 43·92	− 0·10	+ 2·76	+ 2·86	+ 0·54
	949	α Ceti	....	86 25	5·9	14·2	22·4	30·4	55 39·2	2 55 22·42	− 0·13	+ 2·90	+ 2·87	+ 0·75
	2862	η Cancri	....	69 7	48·0	57·0	5·8	14·4	25 23·5	8 25 5·74	− 0·10	+ 2·93	+ 2·97	− 0·79
	2971	ε Hydræ	....	83 6	31·6	40·0	48·1	56·1	40 5·0	8 39 48 16	− 0·12	+ 3·01	+ 2·97	− 0·83
	3171	83 Cancri	....	71 45	20·9	29·5	38·1	46·4	11 55·5	9 11 38·08	− 0·11	+ 2·91	+ 2·98	− 0·90
	3523	γ¹ Leonis	....	69 30	25·3	34·1	43·0	51·4	13 0·6	10 12 42·88	− 0·11	+ 3·03	+ 2·99	− 1·00
Mar. 14	2410	δ Geminorum	....	67 47	55·0	4·0	12·8	21·3	12 31·0	7 12 12·62	− 0·10	+ 5·52	+ 5·58	− 0·35
	2485	α² Geminorum	....	57 50	49·9	59·7	9·2	18·5	26 29·0	7 26 9·26	− 0·09	+ 5·58	+ 5·58	− 0·41
	2522	α Canis Minoris	....	84 27	5·0	13·1	21·5	29·5	32 38·3	7 32 21·48	− 0·13	+ 5·75	+ 5·59	− 0·47
	2555	β Geminorum	....	61 40	54·0	3·4	13·0	22·0	37 31·8	7 37 12·84	− 0·10	+ 5·53	+ 5·59	− 0·47
	2672	6 Cancri	....	61 51	4·5	14·0	23·2	32·3	55 42·1	7 55 23·22	− 0·10	+ 5·55	+ 5·59	− 0·56
Mar. 16	2971	ε Hydræ	....	83 6	28·5	36·8	45·0	53·0	40 1·8	8 39 45·02	− 0·13	+ 6·05	+ 6·03	− 0·73
	3171	83 Cancri	....	71 45	17·6	26·3	35·0	43·2	11 52·5	9 11 34·92	− 0·11	+ 5·98	+ 6·03	− 0·81
	3415	π Leonis	....	81 20	55·7	4·0	12·4	20·4	53 29·2	9 53 12·34	− 0·13	+ 6·08	+ 6·04	− 0·95
	3459	α Leonis	....	77 24	1·8	10·1	18·5	26·8	1 35·5	10 1 18·54	− 0·12	+ 6·13	+ 6·04	− 0·96
	3523	γ¹ Leonis	....	69 30	22·2	31·1	40·0	48·4	12 57·7	10 12 39·88	− 0·11	+ 6·01	+ 6·04	− 0·98
	3609	ρ Leonis	....	80 2	33·0	41·4	49·9	58·0	26 6·7	10 25 49·80	− 0·12	+ 6·05	+ 6·04	− 1·41
	3834	δ Leonis	....	68 46	45·9	54·7	3·5	12·0	7 21·4	11 7 3·50	− 0·11	+ 5·98	+ 6·04	− 1·46
Mar. 17	3331	ε Leonis	....	65 38	1·4	10·5	19·6	28·2	38 37·9	9 38 19·52	− 0·11	+ 6·18	+ 6·21	− 0·61
	3459	α Leonis	....	77 24	1·6	10·0	18·4	26·6	1 35·4	10 1 18·40	− 0·12	+ 6·26	+ 6·22	− 0·95
	3523	γ¹ Leonis	....	69 30	22·2	31·0	40·0	48·2	12 57·5	10 12 39·78	− 0·11	+ 6·11	+ 6·22	− 0·98
	3609	ρ Leonis	....	80 2	33·0	41·3	49·8	57·6	26 6·3	10 25 49·60	− 0·12	+ 6·25	+ 6·22	− 1·01
	3788	χ Leonis	....	81 58	53·9	2·0	10·5	18·4	58 27·3	10 58 10·42	− 0·13	+ 6·26	+ 6·23	− 1·46
	3834	δ Leonis	....	68 46	45·5	54·4	3·2	11·9	7 21·1	11 7 3·22	− 0·11	+ 6·26	+ 6·23	− 1·46
Mar. 18	2410	δ Geminorum	....	67 47	54·0	3·0	12·0	20·7	12 30·0	7 12 11·94	− 0·11	+ 6·34	+ 6·34	− 0·36
	2485	α² Geminorum	....	57 50	49·1	58·8	8·5	17·9	26 28·0	7 26 8·46	− 0·10	+ 6·32	+ 6·35	− 0·37
	3523	γ¹ Leonis	....	69 30	21·9	31·0	39·7	48·0	12 57·4	10 12 39·60	− 0·11	+ 6·28	+ 6·35	− 0·97
	3609	ρ Leonis	....	80 2	32·8	41·0	49·6	57·5	26 6·3	10 25 49·44	− 0·13	+ 6·42	+ 6·36	− 1·41
	3708	l Leonis	....	78 46	0·2	8·6	17·0	25·0	42 34·0	10 42 16·96	− 0·13	+ 6·36	+ 6·37	− 1·03
	3788	χ Leonis	....	81 58	53·8	2·0	10·4	18·2	58 27·1	10 58 10·30	− 0·14	+ 6·39	+ 6·38	− 1·05
	3834	δ Leonis	....	68 46	45·5	54·3	3·0	11·6	7 21·0	11 7 3·08	− 0·11	+ 6·41	+ 6·39	− 1·46

(a) Very boisterous wind, S.W. (b) Faint.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1869.
1869.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Mar. 19	3415	π Leonis	....	81 20	55·2	3·4	12·0	20·0	53 28·9	9 53 11·90	− 0·14	+ 6·51	+ 6·54	− 0·93
	3459	α Leonis	....	77 24	1·2	9·5	18·2	26·3	1 35·0	10 1 18·04	− 0·14	+ 6·63	+ 6·55	− 0·94
	3523	γ^1 Leonis	....	69 30	21·9	30·5	39·4	48·0	12 57·0	10 12 39·36	− 0·11	+ 6·51	+ 6·56	− 0·96
	3609	ρ Leonis	....	80 2	32·5	41·0	49·3	57·3	26 6·0	10 25 49·22	− 0·14	+ 6·64	+ 6·56	− 1·00
	3834	δ Leonis	....	68 46	45·2	54·0	3·0	11·5	7 20·9	11 7 2·92	− 0·11	+ 6·57	+ 6·57	− 1·06
	3946	υ Leonis	....	90 6	52·8	1·0	9·4	17·2	30 26·0	11 30 9·28	− 0·16	+ 6·48	+ 6·58	− 1·14
Mar. 22	3523	γ^1 Leonis	....	69 30	20·4	29·4	38·0	46·4	12 55·9	10 12 38·02	− 0·12	+ 7·85	+ 7·92	− 0·95
	3609	ρ Leonis	....	80 2	31·1	39·4	48·0	56·0	26 4·8	10 25 47·86	− 0·15	+ 8·00	+ 7·93	− 0·99
	3708	l Leonis	....	78 46	58·8	7·0	15·4	23·4	42 32·4	10 42 15·40	− 0·15	+ 7·93	+ 7·94	− 1·02
	3788	χ Leonis	....	81 58	52·1	0·4	8·9	17·0	58 25·6	10 58 8·80	− 0·15	+ 7·90	+ 7·95	− 1·06
	3834	δ Leonis	....	68 46	44·0	52·5	1·5	10·0	7 19·3	11 7 1·46	− 0·12	+ 8·04	+ 7·96	− 1·06
Mar. 26	2971	ι Hydræ	....	83 6	23·6	32·0	40·2	48·5	39 57·0	8 39 40·26	− 0·17	+ 10·71	+ 10·63	− 0·58
	3171	83 Cancri	....	71 45	12·8	21·8	30·4	39·0	11 47·9	9 11 30·38	− 0·15	+ 10·45	+ 10·63	− 0·70
	3331	ι Leonis	....	65 38	57·0	6·1	15·0	23·5	38 33·2	9 38 14·96	− 0·15	+ 10·69	+ 10·63	− 0·80
	3415	π Leonis	....	81 20	51·0	59·3	7·8	15·8	53 24·7	9 53 7·72	− 0·17	+ 10·66	+ 10·63	− 0·87
	3459	α Leonis	....	77 24	57·1	5·5	14·0	22·3	1 31·0	10 1 13·98	− 0·15	+ 10·64	+ 10·63	− 0·88
Mar. 29	3708	l Leonis	....	78 46	53·9	2·3	10·8	18·9	42 27·5	10 42 10·68	− 0·18	+ 12·64	+ 12·70	− 0·98
	3788	χ Leonis	....	81 58	47·4	55·5	4·0	12·0	58 20·8	10 58 3·94	− 0·18	+ 12·76	+ 12·71	− 1·03
	3834	δ Leonis	....	68 46	39·0	48·0	56·9	5·3	7 14·6	11 6 56·76	− 0·15	+ 12·75	+ 12·72	− 1·04
	3946	υ Leonis	....	90 6	46·5	54·9	3·0	11·0	30 19·8	11 30 3·04	− 0·19	+ 12·75	+ 12·73	− 1·14
	3995	β Leonis	....	74 42	54·0	2·7	11·1	19·2	42 28·3	11 42 11·06	− 0·16	+ 12·75	+ 12·74	− 1·09
Mar. 30	2410	δ Geminorum	....	67 47	47·0	56·0	4·6	13·2	12 22·7	7 12 4·70	− 0·16	+ 13·42	+ 13·52	− 0·07
	2485	π^2 Geminorum	....	57 50	41·5	51·3	1·0	10·4	26 20·8	7 26 1·00	− 0·14	+ 13·57	+ 13·53	− 0·12
	3331	ι Leonis	....	65 38	54·0	3·0	12·1	21·0	38 30·4	9 38 12·10	− 0·15	+ 13·50	+ 13·54	− 0·75
	3459	α Leonis	....	77 24	54·2	2·6	11·0	19·3	1 28·1	10 1 11·04	− 0·16	+ 13·56	+ 13·55	− 0·85
	3788	χ Leonis	....	81 58	46·5	55·0	3·1	11·1	58 20·0	10 58 3·14	− 0·18	+ 13·56	+ 13·56	− 1·03
	3834	δ Leonis	....	68 46	38·1	47·1	56·0	4·4	7 13·9	11 6 55·90	− 0·15	+ 13·61	+ 13·56	− 1·04
	3946	υ Leonis	....	90 6	45·8	54·0	2·2	10·2	30 19·0	11 30 2·24	− 0·19	+ 13·55	+ 13·57	− 1·14
	3995	β Leonis	....	74 42	53·1	1·6	10·2	18·4	42 27·5	11 42 10·16	− 0·16	+ 13·65	+ 13·58	− 1·09
April 12	2522	α Canis Minoris	....	84 27	46·8	55·0	3·4	11·2	32 20·0	7 32 3·28	− 0·22	+ 23·54	+ 23·53	+ 0·03
	2555	β Geminorum	....	61 40	35·8	45·1	54·5	3·4	37 13·5	7 36 54·46	− 0·19	+ 23·46	+ 23·54	+ 0·07
	4401	θ Virginis	....	94 51	31·4	39·8	48·1	56·0	3 4·8	13 2 48·02	− 0·24	+ 23·66	+ 23·64	− 1·31
	360	α Ursæ Minoris S. P.	....	1 24	29·0	30·0	54·8	38·0	21 19·0	13 9 58·00	− 1·02	....	+ 23·65	+ 36·18
	4648	η Bootis	....	70 57	47·1	56·0	4·6	13·0	48 22·3	13 48 4·60	− 0·20	+ 23·70	+ 23·66	− 1·25
	4672	τ Virginis	....	87 50	20·3	28·4	36·7	44·7	54 53·3	13 54 36·68	− 0·23	+ 23·69	+ 23·67	− 1·28
	4729	α Bootis	....	70 8	1·5	10·4	19·0	27·5	9 36·5	14 9 18·98	− 0·19	+ 23·66	+ 23·68	− 1·22
April 13	4532	ζ Virginis	....	89 56	21·5	29·8	38·0	45·9	27 54·6	13 27 37·96	− 0·23	+ 24·74	+ 24·74	− 1·30
	4648	η Bootis	....	70 57	46·1	55·0	3·5	12·1	48 21·1	13 48 3·56	− 0·20	+ 24·74	+ 24·75	− 1·25
	4672	τ Virginis	....	87 50	19·1	27·4	35·7	43·7	54 52·2	13 54 35·62	− 0·23	+ 24·76	+ 24·76	− 1·29
	4729	α Bootis	....	70 8	0·4	9·1	17·8	26·4	9 35·5	14 9 17·84	− 0·19	+ 24·81	+ 24·77	− 1·23
April 23	4145	η Virginis	....	89 57	25·5	33·4	41·9	49·9	12 58·5	12 12 41·84	− 0·33	+ 31·90	+ 31·96	− 1·18
	4401	θ Virginis	....	94 51	23·4	31·6	40·0	47·9	2 56·5	13 2 39·88	− 0·34	+ 31·92	+ 31·98	− 1·34
	360	α Ursæ Minoris S. P.	....	1 24	23·0	28·0	49·5	35·0	21 16·0	13 9 54·30	− 3·36	....	+ 31·99	+ 33·92
	4532	ζ Virginis	....	89 56	14·3	22·5	31·0	38·8	27 47·4	13 27 30·80	− 0·33	+ 32·03	+ 32·00	− 1·33

Date.	No. in British Association Catalogue.	OBJECT OBSERVED.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1869.
1869.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
April 23	4648	η Bootis	....	70 57	39·0	47·7	56·4	5·0	48 14·1	13 47 56·44	− 0·28	+32·01	+32·01	− 1·32
	4672	τ Virginis	....	87 50	12·0	20·2	28·6	36·4	54 45·2	13 54 28·48	− 0·32	+32·06	+32·02	− 1·36
	4729	α Bootis	....	70 8	53·4	2·2	10·8	19·2	9 28·5	14 9 10·82	− 0·27	+31·99	+32·04	− 1·31
	4876	ε Bootis	....	62 23	27·0	36·1	45·6	54·4	39 4·2	14 38 45·46	− 0·25	+32·13	+32·06	− 1·38
April 25	3788	χ Leonis	....	81 58	26·5	34·9	43·1	51·0	57 59·9	10 57 43·06	− 0·31	+33·57	+33·56	− 0·63
	3834	δ Leonis	....	68 46	18·1	27·0	36·0	44·4	6 53·9	11 6 35·88	− 0·28	+33·55	+33·57	− 0·63
	3946	υ Leonis	....	90 6	25·8	34·0	42·3	50·1	29 59·0	11 29 42·24	− 0·33	+33·57	+33·58	− 1·02
	3995	β Leonis	....	74 42	33·1	41·8	50·2	58·5	42 7·3	11 41 50·18	− 0·29	+33·65	+33·60	− 0·98
April 26	2485	α² Geminorum	....	57 50	20·2	30·0	40·0	49·3	25 59·5	7 25 39·80	− 0·24	+34·30	+34·36	+ 0·39
	2522	α Canis Minoris	....	84 27	35·8	44·0	52·3	0·1	32 9·0	7 31 52·24	− 0·31	+34·45	+34·37	+ 0·25
	2555	β Geminorum	....	61 40	24·7	34·0	43·5	52·4	37 2·2	7 36 43·36	− 0·25	+34·37	+34·38	+ 0·32
	3331	ε Leonis	....	65 38	32·9	42·0	51·0	59·7	38 9·2	9 37 50·95	− 0·27	+34·37	+34·42	− 0·36
	3459	α Leonis	....	77 24	33·0	41·5	50·0	58·1	1 7·1	10 9 49·94	− 0·29	+34·47	+34·43	− 0·51
April 27	4401	θ Virginis	....	94 51	19·7	27·9	36·1	44·0	2 52·8	13 2 36·10	− 0·35	+35·71	+35·74	− 1·34
	360	α Ursæ Minoris S. P.	....	1 24	23·0	24·0	48·0	29·5	21 12·0	13 9 51·30	− 3·02	....	+35·75	+32·63
	4532	ζ Virginis	....	89 56	10·5	18·8	27·0	35·0	27 43·7	13 27 27·00	− 0·33	+35·84	+35·76	− 1·34
	4648	η Bootis	....	70 57	35·3	44·0	52·8	1·0	48 10·1	13 47 52·64	− 0·29	+35·83	+35·77	− 1·33
	4729	α Bootis	....	70 8	49·6	58·4	7·0	15·5	9 24·8	14 9 7·06	− 0·28	+35·78	+35·79	− 1·33
	4808	ρ Bootis	....	59 3	17·8	27·4	37·0	46·2	25 56·4	14 25 36·96	− 0·25	+35·76	+35·80	− 1·41
April 30	4401	θ Virginis	....	94 51	16·4	24·7	33·0	41·0	2 49·5	13 2 32·92	− 0·35	+38·89	+38·98	− 1·31
	360	α Ursæ Minoris S. P.	....	1 24	21·5	22·5	46·5	27·0	21 8·5	13 9 49·20	− 3·02	....	+38·99	+31·50
	4532	ζ Virginis	....	89 56	7·4	15·5	24·0	32·0	27 40·5	13 27 23·88	− 0·33	+38·97	+39·00	− 1·33
	4648	η Bootis	....	70 57	32·0	40·9	49·4	57·9	48 7·0	13 47 49·44	− 0·29	+39·04	+39·01	− 1·34
	4672	τ Virginis	....	87 50	5·0	13·2	21·5	29·3	54 38·1	13 54 21·42	− 0·32	+39·15	+39·02	− 1·39
	4729	α Bootis	....	70 8	46·4	55·0	3·9	12·2	9 21·5	14 9 3·80	− 0·28	+39·05	+39·02	− 1·34
	4808	ρ Bootis	....	59 3	14·5	24·1	34·0	43·0	25 53·1	14 25 33·74	− 0·25	+39·00	+39·03	− 1·43
	4876	ε Bootis	....	62 23	20·0	29·4	38·9	47·7	39 57·5	14 38 38·70	− 0·26	+38·95	+39·03	− 1·43
May 4	3708	l Leonis	....	78 46	23·8	32·1	40·5	48·8	41 57·5	10 41 40·54	− 0·32	+42·57	+42·63	− 0·61
	3788	χ Leonis	....	81 58	17·3	25·7	34·0	42·0	57 50·8	10 57 33·96	− 0·33	+42·60	+42·64	− 0·73
	3834	δ Leonis	....	68 46	9·0	18·0	26·8	35·1	6 44·5	11 6 26·68	− 0·30	+42·67	+42·64	− 0·73
	4401	θ Virginis	....	94 51	12·7	21·0	29·1	37·0	2 45·9	13 2 29·14	− 0·36	+42·67	+42·67	− 1·33
	360	α Ursæ Minoris S. P.	....	1 24	21·5	18·5	46·0	27·0	21 8·5	13 9 48·30	− 4·09	....	+42·67	+29·60
	4532	ζ Virginis	....	89 56	3·8	11·9	20·4	28·2	27 37·0	13 27 20·20	− 0·36	+42·62	+42·68	− 1·35
	4648	η Bootis	....	70 57	28·2	37·0	45·9	54·0	48 3·3	13 47 45·68	− 0·29	+42·80	+42·69	− 1·34
	4729	α Bootis	....	70 8	42·6	51·4	0·1	8·6	9 17·9	14 9 0·12	− 0·29	+42·76	+42·70	− 1·36
	4876	ε Bootis	....	62 23	16·6	25·8	35·0	44·0	38 53·6	14 38 35·00	− 0·27	+42·68	+42·71	− 1·45
May 8	4648	η Bootis	....	70 57	25·8	34·2	43·0	51·5	48 0·8	13 47 43·06	− 0·32	+45·45	+45·48	− 1·34
	4672	τ Virginis	....	87 50	58·5	6·9	15·1	23·1	54 31·9	13 54 16·10	− 0·36	+45·52	+45·49	− 1·40
	4729	α Bootis	....	70 8	40·0	48·8	57·4	6·0	9 15·0	14 8 57·44	− 0·32	+45·47	+45·49	− 1·31
	4808	ρ Bootis	....	59 3	8·0	17·9	27·3	36·5	25 46·8	14 25 27·30	− 0·27	+45·49	+45·50	− 1·46
	4876	ε Bootis	....	62 23	13·8	23·0	32·2	41·0	38 51·0	14 38 32·20	− 0·29	+45·52	+45·51	− 1·47
May 11	4401	θ Virginis	....	94 51	7·9	16·0	24·0	32·1	2 40·9	13 2 24·18	− 0·43	+47·68	+47·78	− 1·31
	360	α Ursæ Minoris S. P.	....	1 24	18·5	19·5	44·0	25·0	21 8·0	13 9 47·00	− 4·44	....	+47·79	+26·28
	4532	ζ Virginis	....	89 56	58·8	7·0	15·2	23·0	27 31·7	13 27 15·14	− 0·43	+47·81	+47·80	− 1·35

Date.	No. in British Association Catalogue.	OBJECT OBSERVED.	Magnitude observed.	North Polar Distance set to.	Wires observed.					Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock		Correction to Mean R.A. Jan. 1. 1869.
					I.	II.	III.	IV.	V.			observed.	interpolated.	
1869.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
May 11	4648	η Bootis	....	70 57	23·1	32·0	40·9	49·0	47 58·3	13 47 40·66	− 0·37	+47·90	+47·81	− 1·34
	4729	α Bootis	....	70 8	37·6	46·3	55·0	3·5	9 12·9	14 8 55·06	− 0·37	+47·91	+47·81	− 1·37
	4876	ε Bootis	....	62 23	11·3	20·8	30·1	39·0	38 49·0	14 38 30·04	− 0·33	+17·73	+47·81	− 1·48
	4969	ψ Bootis	....	62 33	45·5	54·9	4·0	13·0	58 22·8	14 58 4·04	− 0·33	+47·78	+47·82	− 1·51
	5143	α Coronæ Borealis	....	62 51	4·1	13·3	22·9	31·5	28 41·2	15 28 22·60	− 0·33	+47·81	+47·83	− 1·55
	5196	α Serpentis	....	83 10	46·6	54·9	3·0	11·0	37 20·0	15 37 3·10	− 0·40	+47·82	+47·84	− 1·53
May 13	4648	(a) η Bootis	....	70 57	21·3	30·0	38·9	47·2	47 56·4	13 47 38·76	− 0·37	+49·80	+49·77	− 1·34
	4672	τ Virginis	....	87 50	54·4	2·8	11·0	19·0	54 27·7	13 54 10·98	− 0·40	+49·69	+49·77	− 1·41
	4729	α Bootis	....	70 8	35·6	44·3	53·1	1·5	9 11·0	14 8 53·10	− 0·36	+49·86	+49·78	− 1·37
	4808	ρ Bootis	....	59 3	3·9	13·4	23·0	32·4	25 42·6	14 25 23·06	− 0·32	+49·79	+49·79	− 1·47
	4876	ε Bootis	....	62 23	9·1	18·8	28·0	37·0	38 46·9	14 38 27·96	− 0·32	+49·80	+49·79	− 1·48
	5143	α Coronæ Borealis	....	62 51	2·0	11·3	20·6	29·9	28 39·3	15 28 20·66	− 0·33	+49·76	+49·80	− 1·56
	5196	α Serpentis	....	83 10	44·4	52·9	1·3	9·0	37 18·0	15 37 1·12	− 0·39	+49·81	+49·80	− 1·56
May 14	4808	ρ Bootis	....	59 3	2·9	12·5	22·1	31·4	25 41·3	14 25 22·04	− 0·33	+50·82	+50·83	− 1·47
	4876	ε Bootis	....	62 23	8·3	17·6	27·0	36·0	38 45·8	14 38 26·91	− 0·33	+50·84	+50·84	− 1·49
	5034	β Libræ	....	98 54	52·0	0·5	8·8	16·9	9 25·8	15 9 8·80	− 0·45	+50·86	+50·85	− 1·64
	5143	α Coronæ Borealis	....	62 51	1·0	10·4	19·7	28·5	28 38·4	15 28 19·60	− 0·34	+50·84	+50·85	− 1·57
	5196	α Serpentis	....	83 10	43·5	51·8	0·0	8·0	37 16·9	15 37 0·04	− 0·40	+50·90	+50·86	− 1·55
May 19	4672	τ Virginis	....	87 50	49·0	57·2	5·5	13·4	54 22·1	13 54 5·44	− 0·41	+55·24	+55·27	− 1·41
	4729	α Bootis	....	70 8	30·2	39·0	47·8	56·2	9 5·5	14 8 47·71	− 0·37	+55·22	+55·28	− 1·36
	4876	ε Bootis	....	62 23	4·0	13·0	22·5	31·4	38 41·3	14 38 22·44	− 0·34	+55·36	+55·29	− 1·50
	4969	ψ Bootis	....	62 33	38·0	47·4	56·8	5·5	58 15·4	14 57 56·62	− 0·35	+55·24	+55·30	− 1·53
	5414	δ Ophiuchi	....	93 21	19·0	27·3	35·8	43·5	6 52·3	16 6 35·58	− 0·43	+55·41	+55·33	− 1·66
May 24	3995	β Leonis	....	74 42	6·2	15·0	23·4	31·9	41 41·0	11 41 23·50	− 0·37	+60·13	+60·18	− 0·70
	4401	θ Virginis	....	94 51	55·0	3·3	11·5	19·5	2 28·3	13 2 11·52	− 0·43	+60·28	+60·22	− 1·25
	360	(b) α Ursæ Minoris S. P.	....	1 24	12·0	12·0	39·5	20·0	21 1·5	13 9 41·00	− 2·93	....	+60·23	+18·20
	4648	η Bootis	....	70 57	10·9	19·9	28·5	36·7	47 45·8	13 47 28·36	− 0·37	+60·17	+60·25	− 1·31
	4672	τ Virginis	....	87 50	44·0	52·1	0·3	8·4	54 17·0	13 54 0·36	− 0·41	+60·31	+60·25	− 1·40
	4729	α Bootis	....	70 8	25·3	34·0	42·9	51·3	9 0·4	14 8 42·78	− 0·37	+60·17	+60·26	− 1·35
	5143	α Coronæ Borealis	....	62 51	51·8	1·0	10·2	19·0	28 29·0	15 28 10·20	− 0·35	+60·30	+60·29	− 1·62
	5196	α Serpentis	....	83 10	34·0	42·4	50·7	58·7	37 7·4	15 36 50·64	− 0·40	+60·38	+60·30	− 1·63
May 28	4876	ε Bootis	....	62 23	55·0	4·0	13·1	22·3	38 32·0	14 38 13·28	− 0·39	+64·56	+64·56	− 1·49
	4969	ψ Bootis	....	62 33	29·0	38·1	47·5	56·4	58 6·0	14 57 47·40	− 0·39	+64·51	+64·58	− 1·54
	5143	α Coronæ Borealis	....	62 51	47·6	57·0	6·0	15·0	28 24·8	15 28 6·08	− 0·39	+64·47	+64·60	− 1·63
	5196	α Serpentis	....	83 10	30·0	38·2	46·5	54·4	37 3·3	15 36 46·48	− 0·46	+64·62	+64·61	− 1·65
	5414	δ Ophiuchi	....	93 21	10·0	18·1	26·5	34·4	6 43·2	16 6 26·44	− 0·49	+64·69	+64·63	− 1·74
	5821	α Herculis	....	75 28	20·9	29·4	38·0	46·1	7 55·1	17 7 37·90	− 0·44	+64·74	+64·67	− 1·70
May 31	5414	δ Ophiuchi	....	93 21	6·5	15·0	23·1	31·0	6 39·8	16 6 23·08	− 0·50	+68·09	+68·09	− 1·77
	5708	κ Ophiuchi	....	80 25	5·4	13·8	22·3	30·3	50 39·0	16 50 22·16	− 0·40	+68·09	+68·10	− 1·73
	5821	α Herculis	....	75 28	17·5	26·0	34·6	42·9	7 51·9	17 7 34·58	− 0·45	+68·11	+68·10	− 1·74
	5941	α Ophiuchi	....	77 21	28·5	36·9	45·2	53·5	28 2·3	17 27 45·28	− 0·45	+68·12	+68·11	− 1·73
June 8	360	α Ursæ Minoris S. P.	....	1 24	9·0	8·0	33·5	13·0	22 55·0	13 11 35·70	− 2·94	....	−42·95	+ 6·88
	4632	ζ Virginis	....	89 56	29·4	37·6	45·9	54·0	29 2·5	13 28 45·88	− 0·50	−42·99	−42·94	− 1·22
	4969	ψ Bootis	....	62 33	16·2	25·5	35·0	44·0	59 53·7	14 59 34·88	− 0·42	−42·97	−42·89	− 1·51

(a) At 11h M.T. a very brilliant aurora, red and green; and from the zenith as a centre, rays proceeded in all azimuths down to the horizon.
(b) Definition bad—very unsteady.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction = Mean R.A. Jan. 1, 1869.
1869.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
June 8	5143	α Coronæ Borealis	....	62 51	34·9	44·0	53·5	2·3	30 12·1	15 29 53·36	− 0·42	− 42·77	− 42·87	− 1·44
	5196	α Serpentis	....	83 10	17·4	25·6	34·0	42·0	38 50·9	15 38 33·98	− 0·46	− 42·82	− 42·85	− 1·69
	5414	δ Ophiuchi	....	93 21	57·5	5·9	14·0	21·9	8 30·9	16 8 14·04	− 0·51	− 42·81	− 42·83	− 1·62
	5821	α Herculis	....	75 28	8·5	17·0	25·8	34·0	9 42·7	17 9 25·60	− 0·46	− 42·82	− 42·79	− 1·61
June 9	4876	(a) ε Bootis	....	62 23	41·0	50·3	59·6	8·9	40 18·3	14 39 59·62	− 0·43	− 41·79	− 41·77	− 1·41
	4969	ψ Bootis	....	62 33	15·0	24·3	34·0	42·9	59 52·4	14 59 33·72	− 0·43	− 41·81	− 41·75	− 1·50
	5143	α Coronæ Borealis	....	62 51	33·8	43·0	52·5	1·0	30 11·1	15 29 52·28	− 0·43	− 41·68	− 41·72	− 1·44
	5196	α Serpentis	....	83 10	16·4	24·5	33·0	40·9	38 49·6	15 38 32·88	− 0·49	− 41·71	− 41·72	− 1·69
	5821	α Herculis	....	75 28	7·2	15·9	24·6	32·7	9 41·6	17 9 24·40	− 0·46	− 41·61	− 41·65	− 1·33
June 10	5196	α Serpentis	....	83 10	15·0	23·5	31·9	39·9	38 48·7	15 38 31·80	− 0·49	− 40·63	− 40·58	− 1·69
	5414	δ Ophiuchi	....	93 21	55·2	3·5	11·7	19·9	8 28·4	16 8 11·74	− 0·52	− 40·49	− 40·56	− 1·63
	5604	ζ Herculis	....	58 10	44·5	54·0	3·8	13·2	37 23·4	16 37 3·78	− 0·43	− 40·59	− 40·54	− 1·64
	5708	κ Ophiuchi	....	80 25	54·2	2·5	11·0	19·0	52 27·9	16 52 10·92	− 0·48	− 40·56	− 40·53	− 1·62
	5821	α Herculis	....	75 28	6·4	14·7	23·4	31·6	9 40·5	17 9 23·32	− 0·46	− 40·52	− 40·52	− 1·34
	5941	α Ophiuchi	....	77 21	17·1	25·6	34·0	42·2	29 51·0	17 29 33·98	− 0·47	− 40·44	− 40·50	− 1·35
June 18	4648	η Bootis	....	70 57	44·0	52·5	1·4	9·9	49 19·0	13 49 1·36	− 0·46	− 32·91	− 32·84	− 1·14
	4969	ψ Bootis	....	62 33	6·0	15·4	25·0	33·9	59 43·4	14 59 24·74	− 0·45	− 32·86	− 32·80	− 1·45
	5196	α Serpentis	....	83 10	7·3	15·5	23·9	32·0	38 40·6	15 38 23·86	− 0·52	− 32·66	− 32·76	− 1·69
	5941	α Ophiuchi	....	77 [illegible]	9·4	17·9	26·3	34·5	29 43·4	17 29 26·30	− 0·50	− 32·67	− 32·70	− 1·91
June [illegible]	5143	α Coronæ Borealis	....	62 51	16·1	25·4	34·8	43·7	29 53·5	15 29 34·70	− 0·47	− 24·13	− 24·14	− 1·56
	5196	α Serpentis	....	83 10	58·6	7·0	15·6	23·4	38 32·2	15 38 15·36	− 0·53	− 24·17	− 24·13	− 1·67
	5414	δ Ophiuchi	....	93 21	39·0	47·1	55·4	3·2	8 12·1	16 7 55·36	− 0·55	− 24·06	− 24·10	− 1·65
	5604	ζ Herculis	....	58 10	27·9	37·6	47·3	56·8	37 7·0	16 36 47·32	− 0·47	− 24·03	− 24·09	− 1·94
	5821	α Herculis	....	75 28	50·0	58·5	7·0	15·3	9 24·1	17 9 6·98	− 0·50	− 24·06	− 24·07	− 1·33
	5941	α Ophiuchi	....	77 21	1·0	9·3	18·0	25·8	29 34·8	17 29 17·78	− 0·51	− 24·10	− 24·06	− 1·35
July 6	3459	α Leonis	....	77 24	17·6	26·0	34·4	42·6	1 51·7	10 1 34·46	− 0·51	− 10·57	− 10·57	+ 0·31
	5143	α Coronæ Borealis	....	62 51	2·8	12·0	21·2	30·0	29 40·0	15 29 21·20	− 0·49	− 10·71	− 10·67	− 1·47
	5196	α Serpentis	....	83 10	45·1	53·4	1·9	10·0	38 18·5	15 38 1·78	− 0·53	− 10·64	− 10·68	− 1·42
	5414	δ Ophiuchi	....	93 [illegible]	25·5	33·8	42·0	50·0	7 58·9	16 7 42·04	− 0·55	− 10·77	− 10·70	− 1·32
	5941	α Ophiuchi	....	77 21	47·5	56·1	4·3	12·5	29 21·4	17 29 4·36	− 0·51	− 10·64	− 10·71	− 1·99
	6281	δ Ursæ Minoris	....	3 24	25·5	47·0	5·5	19·0	19 47·5	18 15 4·90	− 0·19	....	− 10·72	− 18·04
July 8	5821	α Herculis	....	75 28	37·9	46·2	54·9	3·0	9 12·0	17 8 54·80	− 0·54	− 11·84	− 11·87	− 1·92
	5941	α Ophiuchi	....	77 21	48·8	57·0	5·7	13·8	29 22·6	17 29 5·58	− 0·54	− 11·83	− 11·88	− 1·49
	6021	μ Herculis	....	62 12	15·9	25·0	34·4	43·4	41 53·1	17 41 34·36	− 0·52	− 11·87	− 11·89	− 2·03
	6281	δ Ursæ Minoris	....	3 24	26·0	47·5	7·0	20·0	19 48·0	18 15 5·70	− 0·11	....	− 11·91	− 17·73
	6355	α Lyræ	....	51 20	23·9	34·4	45·0	55·2	33 6·2	18 32 44·94	− 0·49	− 11·97	− 11·92	− 2·30
	6429	β Lyræ	....	56 47	9·6	19·5	29·4	39·0	45 49·2	18 45 29·34	− 0·50	− 11·96	− 11·93	− 2·34
July 9	5708	κ Ophiuchi	....	80 25	26·0	34·4	42·9	51·0	51 59·8	16 51 42·82	− 0·54	− 12·35	− 12·33	− 1·67
	5821	α Herculis	....	75 28	38·2	46·6	55·3	3·3	9 12·4	17 8 55·16	− 0·53	− 12·21	− 12·34	− 1·32
	5941	α Ophiuchi	....	77 [illegible]	49·2	57·9	6·0	14·2	29 23·1	17 29 6·08	− 0·53	− 12·34	− 12·36	− 1·99
	6355	α Lyræ	....	51 20	24·2	34·9	45·4	55·4	33 6·8	18 32 45·34	− 0·49	− 12·36	− 12·38	− 2·31
	6429	β Lyræ	....	56 47	10·0	20·0	29·9	39·4	45 49·8	18 45 29·82	− 0·49	− 12·47	− 12·39	− 2·34
	6528	ζ Aquilæ	....	76 20	21·3	29·9	38·7	46·5	59 55·5	18 59 38·38	− 0·53	− 12·42	− 12·40	− 2·11

(a) Definition bad.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1869.
1869.				° ′	s.	s.	s.	s.	m s.	h. m. s.	s.	s.	s.	s.
July 12	6355	α Lyræ	....	51 20	23·7	34·2	45·0	55·2	33 6·2	18 32 44·86	– 0·49	– 11·88	– 11·89	– 2·31
	6429	β Lyræ	....	56 47	9·6	19·5	29·3	39·0	45 49·1	18 45 29·30	– 0·49	– 11·[illegible]	– 11·88	– 2·25
	6528	ζ Aquilæ	....	76 20	21·0	29·4	38·0	46·0	59 55·0	18 59 37·88	– 0·53	– 11·90	– 11·87	– 2·16
	6595	ω Aquilæ	....	78 38	37·9	46·3	54·5	2·6	12 11·5	19 11 54·56	– 0·54	– 11·83	– 11·86	– 2·17
	6646	δ Aquilæ	....	87 9	51·6	59·9	8·1	16·0	19 24·8	19 19 8·08	– 0·55	– 11·81	– 11·85	– 2·19
July 15	3995	β Leonis	....	74 42	17·9	26·5	35·0	43·4	42 52·2	11 42 35·00	– 0·52	– 11·78	– 11·73	– 0·14
	4648	η Bootis	....	70 57	22·5	31·3	40·0	48·4	48 57·5	13 48 39·94	– 0·52	– 11·74	– 11·73	– 0·63
	4729	α Bootis	....	70 8	36·9	45·5	54·4	3·0	10 12·1	14 9 54·38	– 0·52	– 11·73	– 11·73	– 0·91
	6355	α Lyræ	....	51 20	23·5	34·2	44·6	55·0	33 6·0	18 32 44·66	– 0·49	– 11·69	– 11·73	– 2·30
	6429	β Lyræ	....	56 47	9·4	19·1	29·0	38·6	45 49·0	18 45 29·02	– 0·49	– 11·65	– 11·73	– 2·26
	6772	γ Aquilæ	....	79 42	59·6	8·0	16·4	24·4	40 33·1	19 40 16·30	– 0·53	– 11·68	– 11·73	– 2·20
	6802	α Aquilæ	....	81 28	21·2	29·6	38·0	46·0	44 54·8	19 44 37·92	– 0·52	– 11·71	– 11·73	– 2·22
	6833	β Aquilæ	....	83 55	50·8	59·0	7·3	15·1	49 24·0	19 49 7·24	– 0·53	– 11·84	– 11·73	– 2 20
July 16	5821	α Herculis	....	75 28	37·4	46·0	54·5	2 7	9 11·8	17 8 54·48	– 0·50	– 11·59	– 11·67	– 1·89
	5941	α Ophiuchi	....	77 21	48·5	57·0	5·2	13·5	29 22·2	17 29 5·28	– 0·50	– 11·59	– 11·67	– 1·97
	6021	μ Herculis	....	62 12	15·6	24 8	34·1	43·0	41 53·0	17 41 34·10	– 0·49	– 11·67	– 11·67	– 1·99
	6281	δ Ursæ Minoris	....	3 24	26 0	46·5	6·0	19·0	19 47·0	18 15 4·90	– 0·85	....	– 11·67	– 16·35
	6355	α Lyræ	....	51 20	23·7	34·1	44·8	55·0	33 6·0	18 32 44·72	– 0·48	– 11·76	– 11·67	– 2·30
	6429	β Lyræ	....	56 47	9·3	19·4	29·1	38·6	45 49·0	18 45 29·08	– 0·48	– 11·72	– 11·67	– 2 26
	6772	γ Aquilæ	....	79 42	59·5	7·9	16·2	24·4	40 33·1	19 40 16·22	– 0·52	– 11·60	– 11·67	– 2·21
	6802	α Aquilæ	....	81 28	21·0	29·5	38·0	46·0	44 54·8	19 44 37·86	– 0 51	– 11·66	– 11·67	– 2·22
	6833	β Aquilæ	....	83 55	50·7	59·0	7·2	15·0	49 23·9	19 49 7·16	– 0 52	– 11·76	– 11·68	– 2·21
July 17	6021	μ Herculis	....	62 12	15·4	25·0	34·0	43·0	41 53·0	17 41 34·08	– 0·47	– 11·68	– 11·67	– 1·98
	6281	δ Ursæ Minoris	....	3 24	25·5	46·0	6·5	20·5	19 47·0	18 15 5·10	– 1·29	....	– 11·67	– 16·15
	6355	α Lyræ	....	51 20	23·4	34·1	44·6	55·0	33 5·8	18 32 44 58	– 0·46	– 11·64	– 11·67	– 2·30
	6429	β Lyræ	....	56 47	9·4	19·1	29·0	38·8	45 49·0	18 45 29·06	– 0·46	– 11·72	– 11·67	– 2·26
July 19	5821	(a) α Herculis	....	75 28	37·4	46·0	54·3	2·5	9 11·5	17 8 54·34	– 0·46	– 11·50	– 11·44	– 1·67
	5941	α Ophiuchi	....	77 21	47·9	56·8	5·0	13·3	29 22·2	17 29 5·04	– 0·46	– 11·40	– 11·44	– 1·96
	6355	α Lyræ	....	51 20	23·3	34·0	44·1	54·4	33 5·9	18 32 44·34	– 0·45	– 11·42	– 11·44	– 2·29
	6429	β Lyræ	....	56 47	9·0	19·0	29·0	38·3	45 48·6	18 45 28·78	– 0·45	– 11·45	– 11·44	– 2·26
July 20	6429	β Lyræ	....	56 47	9·0	18·9	28·8	38·2	45 48·8	18 45 28·74	– 0·46	– 11·40	– 11·31	– 2·26
	6528	ζ Aquilæ	....	76 20	20·4	29·0	37·4	45·5	59 54·4	18 59 37·34	– 0·49	– 11·36	– 11·31	– 2·20
	6595	ω Aquilæ	....	78 38	37·3	45·8	54·2	2·1	12 11·1	19 11 54·10	– 0·49	– 11·37	– 11·30	– 2·22
	6646	δ Aquilæ	....	87 9	51·2	59·2	7·4	15·5	19 24·2	19 19 7·50	– 0·51	– 11·21	– 11·30	– 2·25
	6772	γ Aquilæ	....	79 42	59·1	7·5	15·9	24·1	40 33·0	19 40 15·92	– 0·50	– 11·28	– 11·30	– 2·25
	6802	α Aquilæ	....	81 28	20·9	29·2	37·5	45·5	44 54·0	19 44 37·42	– 0·50	– 11·19	– 11·29	– 2·26
	6833	β Aquilæ	....	83 55	50·2	58·5	6·8	14·6	49 23·5	19 49 6·72	– 0·50	– 11·30	– 11·29	– 2·25
July 26	5941	α Ophiuchi	....	77 21	48·1	56·9	5·2	13·3	29 22·2	17 29 5·14	– 0·48	– 11·52	– 11·55	– 1·92
	6021	μ Herculis	....	62 12	15·1	24·5	34·0	43·0	41 52·9	17 41 33·90	– 0·46	– 11·57	– 11·55	– 1·92
	6281	δ Ursæ Minoris	....	3 24	23·5	43·5	3·0	16·5	19 44·0	18 15 2·10	– 0·41	....	– 11·55	– 14·09
	6355	α Lyræ	....	51 20	23·0	33·9	44·6	54·4	[illegible] 5·8	18 [illegible] 44·34	– 0·45	– 11·46	– 11·55	– 2·25
	6429	β Lyræ	....	56 47	9·1	19·0	29·0	38·4	45 48·9	18 45 28·88	– 0·45	– 11·57	– 11·55	– 2·24
	6528	ζ Aquilæ	....	76 20	20·6	29·0	37·5	46·0	59 54·9	18 59 37·60	– 0·48	– 11·63	– 11·55	– 2·20
	6646	δ Aquilæ	....	87 9	51·4	59·8	8 0	15·5	19 24·5	19 19 7·84	– 0·50	– 11·54	– 11·55	– 2·27
	6772	γ Aquilæ	....	79 42	59·5	7·8	16·4	24·4	40 33·1	19 40 16·24	– 0·50	– 11·58	– 11·55	– 2·27

(a) Definition very bad.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1
1859.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
July 26	6802	α Aquilæ	....	81 28	21·0	29·5	38·0	46·0	44 54·5	19 44 37·80	− 0·49	− 11·55	− 11·55	− 2·29
	6833	β Aquilæ	....	83 55	50·2	58·6	7·0	15·0	49 24·0	19 49 6·96	− 0·50	− 11·50	− 11·55	− 2·29
July 27	6355	α Lyræ	....	51 20	23·5	34·0	44·7	55·0	33 6·0	18 32 41·64	− 0·44	− 11·77	− 11·79	− 2·25
	6429	β Lyræ	....	56 47	9·3	19·4	29·4	38·9	45 49·1	18 45 29·22	− 0·44	− 11·93	− 11·78	− 2·21
	6528	ζ Aquilæ	....	76 20	20·9	29·4	38·0	46·0	59 55·0	18 59 37·86	− 0·47	− 11·90	− 11·78	− 2·20
	6646	δ Aquilæ	....	87 9	51·7	59·9	8·1	16·0	19 24·6	19 19 8·06	− 0·50	− 11·76	− 11·77	− 2·27
	6772	γ Aquilæ	....	79 42	59·5	7·9	16·3	24·3	40 33·1	19 40 16·22	− 0·49	− 11·56	− 11·76	− 2·25
	6802	α Aquilæ	....	81 28	21·4	29·7	38·0	46·8	44 54·9	19 44 38·00	− 0·48	− 11·75	− 11·75	− 2·30
	6833	β Aquilæ	....	83 55	50·5	59·0	7·1	15·2	49 24·0	19 49 7·16	− 0·49	− 11·71	− 11·74	− 2·23
July 28	6355	α Lyræ	....	51 20	24·0	34·5	45·0	55·0	33 6·1	18 32 44·92	− 0·44	− 12·06	− 12·04	− 2·24
	6429	β Lyræ	....	56 47	9·8	19·5	29·5	39·0	45 49·4	18 45 29·44	− 0·44	− 12·15	− 12·04	− 2·23
	6528	ζ Aquilæ	....	76 20	21·1	29·6	38·1	46·2	59 55·2	18 59 38·04	− 0·47	− 12·08	− 12·03	− 2·20
	6646	δ Aquilæ	....	87 9	51·9	0·0	8·2	16·3	19 25·0	19 19 8·28	− 0·48	− 12·00	− 12·03	− 2·27
	6772	γ Aquilæ	....	79 42	59·9	8·1	16·9	24·8	40 34·4	19 40 16·62	− 0·48	− 11·97	− 12·02	− 2·25
	6802	α Aquilæ	....	81 28	21·6	30·0	38·2	46·2	44 55·0	19 44 38·20	− 0·47	− 11·96	− 12·02	− 2·30
	6833	β Aquilæ	....	83 55	51·0	59·3	7·5	15·4	49 24·1	19 49 7·46	− 0·48	− 12·01	− 12·01	− 2·30
July 29	6802	α Aquilæ	....	81 28	22·0	30·2	38·8	46·5	44 55·4	19 44 38·58	− 0·46	− 12·35	− 12·44	− 2·31
	6833	β Aquilæ	....	83 55	51·1	59·6	8·0	16·0	49 24·7	19 49 7·88	− 0·46	− 12·45	− 12·44	− 2·31
	7256	32 Vulpeculæ	....	62 26	55·5	4·9	14·0	23·3	49 32·9	20 49 14·06	− 0·44	− 12·54	− 12·44	− 2·44
	7368	ζ Cygni	....	60 18	16·0	27·7	37·1	46·1	7 56·1	21 7 37·00	− 0·43	− 12·42	− 12·44	− 2·47
July 31	5941	α Ophiuchi	....	77 21	49·9	58·3	6·3	14·8	29 23·6	17 29 6·58	− 0·44	− 13·04	− 13·14	− 1·88
	6429	β Lyræ	....	56 47	10·8	20·6	30·5	40·1	45 50·3	18 45 30·46	− 0·42	− 13·21	− 13·14	− 2·21
	6528	ζ Aquilæ	....	76 20	22·3	30·9	39·1	47·3	59 56·2	18 59 39·16	− 0·44	− 13·23	− 13·14	− 2·20
	6646	δ Aquilæ	....	87 9	53·0	1·3	9·5	17·3	19 26·1	19 19 9·44	− 0·47	− 13·16	− 13·14	− 2·25
	6772	γ Aquilæ	....	79 42	1·0	9·3	17·9	26·0	40 34·6	19 40 17·76	− 0·46	− 13·12	− 13·14	− 2·23
	6802	α Aquilæ	....	81 28	22·6	31·1	39·4	47·3	44 56·2	19 44 39·32	− 0·46	− 13·08	− 13·14	− 2·31
	6833	β Aquilæ	....	83 55	52·0	0·3	8·6	16·7	49 25·2	19 49 8·56	− 0·46	− 13·12	− 13·14	− 2·31
Aug. 24	6974	α² Capricorni	....	102 57	52·0	0·3	9·1	17·2	11 26·0	20 11 8·92	− 0·41	....	− 18·98	− 2·42
	7171	α Cygni	....	45 12	56·7	8·8	20·3	31·4	37 43·6	20 37 20·16	− 0·39	....	− 18·98	− 2·49
	7256	(a) 32 Vulpeculæ	....	62 26	11·3	16·2	20·8	25·3	49 29·3	20 49 20·58	− 0·38	− 19·08	− 18·98	− 2·48
	7478	β Aquarii	....	96 8	53·2	57·2	1·3	5·2	25 9·7	21 25 1·32	− 0·40	− 18·85	− 18·98	− 2·46
	7561	ε Pegasi	....	80 43	58·8	2·9	7·1	11·2	38 15·1	21 38 7·02	− 0·39	− 19·02	− 18·98	− 2·45
Sept. 3	7256	32 Vulpeculæ	....	62 26	4·5	13·5	23·0	31·9	49 41·8	20 49 22·94	− 0·34	− 21·54	− 21·44	− 2·42
	7368	ζ Cygni	....	60 18	26·8	36·4	46·0	55·1	8 5·0	21 7 45·86	− 0·33	− 21·34	− 21·44	− 2·51
	7561	ε Pegasi	....	80 43	52·9	1·0	9·3	17·5	38 26·2	21 38 9·38	− 0·35	− 21·42	− 21·44	− 2·48
Sept. 4	6646	δ Aquilæ	....	87 9	1·5	9·7	18·0	26·0	19 34·7	19 19 17·98	− 0·36	− 22·04	− 22·04	− 2·05
	6772	γ Aquilæ	....	79 42	9·5	18·0	26·3	34·4	40 43·3	19 40 26·30	− 0·35	− 21·97	− 22·04	− 2·03
	6802	α Aquilæ	....	81 28	31·2	39·6	48·0	56·0	45 4·9	19 44 47·94	− 0·35	− 21·99	− 22·05	− 2·13
	7256	32 Vulpeculæ	....	62 26	4·9	14·0	23·4	32·4	49 42·2	20 49 23·38	− 0·34	− 21·99	− 22·05	− 2·41
	7368	ζ Cygni	....	60 18	27·7	37·3	46·9	55·8	8 5·8	21 7 46·70	− 0·33	− 22·19	− 22·06	− 2·50
	7561	ε Pegasi	....	80 43	53·5	1·8	10·0	18·1	38 27·0	21 38 10·08	− 0·35	− 22·12	− 22·06	− 2·48
Sept. 7	7688	α Aquarii	....	90 57	13·1	21·9	30·0	38·0	59 46·7	21 59 29·94	− 0·36	− 23·85	− 23·91	− 2·50
	7773	δ Aquarii	....	98 26	5·2	13·5	22·0	30·0	10 38·9	22 10 21·92	− 0·36	− 23·90	− 23·91	− 2·51

(a) Observed by Professor Smyth. Experiments in observing on the 5 close Wires.

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Date.	No. in British Association Catalogue.	Object Observed	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations	Correction of Clock observed	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1869.
1869.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Sept. 7	7868	η Aquarii	....	90 47	48·0	56·0	4·2	12·0	29 21·0	22 29 4·24	– 0·36	– 23·95	– 23·91	– 2·53
	7908	ζ Pegasi	....	79 51	5·9	14·0	22·5	30·6	35 39·4	22 35 22·48	– 0·35	– 23·87	– 23·91	– 2·57
	8034	α Pegasi	....	75 30	24·0	32·6	41·1	49·4	58 58·3	22 58 41·08	– 0·35	– 23·93	– 23·91	– 2·62
Sept. 8	7368	ζ Cygni	....	60 18	30·1	39·5	49·0	58·1	8 6·3	21 7 49·00	– 0·33	– 24·52	– 24·52	– 2·47
	7561	ι Pegasi	....	80 43	55·8	4·0	12·5	20·4	38 29·2	21 38 12·38	– 0·35	– 24·43	– 24·53	– 2·47
	7627	16 Pegasi	....	64 42	15·4	24·5	33·9	42·4	47 52·1	21 47 33·66	– 0·34	– 24·56	– 24·53	– 2·59
	7908	ζ Pegasi	....	79 51	6·4	14·9	23·2	31·4	35 40·2	22 35 23·22	– 0·35	– 24·61	– 24·54	– 2·57
Sept. 14	7256	32 Vulpeculæ	....	62 26	12·0	21·4	30·8	39·9	49 49·7	20 49 30·76	– 0·32	– 29·50	– 29·46	– 2·30
	7368	ζ Cygni	....	60 18	35·0	44·4	54·0	3·0	8 13·0	21 7 53·88	– 0·32	– 29·48	– 29·47	– 2·40
	7561	ι Pegasi	....	80 43	0·6	9·0	17·4	25·3	38 34·1	21 38 17·28	– 0·33	– 29·39	– 29·48	– 2·43
	7908	ζ Pegasi	....	79 51	11·2	19·8	28·2	36·1	35 45·0	22 35 28·06	– 0·33	– 29·47	– 29·49	– 2·57
	8034	α Pegasi	....	75 30	29·9	38·1	46·6	55·0	59 4·8	22 58 46·72	– 0·33	– 29·57	– 29·50	– 2·64
Sept. 16	7256	32 Vulpeculæ	....	62 26	14·0	23·2	32·8	41·5	49 51·4	20 49 32·58	– 0·31	– 31·36	– 31·41	– 2·27
	7368	ζ Cygni	....	60 18	36·9	46·3	55·9	5·0	8 15·0	21 7 55·52	– 0·31	– 31·45	– 31·42	– 2·38
	7908	ζ Pegasi	....	79 51	13·1	21·8	30·0	38·2	35 47·0	22 35 30·02	– 0·33	– 31·43	– 31·42	– 2·57
	8034	α Pegasi	....	75 30	31·6	40·0	48·7	56·9	59 5·8	22 58 48·60	– 0·33	– 31·44	– 31·43	– 2·65
Sept. 17	7868	η Aquarii	....	90 47	56·1	4·3	12·5	20·5	29 29·2	22 29 12·52	– 0·34	– 32·25	– 32·30	– 2·53
	7908	ζ Pegasi	....	79 51	14·1	22·5	31·0	39·0	35 47·4	22 35 30·90	– 0·32	– 32·32	– 32·30	– 2·57
	8034	α Pegasi	....	75 30	32·5	41·0	49·4	57·5	59 6·7	22 58 49·42	– 0·32	– 32·27	– 32·31	– 2·65
	8105	γ Piscium	....	87 26	41·0	49·4	57·9	5·7	11 14·5	23 10 57·70	– 0·33	– 32·33	– 32·31	– 2·62
	8169	κ Piscium	....	89 27	31·9	40·0	48·3	56·2	21 5·0	23 20 48·28	– 0·33	– 32·37	– 32·32	– 2·59
	8233	ι Piscium	....	85 5	31·4	39·9	48·0	56·0	34 4·8	23 33 48·02	– 0·33	– 32·32	– 32·33	– 2·62
Sept. 20	7627	16 Pegasi	....	64 42	26·0	35·3	44·5	53·1	48 2·9	21 47 44·36	– 0·31	– 35·37	– 35·46	– 2·51
	7868	η Aquarii	....	90 47	59·2	7·4	15·9	23·5	29 32·0	22 29 15·60	– 0·32	– 35·36	– 35·46	– 2·52
	8034	α Pegasi	....	75 30	35·9	44·4	52·8	1·0	59 9·8	22 58 52·78	– 0·31	– 35·64	– 35·47	– 2·65
	8105	γ Piscium	....	87 26	44·4	52·6	1·0	9·0	11 17·5	23 11 0·90	– 0·31	– 35·55	– 35·47	– 2·62
	8169	κ Piscium	....	89 27	34·9	43·1	51·4	59·2	21 8·0	23 20 51·32	– 0·32	– 35·42	– 35·48	– 2·59
	8233	ι Piscium	....	85 5	34·6	43·0	51·2	59·0	34 8·0	23 33 51·16	– 0·32	– 35·46	– 35·48	– 2·63
Sept. 21	7688	α Aquarii	....	90 57	25·8	34·0	42·4	50·1	59 59·0	21 59 42·26	– 0·31	– 36·27	– 36·26	– 2·45
	7773	θ Aquarii	....	98 26	17·5	25·8	34·2	42·2	10 51·0	22 10 34·14	– 0·33	– 36·19	– 36·27	– 2·49
	7868	η Aquarii	....	90 47	0·0	8·3	16·6	24·4	29 33·1	22 29 16·48	– 0·31	– 36·25	– 36·28	– 2·52
	7908	ζ Pegasi	....	79 51	18·1	26·5	34·9	43·0	35 51·9	22 35 34·56	– 0·31	– 36·32	– 36·29	– 2·56
	8034	α Pegasi	....	75 30	36·4	45·0	53·5	1·7	59 10·7	22 58 53·46	– 0·30	– 36·34	– 36·30	– 2·64
	8233	ι Piscium	....	85 5	35·5	43·6	52·0	0·0	34 8·9	23 33 52·04	– 0·31	– 36·34	– 36·32	– 2·64
Oct. 2	8105	(a) γ Piscium	....	87 26	55·3	3·4	11·6	19·4	11 28·2	23 11 11·58	– 0·28	– 46·28	– 46·27	– 2·60
	8169	κ Piscium	....	89 27	45·7	54·0	2·2	10·0	21 19·0	23 21 2·18	– 0·28	– 46·32	– 46·27	– 2·59
	8233	ι Piscium	....	85 5	45·4	53·5	2·0	10·0	34 18·7	23 34 1·92	– 0·28	– 46·24	– 46·28	– 2·65
	8331	ω Piscium	....	83 51	7·8	16·0	24·4	32·2	53 41·0	23 53 24·28	– 0·28	– 46·24	– 46·29	– 2·67
	4	α Andromedæ	....	61 38	8·0	17·4	26·8	35·9	2 45·6	0 2 26·74	– 0·25	– 46·30	– 46·30	– 2·98
	26	γ Pegasi	....	75 32	1·9	10·4	19·0	27·0	7 36·2	0 7 18·90	– 0·27	– 46·34	– 46·31	– 2·76
Oct. 4	8105	γ Piscium	....	87 26	56·8	5·0	13·1	21·2	11 30·0	23 11 13·22	– 0·28	– 47·92	– 47·84	– 2·60
	8169	κ Piscium	....	89 27	47·1	55·4	3·8	11·6	21 20·4	23 21 3·66	– 0·29	– 47·80	– 47·85	– 2·58
	8233	ι Piscium	....	85 5	47·0	55·3	3·4	11·4	34 20·2	23 34 3·46	– 0·28	– 47·79	– 47·85	– 2·64

(a) Faint.

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Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan 1. 1869.
1869.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Oct. 4	8331	ω Piscium	....	83 51	9·3	17·5	26·0	34·1	53 42·8	23 53 25·94	− 0·28	−47·89	−47·86	− 2·68
	4	α Andromedæ	....	61 38	9·5	19·0	28·4	37·4	2 17·1	0 2 28·28	− 0·25	−47·83	−47·86	− 2·99
	26	γ Pegasi	....	75 32	3·4	12·0	20·4	28·7	7 37·8	0 7 20·46	− 0·27	−47·90	−47·87	− 2·77
	288	ε Piscium	....	82 49	43·0	51·3	59·7	7·8	57 16·4	0 56 59·64	− 0·27	−47·86	−47·88	− 2·73
	360	α Ursæ Minoris	....	1 24	34·5	17·5	2·0	27·0	24 27·0	1 12 57·60	+ 0·50	....	−47·89	−73·17
Oct. 6	7908	(a) ζ Pegasi	....	79 51	31·1	39·5	48·0	56·0	36 4·9	22 35 47·90	− 0·26	−49·48	−49·42	− 2·47
	4	α Andromedæ	....	61 38	11·0	20·5	30·0	39·0	2 45·9	0 2 29·88	− 0·24	−49·44	−49·42	− 2·91
	26	γ Pegasi	....	75 32	4·9	13·4	22·0	30·2	7 39·2	0 7 21·94	− 0·25	−49·39	−49·42	− 2·78
	288	ε Piscium	....	82 49	44·4	53·0	1·2	9·2	57 18·0	0 57 1·16	− 0·26	−49·37	−49·42	− 2·75
	360	(b) α Ursæ Minoris	....	1 24	36·5	20·5	3·0	31·0	24 28·9	1 12 59·98	+ 0·05	....	−49·42	−73·46
Oct. 9	8331	ω Piscium	....	83 51	13·4	21·5	30·0	38·0	53 46·9	23 53 29·96	− 0·30	−51·89	−51·87	− 2·46
	4	α Andromedæ	....	61 38	13·5	23·0	32·3	41·3	2 51·4	0 2 32·30	− 0·27	−51·83	−51·87	− 2·89
	26	γ Pegasi	....	75 32	7·4	16·0	24·4	32·8	7 41·8	0 7 24·48	− 0·29	−51·89	−51·87	− 2·74
	288	ε Piscium	....	82 49	47·0	55·4	3·8	11·8	57 20·5	0 57 3·70	− 0·30	−51·86	−51·87	− 2·75
	360	α Ursæ Minoris	....	1 24	39·0	22·0	3·5	34·5	24 32·0	1 13 2·20	+ 0·61	....	−51·87	−73·77
Oct. 13	7908	ζ Pegasi	....	79 51	37·0	45·4	3·9	2·0	36 10·6	22 35 53·78	− 0·30	−55·38	−55·36	− 2·41
	8034	α Pegasi	....	75 30	55·2	3·9	12·3	20·5	59 29·5	22 59 12·28	− 0·30	−55·26	−55·37	− 2·51
	8233	ι Piscium	....	85 5	54·5	2·9	11·1	19·0	34 27·8	23 34 11·06	− 0·31	−55·38	−55·38	− 2·62
	4	α Andromedæ	....	61 38	17·0	26·5	36·0	45·0	2 54·9	0 2 35·88	− 0·28	−55·41	−55·38	− 2·44
	26	γ Pegasi	....	75 32	11·0	19·4	28·0	36·1	7 45·2	0 7 27·94	− 0·29	−55·36	−55·39	− 2·77
	112	12 Ceti	....	94 41	3·0	11·1	19·6	27·7	24 36·2	0 24 19·52	− 0·32	−55·38	−55·40	− 2·65
	288	ε Piscium	....	82 49	50·9	59·0	7·4	15·3	57 24·1	0 57 7·34	− 0·31	−55·47	−55·41	− 2·75
	360	α Ursæ Minoris	....	1 24	43·0	26·5	10·0	36·5	24 36·0	1 13 6·40	+ 0·26	....	−55·42	−74·01
Oct. 19	8034	α Pegasi	....	75 30	4·1	12·9	21·2	29·6	59 38·5	22 59 21·26	− 0·24	−64·35	−64·42	− 2·40
	8105	γ Piscium	....	87 26	13·0	21·3	29·8	37·5	11 46·4	23 11 29·60	− 0·25	−64·42	−64·43	− 2·51
	8233	ι Piscium	....	85 5	3·4	11·8	20·0	28·0	34 36·8	23 34 20·00	− 0·25	−64·41	−64·44	− 2·59
	4	α Andromedæ	....	61 38	26·1	35·5	45·0	54·0	3 3·8	0 2 44·88	− 0·23	−64·47	−64·45	− 2·97
	26	γ Pegasi	....	75 32	20·0	28·5	37·0	45·2	7 54·2	0 7 36·98	− 0·24	−64·45	−64·45	− 2·77
	288	ε Piscium	....	82 49	59·9	8·0	16·3	24·4	57 33·2	0 57 16·36	− 0·24	−64·54	−64·47	− 2·60
	360	α Ursæ Minoris	....	1 24	52·0	37·0	16·5	47·5	24 48·0	1 13 16·20	− 0·40	....	−64·48	−73·96
Oct. 20	8233	ι Piscium	....	85 5	5·0	13·3	21·5	29·5	34 38·3	23 34 21·52	− 0·23	−65·95	−66·00	− 2·59
	8331	ω Piscium	....	83 51	27·5	35·8	44·0	52·0	54 0·7	23 53 44·00	− 0·23	−66·03	−66·02	− 2·65
	4	α Andromedæ	....	61 38	27·6	37·0	46·4	55·4	3 5·2	0 2 46·32	− 0·21	−65·94	−66·02	− 2·96
	26	γ Pegasi	....	75 32	21·5	30·0	38·4	46·7	7 55·7	0 7 38·46	− 0·22	−65·96	−66·02	− 2·76
	112	12 Ceti	....	94 41	13·2	22·0	30·4	38·4	24 47·0	0 24 30·20	− 0·24	−66·14	−66·03	− 2·65
	288	ε Piscium	....	82 49	1·2	9·4	18·0	26·0	57 34·8	0 57 17·88	− 0·23	−66·07	−66·04	− 2·80
	360	α Ursæ Minoris	....	1 24	53·0	39·0	20·0	48·5	24 47·5	1 13 17·60	− 0·51	....	−66·05	−73·81
Oct. 26	8233	ι Piscium	....	85 5	13·4	21·8	30·0	38·0	34 46·8	23 34 30·00	− 0·15	−74·56	−74·65	− 2·14
	8331	ω Piscium	....	83 51	36·0	44·4	52·6	0·4	54 9·2	23 53 52·52	− 0·15	−74·66	−74·67	− 2·48
	4	α Andromedæ	....	61 38	36·0	45·5	55·0	4·0	3 14·0	0 2 54·90	− 0·13	−74·63	−74·68	− 2·93
	288	ε Piscium	....	82 49	9·9	18·1	26·5	34·4	57 43·2	0 57 26·42	− 0·15	−74·68	−74·70	− 2·81
	360	α Ursæ Minoris	....	1 24	0·5	46·0	30·0	......	24 56·5	1 13 25·65	− 0·60	....	−74·71	−73·24
	420	θ Ceti	....	98 51	29·4	37·8	46·1	54·0	19 3·0	1 18 46·06	− 0·15	−74·70	−74·72	− 2·71
	518	ν Piscium	....	85 10	38·0	46·4	54·8	2·5	36 11·5	1 35 54·64	− 0·15	−74·75	−74·73	− 2·85
	577	β Arietis	....	69 50	25·0	33·6	42·5	51·0	49 0·4	1 48 42·50	− 0·13	−74·88	−74·74	− 3·13

(a) An apparent inversion of the clock's rate during observation, caused most probably by swerving of the instrument piers through temperature. (b) Very unsteady.

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Date	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1, 1869.
1869				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Oct. 27	6355	α Lyræ	....	51 20	24·9	35·4	46·0	56·1	33 7·4	18 32 45·96	− 0·07	−15·43	−15·40	− 0·28
	6772	γ Aquilæ	....	79 42	1·8	10·1	18·5	26·2	40 35·5	19 40 18·42	− 0·05	−15·26	−15·40	− 1·22
	6802	α Aquilæ	....	81 28	23·7	32·0	40·3	48·2	44 57·1	19 44 40·26	− 0·05	−15·46	−15·40	− 1·28
	6833	β Aquilæ	....	83 55	53·0	1·2	9·4	17·4	49 26·2	19 49 9·44	− 0·04	−15·42	−15·40	− 1·31
	360	α Ursæ Minoris	....	1 24	5·0	48·0	32·5	58·5	23 59·0	1 12 28·60	− 2·97	....	−15·47	−73·08
	518	ν Piscium	....	85 10	39·0	47·2	55·4	3·4	35 12·0	1 34 55·40	− 0·04	−15·61	−15·47	− 2·86
	577	β Arietis	....	69 50	25·6	34·4	43·0	51·7	48 1·0	1 47 43·14	− 0·05	−15·59	−15·48	− 3·13
	648	α Arietis	....	67 9	48·4	57·2	6·1	15·0	0 24·5	2 0 6·24	− 0·06	−15·41	−15·48	− 3·21
	704	67 Ceti	....	97 1	28·8	37·0	45·2	53·2	11 2·1	2 10 45·26	− 0·04	−15·47	−15·51	− 2·77
Oct. 28	8233	ι Piscium	....	85 5	14·5	23·0	31·3	39·1	33 48·0	23 33 31·18	− 0·06	−15·84	−15·80	− 2·53
	8331	ω Piscium	....	83 51	37·0	45·3	53·6	1·4	53 10·4	23 52 53·54	− 0·06	−15·78	−15·80	− 2·61
	4	α Andromedæ	....	61 38	37·3	46·6	56·0	5·0	2 15·0	0 1 55·98	− 0·07	−15·78	−15·80	− 2·92
	26	γ Pegasi	....	75 32	31·0	39·8	48·2	56·3	7 5·2	0 6 48·10	− 0·06	−15·79	−15·80	− 2·73
Oct. 30	288	(a) ι Piscium	....	82 49	11·6	20·0	28·3	36·3	56 45·0	0 56 28·24	− 0·06	−16·59	−16·55	− 2·81
	453	η Piscium	....	75 20	31·3	39·9	48·2	56·5	25 5·3	1 24 48·24	− 0·06	−16·63	−16·55	− 2·99
	577	β Arietis	....	69 50	26·7	35·4	44·1	52·6	48 1·9	1 47 44·14	− 0·06	−16·56	−16·55	− 3·15
	648	α Arietis	....	67 9	49·5	58·2	7·2	16·0	0 25·5	2 0 7·28	− 0·07	−16·42	−16·55	− 3·23
Oct. 31	288	ι Piscium	....	82 49	11·7	20·0	28·3	36·2	56 45·0	0 56 28·24	− 0·07	−16·58	−16·66	− 2·81
	453	η Piscium	....	75 20	31·5	39·9	48·4	56·6	25 5·4	1 24 48·36	− 0·07	−16·74	−16·66	− 2·99
	518	ν Piscium	....	85 10	40·0	48·3	56·5	4·5	35 13·1	1 34 56·18	− 0·07	−16·65	−16·66	− 2·87
	577	β Arietis	....	69 50	26·8	35·5	44·2	52·8	48 2·0	1 47 44·26	− 0·07	−16·67	−16·66	− 3·15
Nov. 1	453	η Piscium	....	75 20	31·4	39·9	48·5	56·6	25 5·6	1 24 48·40	− 0·08	−16·77	−16·75	− 2·99
	577	β Arietis	....	69 50	26·9	35·5	44·3	53·0	48 2·1	1 17 44·36	− 0·08	−16·76	−16·76	− 3·15
	648	α Arietis	....	67 9	49·9	58·8	7·7	16·3	0 25·5	2 0 7·64	− 0·09	−16·75	−16·76	− 3·24
	704	67 Ceti	....	97 1	30·0	38·4	46·8	54·8	11 3·5	2 10 46·70	− 0·10	−16·82	−16·77	− 2·80
	837	γ Ceti	....	87 19	34·2	42·4	50·7	58·5	37 7·1	2 36 50·58	− 0·10	−16·72	−16·77	− 2·91
Nov. 2	577	β Arietis	....	69 50	27·2	36·0	44·8	53·4	48 2·5	1 47 44·78	− 0·09	−17·16	−17·06	− 3·16
	648	α Arietis	....	67 9	50·0	59·0	8·0	16·7	0 26·0	2 0 7·94	− 0·10	−17·03	−17·06	− 3·25
	704	67 Ceti	....	97 1	30·3	38·8	47·0	55·0	11 3·9	2 10 47·00	− 0·12	−17·10	−17·06	− 2·80
	837	γ Ceti	....	87 19	34·3	42·5	51·0	59·0	37 7·4	2 36 50·84	− 0·11	−16·96	−17·06	− 2·92
Nov. 4	360	α Ursæ Minoris	....	1 24	2·5	45·0	27·0	55·5	23 56·0	1 12 25·20	+ 0·81	....	−17·70	−71·29
	518	ν Piscium	....	85 10	41·2	49·1	57·5	5·5	35 14·3	1 34 57·52	− 0·12	−17·64	−17·71	− 2·87
	648	α Arietis	....	67 9	51·0	59·6	8·5	17·2	0 26·8	2 0 8·66	− 0·10	−17·75	−17·72	− 3·25
	704	67 Ceti	....	97 1	31·0	39·3	47·8	55·6	11 4·5	2 10 47·64	− 0·14	−17·70	−17·72	− 2·82
	837	γ Ceti	....	87 19	35·2	43·6	51·8	59·6	37 8·4	2 36 51·72	− 0·12	−17·81	−17·73	− 2·94
	949	α Ceti	....	86 25	30·2	38·5	47·0	54·8	56 3·4	2 55 46·78	− 0·12	−17·72	−17·73	− 2·97
Nov. 9	360	(b) α Ursæ Minoris	....	1 24	2·0	47·5	29·5	59·5	....	1 12 27·76	− 1·01	....	−20·11	−69·72
	518	ν Piscium	....	85 10	43·4	51·7	0·0	8·0	35 16·7	1 34 59·96	− 0·00	−20·19	−20·11	− 2·88
	577	β Arietis	....	69 50	30·0	39·0	47·9	56·1	48 5·5	1 47 47·70	+ 0·01	−20·17	−20·11	− 3·17
	648	α Arietis	....	67 9	53·0	2·0	11·0	19·5	0 29·0	2 0 10·90	+ 0·02	−20·09	−20·11	− 3·27
	704	67 Ceti	....	97 1	33·3	41·5	50·0	58·0	11 6·7	2 10 49·90	− 0·00	−20·09	−20·11	− 2·83
	837	γ Ceti	....	87 19	37·4	45·4	54·0	2·0	37 10·5	2 36 53·86	− 0·00	−20·04	−20·11	− 2·97
	949	α Ceti	....	86 25	32·7	40·8	49·1	57·0	56 5·7	2 55 49·06	− 0·00	−20·08	−20·11	− 3·01

(a) Faint. (b) An apparent inversion of the clock's rate during observation, caused by swerving of the Transit piers under the influence of temperature.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Corr[illegible] to Mean R.A. Jan. 1. 18[illegible]
1869.					s	s	s	s	m s	h m s	s	s	s	s
Nov. 10	360	α Ursæ Minoris	....	1 24	......	......	31·0	0·0	24 0·0	1 12 28·49	− 1·57	....	− 20·70	− 69·36
	518	ν Piscium	....	85 10	43·9	52·3	0·5	8·4	35 17·1	1 35 0·44	+ 0·04	− 20·71	− 20·70	− 2·89
	577	β Arietis	....	69 50	30·7	39·6	48·4	56·8	48 6·0	1 47 48·30	+ 0·04	− 20·80	− 20·70	− 3·17
	648	α Arietis	....	67 9	53·5	2·4	11·4	20·2	0 29·5	2 0 11·40	+ 0·04	− 20·60	− 20·70	− 3·28
	704	67 Ceti	....	97 1	34·0	42·3	50·7	58·5	11 7·3	2 10 50·50	+ 0·04	− 20·78	− 20·70	− 2·84
	837	γ Ceti	....	87 19	38·0	46·2	54·4	2·4	37 11·1	2 36 54·42	+ 0·05	− 20·65	− 20·70	− 2·97
	949	α Ceti	....	86 25	33·2	41·4	49·7	57·5	55 6·3	2 55 49·62	+ 0·04	− 20·67	− 20·70	− 3·42
Nov. 14	360	α Ursæ Minoris	....	1 24	4·5	47·0	30·5	58·5	23 59·5	1 12 28·00	− 0·31	....	− 22·98	− 67·81
	518	ν Piscium	....	85 10	46·2	54·4	2·8	10·5	35 19·4	1 35 2·66	+ 0·01	− 22·91	− 22·98	− 2·87
	577	β Arietis	....	69 50	33·0	41·9	50·7	59·0	48 8·3	1 47 50·58	+ 0·03	− 23·06	− 22·98	− 3·18
	648	α Arietis	....	67 9	56·0	4·9	14·0	22·4	0 32·0	2 0 13·86	+ 0·03	− 23·05	− 22·98	− 3·28
	704	67 Ceti	....	97 1	36·1	44·4	52·6	0·5	11 9·8	2 10 52·68	+ 0·01	− 22·87	− 22·98	− 2·84
	837	γ Ceti	....	87 19	40·4	48·6	56·9	4·7	37 13·5	2 36 56·82	+ 0·01	− 22·99	− 22·98	− 2·99
	949	α Ceti	....	86 25	35·4	43·7	52·1	0·0	56 8·7	2 55 51·98	+ 0·01	− 22·97	− 22·98	− 3·05
Nov. 15	518	ν Piscium	....	85 10	46·7	55·0	3·2	11·0	35 20·0	1 35 3·18	− 0·01	− 23·41	− 23·38	− 2·87
	577	β Arietis	....	69 50	33·4	42·1	51·0	59·4	48 8·5	1 47 50·68	+ 0·01	− 23·34	− 23·38	− 3·19
	648	α Arietis	....	67 9	56·2	5·3	14·1	23·0	0 32·4	2 0 14·20	+ 0·01	− 23·36	− 23·39	− 3·29
	949	α Ceti	....	86 25	35·8	44·2	52·5	0·4	56 9·2	2 55 52·42	− 0·01	− 23·38	− 23·39	− 3·06
	986	δ Arietis	....	70 46	18·0	26·5	35·3	43·8	4 53·0	3 4 35·32	+ 0·01	− 23·48	− 23·39	− 3·26
Nov. 16	288	ε Piscium	....	82 49	19·0	27·2	35·4	43·0	56 52·2	0 56 35·30	− 0·02	− 23·80	− 23·88	− 2·76
	360	α Ursæ Minoris	....	1 24	2·0	45·0	28·0	59·5	23 57·0	1 12 26·30	+ 1·41	....	− 23·88	− 66·95
	518	ν Piscium	....	85 10	47·1	55·3	3·8	11·7	35 20·4	1 35 3·66	− 0·02	− 23·88	− 23·89	− 2·87
	577	β Arietis	....	69 50	34·0	42·8	51·6	0·0	48 9·2	1 47 51·52	− 0·00	− 23·97	− 23·89	− 3·15
	648	α Arietis	....	67 9	56·9	5·8	14·9	23·4	0 33·0	2 0 14·80	− 0·00	− 23·95	− 23·90	− 3·29
	704	67 Ceti	....	97 1	37·2	45·5	53·9	1·9	11 10·6	2 10 53·82	− 0·04	− 23·95	− 23·90	− 2·85
	837	γ Ceti	....	87 19	41·2	49·4	58·0	5·6	37 14·5	2 36 57·74	− 0·02	− 23·86	− 23·91	− 3·01
	949	α Ceti	....	86 25	36·4	44·7	53·0	1·0	56 9·7	2 55 52·96	− 0·02	− 23·91	− 23·92	− 3·06
Nov. 19	288	(a) ε Piscium	....	82 49	20·0	28·4	36·6	44·5	56 53·3	0 56 36·56	− 0·01	− 25·02	− 25·15	− 2·75
	360	α Ursæ Minoris	....	1 24	1·0	45·0	26·0	57·5	23 57·5	1 12 25·40	+ 2·35	....	− 25·16	− 65·56
	518	ν Piscium	....	85 10	48·5	56·6	5·0	13·0	35 21·6	1 35 4·94	− 0·02	− 25·17	− 25·18	− 2·86
	577	β Arietis	....	69 50	35·1	44·0	52·8	1·2	48 10·4	1 47 52·70	+ 0·01	− 25·17	− 25·18	− 3·17
	837	γ Ceti	....	87 19	42·8	50·9	59·2	7·0	37 15·8	2 36 59·14	− 0·02	− 25·26	− 25·20	− 3·01
	949	α Ceti	....	86 25	37·9	46·0	54·3	2·2	56 11·0	2 55 54·28	− 0·02	− 25·21	− 25·21	− 3·09
	1166	η Tauri	....	66 18	53·0	1·8	10·8	19·4	40 29·0	3 40 10·80	+ 0·02	− 25·22	− 25·22	− 3·55
Nov. 22	288	ε Piscium	....	82 49	21·2	29·4	38·0	46·0	56 54·5	0 56 37·82	+ 0·07	− 26·39	− 26·46	− 2·72
	360	α Ursæ Minoris	....	1 24	3·0	46·0	27·5	58·0	23 59·5	1 12 26·80	+ 0·43	....	− 26·46	− 64·46
	577	β Arietis	....	69 50	36·4	45·2	54·0	2·4	48 12·0	1 47 54·00	+ 0·09	− 26·56	− 26·47	− 3·16
	648	α Arietis	....	67 9	59·5	8·2	17·3	26·0	0 35·3	2 0 17·26	+ 0·09	− 26·50	− 26·47	− 3·29
	704	67 Ceti	....	97 1	39·7	48·0	56·3	4·2	11 13·0	2 10 56·24	+ 0·05	− 26·47	− 26·48	− 2·84
	837	γ Ceti	....	87 19	44·0	52·2	0·4	8·3	37 17·0	2 37 0·38	+ 0·07	− 26·58	− 26·48	− 3·02
	949	α Ceti	....	86 25	38·9	47·2	55·4	3·4	56 12·1	2 55 55·40	+ 0·07	− 26·41	− 26·49	− 3·09
	986	δ Arietis	....	70 46	20·9	29·4	38·3	47·0	4 56·1	3 4 38·34	+ 0·08	− 26·52	− 26·49	− 3·41
	1166	η Tauri	....	66 18	54·0	3·1	12·0	20·6	40 30·1	3 40 11·96	+ 0·08	− 26·41	− 26·50	− 3·56
Nov. 24	360	α Ursæ Minoris	....	1 24	......	......	31·5	0·0	23 59·5	1 12 28·68	− 0·97	....	− 27·80	− 62·99
	518	ν Piscium	....	85 10	51·0	59·3	7·4	15·5	35 24·2	1 35 7·48	+ 0·14	− 27·88	− 27·80	− 2·55

(a) Definition bad all night.

Date.	No. in British Association Catalogue	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	Correction to Mean R.A. Jan. 1. 1869.
1869.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Nov. 24	577	β Arietis	....	69 50	37·7	46·4	55·2	3·6	48 13·0	1 47 55·18	+ 0·15	− 27·80	− 27·80	− 3·16
	6[illegible]	α Arietis	....	67 9	0·4	9·5	18·5	27·0	0 36·5	2 0 18·38	+ 0·14	− 27·08	− 27·80	− 3·28
	704	67 Ceti	....	97 1	41·0	49·3	57·6	5·5	11 14·4	2 10 57·56	+ 0·13	− 27·87	− 27·80	− 2·84
	837	γ Ceti	....	87 19	45·1	53·3	1·5	9·6	37 18·3	2 37 1·56	+ 0·14	− 27·83	− 27·80	− 3·02
	949	α Ceti	....	86 25	40·3	48·4	56·9	4·5	56 13·5	2 55 56·72	+ 0·14	− 27·80	− 27·80	− 3·09
	1166	η Tauri	....	66 18	55·3	4·4	13·2	22·0	40 31·3	3 40 13·24	+ 0·14	− 27·73	− 27·80	− 3·60
Nov. 25	288	ι Piscium	....	82 49	23·2	31·6	40·0	47·9	56 56·8	0 56 39·90	+ 0·18	− 28·60	− 28·63	− 2·70
	360	α Ursæ Minoris	....	1 21	5·5	50·0	30·0	0·0	24 2·0	1 12 29·50	− 1·75	....	− 28·64	− 62·44
	518	ι Piscium	....	85 10	51·7	0·0	8·3	16·2	35 25·0	1 35 5·24	+ 0·19	− 28·69	− 28·65	− 2·85
	527	(a) β Arietis	....	69 50	38·5	47·2	56·0	4·4	48 14·0	1 47 56·02	+ 0·18	− 28·67	− 28·66	− 3·16
Nov. 26	577	β Arietis	....	69 50	39·1	48·0	56·9	5·3	48 14·5	1 47 56·76	+ 0·19	− 29·43	− 29·40	− 3·16
	648	α Arietis	....	67 9	2·1	11·1	20·1	28·3	0 38·1	2 0 19·94	+ 0·19	− 29·29	− 29·41	− 3·26
	837	γ Ceti	....	87 19	46·6	55·0	3·0	11·0	37 19·9	2 37 3·10	+ 0·19	− 29·41	− 29·42	− 3·03
	949	α Ceti	....	86 25	41·9	50·1	58·4	6·2	56 15·1	2 55 58·34	+ 0·19	− 29·46	− 29·43	− 3·10
	986	δ Arietis	....	70 46	23·7	32·5	41·3	49·6	4 48·8	3 4 41·18	+ 0·19	− 29·45	− 29·44	− 3·43
	1166	η Tauri	....	66 18	57·0	6·0	15·0	23·8	40 33·1	3 40 14·98	+ 0·19	− 29·50	− 29·45	− 3·62
Nov. 28	704	67 Ceti	....	97 1	43·9	52·2	0·5	8·4	11 17·4	2 11 0·48	+ 0·22	− 30·88	− 30·93	− 2·84
	837	γ Ceti	....	87 19	48·1	56·4	5·0	12·3	37 21·2	2 37 4·60	+ 0·22	− 30·94	− 30·94	− 3·03
	949	α Ceti	....	86 25	43·3	51·5	59·9	7·6	56 16·8	2 55 59·82	+ 0·21	− 30·96	− 30·95	− 3·10
	986	δ Arietis	....	70 46	25·3	34·0	42·8	51·0	5 0·4	3 4 42·70	+ 0·21	− 30·98	− 30·96	− 3·44
Nov. 30	577	β Arietis	....	69 50	42·0	51·0	0·0	8·3	48 17·5	1 47 59·76	+ 0·23	− 32·48	− 32·44	− 3·14
	648	α Arietis	....	67 9	5·0	14·1	23·0	31·8	0 41·1	2 0 23·00	+ 0·23	− 32·40	− [illegible]2·44	− 3·27
	837	γ Ceti	....	87 19	49·5	57·9	6·0	14·2	37 22·8	2 37 6·08	+ 0·25	− 32·45	− 32·45	− 3·03
	949	α Ceti	....	86 25	44·7	53·0	1·2	9·2	56 18·0	2 56 1·22	+ 0·25	− 32·40	− 32·46	− 3·10
	1166	η Tauri	....	66 18	0·1	9·0	18·0	26·5	40 36·1	3 40 17·91	+ 0·23	− 32·47	− 32·47	− 3·65
	1376	ι Tauri	....	71 7	16·8	25·4	34·0	42·5	21 51·4	4 21 34·02	+ 0·24	− 32·55	− 32·49	− 3·57
Dec. 1	288	(b) ι Piscium	....	82 49	27·5	36·0	44·3	52·2	57 1·0	0 56 44·20	+ 0·27	− 33·03	− 33·16	− 2·66
	360	α Ursæ Minoris	....	1 24	6·5	51·0	31·5	2·5	[illegible] 4·5	1 12 31·20	− 2·73	....	− 33·18	− 58·85
	648	α Arietis	....	67 9	5·8	14·9	23·8	32·4	0 41·9	2 0 23·76	+ 0·27	− 33·21	− 33·20	− 3·26
	837	γ Ceti	....	87 19	50·2	58·5	6·7	14·9	37 23·5	2 37 6·76	+ 0·27	− 33·15	− 33·21	− 3·03
	949	α Ceti	....	86 25	45·6	53·9	2·0	10·0	56 18·9	2 56 2·08	+ 0·27	− 33·28	− 33·22	− 3·10
	1166	η Tauri	....	66 18	0·8	9·9	18·9	27·4	40 37·0	3 40 18·80	+ 0·26	− 33·36	− 33·25	− 3·65
Dec. 2	837	γ Ceti	....	87 19	51·3	59·5	7·7	15·6	37 24·4	2 37 7·70	+ 0·26	− 34·08	− 34·08	− 3·03
	949	(c) α Ceti	....	86 25	46·4	54·5	3·0	11·0	56 19·4	2 56 2·86	+ 0·26	− 34·04	− 34·09	− 3·11
	986	δ Arietis	....	70 46	28·3	37·0	46·0	54·2	5 3·3	3 4 45·76	+ 0·26	− 34·08	− 34·10	− 3·45
	1166	(d) η Tauri	....	66 18	1·5	10·6	19·7	28·4	40 38·0	3 40 19·64	+ 0·25	− 34·19	− 34·10	− 3·65
	1376	ι Tauri	....	71 7	18·2	27·0	35·6	44·1	21 53·2	4 21 35·62	+ 0·26	− 34·15	− 34·11	− 3·59
	1420	α Tauri	....	73 45	44·4	53·1	1·8	10·0	29 19·2	4 29 1·70	+ 0·25	− 34·08	− 34·12	− 3·53
Dec. 3	837	(a) γ Ceti	....	87 19	52·0	0·2	8·5	16·3	37 25·0	2 37 8·40	+ 0·26	− 34·79	− 34·81	− 3·02
	949	α Ceti	....	86 25	47·1	55·4	3·8	11·5	56 20·3	2 56 3·62	+ 0·26	− 34·80	− 34·82	− 3·11
	986	δ Arietis	....	70 46	29·1	38·0	46·5	55·0	5 4·0	3 4 46·52	+ 0·26	− 34·82	− 34·83	− 3·45
	1166	η Tauri	....	66 18	2·3	11·3	20·4	29·1	40 38·4	3 40 20·30	+ 0·25	− 34·84	− 34·84	− 3·66
	1420	α Tauri	....	73 45	45·2	54·0	2·8	10·7	29 19·9	4 29 2·52	+ 0·25	− 34·89	− 34·86	− 3·54

(a) Faint. (b) Definition bad all night. (c) Definition bad. Stars unsteady. (d) Very faint.

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed. I.	II.	III.	IV.	V.	Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock observed.	Correction of Clock interpolated.	[illegible]
1869.				° ′	s.	s.	s.	s.	m. s.	h. m. s.	s.	s.	s.	s.
Dec. 15	837	γ Ceti	....	87 19	0·5	9·0	17·3	25·0	37 34·0	2 37 17·16	+ 0·25	− 43·57	− 43·65	− 3·99
	949	α Ceti	....	86 25	56·0	4·2	12·5	20·4	56 29·2	2 56 12·46	+ 0·25	− 43·65	− 43·67	− 3·09
	1376	ε Tauri	....	71 7	28·0	36·8	45·4	53·8	22 3·0	4 21 45·40	+ 0·24	− 43·81	− 43·70	− 3·09
	1420	α Tauri	....	73 45	54·4	2·9	11·4	20·0	29 28·9	4 29 11·52	+ 0·24	− 43·76	− 43·71	− 3·63
	1520	ι Aurigæ	....	57 3	56·0	5·8	15·5	25·0	49 35·4	4 49 15·54	+ 0·22	− 43·66	− 43·72	− 4·19
Dec. 20	949	α Ceti	....	86 25	0·4	8·8	17·0	25·0	56 33·9	2 56 17·02	+ 0·25	− 48·23	− 48·25	− 3·07
	1168	η Tauri	....	66 18	16·0	24·9	33·0	42·1	40 52·0	3 40 33·84	+ 0·25	− 48·35	− 48·27	− 3·69
	1376	ε Tauri	....	71 7	32·5	41·2	50·0	58·3	22 7·4	4 21 49·88	+ 0·25	− 48·29	− 48·28	− 3·70
	1420	α Tauri	....	73 45	59·0	7·3	16·1	24·3	29 33·2	4 29 15·98	+ 0·25	− 48·24	− 48·28	− 3·05
	1520	ι Aurigæ	....	57 3	0·5	10·4	20·2	29·7	19 40·0	4 49 20·16	+ 0·23	− 48·26	− 48·29	− 4·22
	1681	β Tauri	....	61 30	34·2	43·5	53·0	2·0	19 11·0	5 18 52·92	+ 0·25	− 48·30	− 48·30	− 4·10
Dec. 21	1166	η Tauri	....	66 18	16·5	25·1	31·4	13·3	40 52·8	3 40 34·48	+ 0·25	− 48·99	− 49·00	− 3·63
	1376	ε Tauri	....	71 7	33·4	12·0	50·8	59·0	22 8·3	4 21 50·70	+ 0·25	− 49·11	− 49·00	− 3·73
	1420	α Tauri	....	73 45	59·5	8·2	16·9	25·0	29 34·1	4 29 16·74	+ 0·25	− 49·00	− 49·00	− 3·65
	1520	ι Aurigæ	....	57 3	1·2	11·0	21·0	30·3	49 40·9	4 49 20·88	+ 0·23	− 48·97	− 49·00	− 4·23
	1681	(a) β Tauri	....	61 30	34·9	14·2	53·6	2·7	19 12·5	5 18 53·58	+ 0·25	− 48·95	− 49·00	− 4·11
Dec. 22	288	ε Piscium	....	82 49	41·0	52·2	0·6	5·4	57 17·3	0 57 0·50	+ 0·25	− 49·52	− 49·57	− 2·45
	360	α Ursæ Minoris	....	1 21	5·5	50·0	34·0	......	24 4·0	1 12 31·05	− 1·40	....	− 49·59	− 43·31
	420	β¹ Ceti	....	98 51	3·5	12·0	20·4	28·3	18 37·2	1 18 20·28	+ 0·26	− 49·64	− 49·58	− 2·41
	1376	ε Tauri	....	71 7	34·0	12·5	51·2	59·8	22 9·0	4 21 51·30	+ 0·25	− 49·70	− 49·64	− 3·71
	1420	α Tauri	....	73 45	0·3	8·8	17·4	25·8	29 31·6	4 29 17·38	+ 0·25	− 49·64	− 49·64	− 3·16
	1520	ι Aurigæ	....	57 3	2·0	11·6	21·6	31·0	49 41·4	4 49 21·52	+ 0·23	− 49·61	− 49·65	− 4·23
	1623	β Orionis	....	98 21	50·5	59·0	7·1	15·3	9 21·4	5 9 7·20	+ 0·26	− 49·65	− 49·65	− 3·37
	1681	β Tauri	....	61 30	35·5	44·9	54·3	3·4	19 13·1	5 18 54·24	+ 0·25	− 49·60	− 49·65	− 4·13
Dec. 23	1166	η Tauri	....	66 18	17·6	26·4	35·5	41·3	40 54·0	3 40 35·56	+ 0·27	− 50·09	− 50·10	− 3·69
	1376	ε Tauri	....	71 7	34·4	13·0	51·9	0·2	22 9·4	4 21 51·78	+ 0·28	− 50·21	− 50·12	− 3·71
	1420	α Tauri	....	73 45	0·5	9·2	18·0	26·1	29 35·1	4 29 17·78	+ 0·27	− 50·05	− 50·13	− 3·66
	1520	ι Aurigæ	....	57 3	2·4	12·2	22·1	31·5	49 42·0	4 49 22·04	+ 0·26	− 50·16	− 50·15	− 4·25
	1681	β Tauri	....	61 30	36·0	45·3	55·0	4·0	19 14·0	5 18 54·86	+ 0·27	− 50·24	− 50·17	− 4·12
Dec. 27	1376	(b) ε Tauri	....	71 7	37·0	45·6	54·3	2·6	22 12·0	4 21 54·30	+ 0·29	− 52·74	− 52·62	− 3·71
	1420	α Tauri	....	73 45	3·0	11·9	20·2	28·8	29 37·8	4 29 20·34	+ 0·30	− 52·63	− 52·62	− 3·67
	1520	ι Aurigæ	....	57 3	4·9	14·7	24·5	31·0	49 44·4	4 49 24·50	+ 0·28	− 52·62	− 52·62	− 1·25
	1681	β Tauri	....	61 30	38·5	48·0	57·2	6·4	19 16·2	5 18 57·26	+ 0·29	− 52·63	− 52·62	− 4·15
	1730	δ Orionis	....	90 24	58·0	6·4	14·6	22·5	26 31·2	5 26 14·54	+ 0·30	− 52·61	− 52·62	− 3·15
	1765	(c) ι Orionis	....	91 17	13·0	21·4	30·0	37·8	30 46·3	5 30 29·70	+ 0·30	− 52·60	− 52·62	− 3·14
Dec. 28	1420	(d) α Tauri	....	73 45	4·2	12·9	21·4	29·8	29 38·9	4 29 21·44	+ 0·31	− 53·74	− 53·65	− 3·67
	1681	β Tauri	....	61 30	39·5	49·0	58·4	7·3	19 17·2	5 18 58·28	+ 0·30	− 53·66	− 53·65	− 4·15
	1730	δ Orionis	....	90 24	59·0	7·4	15·7	23·5	26 32·3	5 26 15·58	+ 0·32	− 53·57	− 53·65	− 3·45
	1765	ι Orionis	....	91 17	14·1	22·4	30·8	38·7	30 47·4	5 30 30·68	+ 0·31	− 53·59	− 53·65	− 3·44
	1883	α Orionis	....	82 37	45·1	53·4	1·9	10·0	49 16·6	5 49 1·80	+ 0·31	− 53·68	− 53·65	− 3·62
Dec. 30	1376	ε Tauri	....	71 7	40·1	49·0	57·5	6·0	22 15·3	4 21 57·58	+ 0·32	− 56·06	− 55·98	− 3·70
	1420	α Tauri	....	73 45	6·3	15·0	23·5	31·8	29 41·0	4 29 23·52	+ 0·32	− 55·84	− 55·98	− 3·67

(a) Definition bad all night. (b) An apparent inversion of the clock's rate during observation. (c) Definition very bad all throughout. (d) Faint

Date.	No. in British Association Catalogue.	Object Observed.	Magnitude observed.	North Polar Distance set to.	Wires observed.					Reduction to Mean of Wires.	Correction for Instrumental Deviations.	Correction of Clock		Correction to Mean R.A. Jan. 1, 1869.
					I.	II.	III.	IV.	V.			observed.	interpolated.	
1869.				° ′	s.	s.	s.	s.	m s.	h m s.	s.	s.	s.	s.
Dec. 30	1520	ι Aurigæ	......	57 3	8·2	18·1	28·0	37·3	49 47·9	4 49 27·90	+ 0·31	− 56·05	− 55·96	− 4·25
	1684	β Tauri	......	61 30	41·8	51·2	0·5	9·6	19 19·4	5 19 0·50	+ 0·31	− 55·88	− 55·96	− 4·16
	1730	δ Orionis	......	90 24	1·3	9·8	18·0	26·0	26 34·5	5 26 17·92	+ 0·33	− 55·91	− 55·96	− 3·46
	1765	ε Orionis	......	91 17	16·6	24·9	33·8	41·1	30 49·8	5 30 33·08	+ 0·33	− 56·00	− 55·96	− 3·45
	1883	α Orionis	......	82 37	47·1	55·9	4·0	12·0	49 21·0	5 49 4·06	+ 0·32	− 55·91	− 55·96	− 3·63
	6281	δ Ursæ Minoris S. P.	......	3 24	12·0	40·0	53·5	13·0	19 34·0	6 14 54·50	+ 1·27	......	− 55·96	+ 36·20

ROYAL OBSERVATORY, EDINBURGH.

Individual Observations of Mean Right Ascensions of Stars observed at the Royal Observatory, Edinburgh, in the Year 1869, reduced to January 1, 1869.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
B.A.C. 4, α Andromedæ.				
			° ′	h. m. s.
Jan. 5	0·01	(a) (1·0)	61 38	0 1 37·11
Feb. 11	0·11			37·26
Oct. 2	0·75			37·21
4	0·76			37·18
6	0·76			37·23
9	0·77			37·17
13	0·78			37·24
19	0·80			37·23
20	0·80			37·13
26	0·82			37·16
28	0·82			37·19
B.A.C. 26, γ Pegasi.				
Jan. 5	0·01	(2·0)	75 33	0 6 29·52
Oct. 2	0·75			29·56
4	0·76			29·55
6	0·76			29·49
9	0·77			29·54
13	0·78			29·49
19	0·80			29·52
20	0·80			29·46
28	0·82			29·51
B.A.C. 112, 12 Ceti.				
Oct. 13	0·78	(6·0)	94 41	0 23 21·15
20	0·80			21·28
B.A.C. 268, ι Piscium.				
Oct. 4	0·76	(4·0)	82 49	0 56 8·76
6	0·76			8·73
9	0·77			8·77
13	0·78			8·84
19	0·80			8·85
B.A.C. 288, ι Piscium.				
			° ′	h. m. s.
Oct. 20	0·80	(4·0)	82 49	0 56 8·81
26	0·82			8·76
30	0·83			8·82
31	0·83			8·70
Nov. 16	0·87			8·70
19	0·88			8·65
22	0·89			8·71
25	0·90			8·75
Dec. 1	0·91			8·65
22	0·97			8·73
B.A.C. 420, θ Ceti.				
Oct. 26	0·82	(3·0)	98 52	1 17 28·48
Dec. 22	0·97			28·55
B.A.C. 453, η Piscium.				
Oct. 30	0·83	(4·0)	75 20	1 24 28·64
31	0·83			28·64
Nov. 1	0·83			28·58
B.A.C. 518, ν Piscium.				
Oct. 26	0·82	(5·0)	85 11	1 34 36·91
27	0·82			37·03
31	0·83			36·88
Nov. 4	0·84			36·82
9	0·85			36·97
10	0·86			36·90
14	0·87			36·82
15	0·87			36·92
16	0·87			36·88
19	0·88			36·88
24	0·90			36·97
25	0·90			36·93
B.A.C. 577, β Arietis				
			° ′	h. m. s.
Oct. 26	0·82	(3·0)	69 50	1 47 24·51
27	0·82			24·46
30	0·83			24·38
31	0·83			24·36
Nov. 1	0·83			24·57
2	0·84			24·47
9	0·85			24·41
10	0·86			24·47
14	0·87			24·45
15	0·87			24·33
16	0·87			24·45
19	0·88			24·35
22	0·89			24·47
24	0·90			24·37
25	0·90			24·35
26	0·90			24·33
30	0·91			24·41
B.A.C. 648, α Arietis.				
Mar. 5	0·17	(2·0)	67 10	1 59 47·66
Oct. 27	0·82			47·49
30	0·83			47·43
Nov. 1	0·83			47·55
2	0·84			47·53
4	0·84			47·53
9	0·85			47·51
10	0·86			47·46
14	0·87			47·63
15	0·87			47·53
16	0·87			47·61
22	0·89			47·59
24	0·90			47·44
26	0·90			47·44
30	0·91			47·38
Dec. 1	0·91			47·47

(a) Magnitudes in parenthesis are the tabular ones of the British Association Catalogue.

B.A.C. 704, 67 Ceti.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
			° ′	h. m. s.
Oct. 27	0·82	(6·0)	97 2	2 10 26·94
Nov. 1	0·83			27·03
2	0·84			27·02
4	0·84			26·96
9	0·85			26·96
10	0·86			27·06
14	0·87			26·87
16	0·87			27·03
22	0·89			26·97
24	0·90			27·05
28	0·91			26·93

B.A.C. 837, γ Ceti.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Nov. 1	0·83	(3·0)	87 19	2 36 30·80
2	0·84			30·75
4	0·84			30·93
9	0·85			30·78
10	0·86			30·80
14	0·87			30·86
16	0·87			30·80
19	0·88			30·91
22	0·89			30·95
24	0·90			30·88
26	0·90			30·84
28	0·91			30·85
30	0·91			30·85
Dec. 1	0·91			30·70
2	0·92			30·85
3	0·92			30·83
15	0·95			30·77

B.A.C. 949, α Ceti.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Mar. 5	0·17	(2·5)	86 26	2 55 25·94
Nov. 4	0·84			25·96
9	0·85			25·94
10	0·86			25·94
14	0·87			25·96
15	0·87			25·96
16	0·87			25·96
19	0·88			25·97
22	0·89			25·89
24	0·90			25·97
26	0·90			26·00

B.A.C. 949, α Ceti.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
			° ′	h. m. s.
Nov. 28	0·91	(2·5)	86 26	2 55 25·98
30	0·91			25·91
Dec. 1	0·91			26·03
2	0·92			25·92
3	0·92			25·95
15	0·95			25·95
20	0·97			25·95

B.A.C. 986, δ Arietis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Nov. 15	0·87	(4·0)	70 46	3 4 8·58
22	0·89			8·52
26	0·90			8·50
28	0·91			8·51
Dec. 2	0·92			8·47
3	0·92			8·48

B.A.C. 1166, η Tauri.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Nov. 19	0·88	(3·0)	66 18	3 39 42·05
22	0·89			41·96
24	0·90			41·98
26	0·90			42·10
30	0·91			42·05
Dec. 1	0·91			42·16
2	0·92			42·14
3	0·92			42·05
20	0·97			42·13
21	0·97			42·04
23	0·97			42·04

B.A.C. 1376, ι Tauri.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Nov. 30	0·91	(3·5)	71 7	4 20 58·20
Dec. 2	0·92			58·18
15	0·95			58·25
20	0·97			58·15
21	0·97			58·25
22	0·97			58·20
23	0·97			58·23
27	0·99			58·26
30	0·99			58·24

B.A.C. 1420, α Tauri.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Jan. 4	0·01	(1·0)	73 45	4 28 24·25
Dec. 2	0·92			24·30

B.A.C. 1420, α Tauri.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
			° ′	h. m. s.
Dec. 3	0·92	(1·0)	73 45	4 28 24·37
15	0·95			24·42
20	0·97			24·30
21	0·97			24·34
22	0·97			24·34
23	0·97			24·26
27	0·99			24·35
28	0·99			24·43
30	0·99			24·21

B.A.C. 1520, ι Aurigæ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Jan. 5	0·01	(4·0)	57 3	4 48 27·98
Feb. 10	0·11			27·96
Dec. 15	0·95			27·85
20	0·97			27·88
21	0·97			27·88
22	0·97			27·87
23	0·97			27·92
27	0·99			27·91
30	0·99			28·00

B.A.C. 1623, β Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Jan. 5	0·01	(1·0)	98 21	5 8 14·58
Feb. 10	0·11			14·50
Dec. 22	0·97			14·54

B.A.C. 1681, β Tauri.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Jan. 4	0·01	(2·0)	61 30	5 18 0·74
5	0·01			0·77
Feb. 10	0·11			0·74
Dec. 20	0·97			0·77
21	0·97			0·72
22	0·97			0·72
23	0·97			0·84
27	0·99			0·78
28	0·99			0·78
30	0·99			0·69

B.A.C. 1730, δ Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Jan. 4	0·01	(2·0)	90 24	5 25 18·89
5	0·01			18·83

B.A.C. 1730, δ Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Jan. 6	0·01	(2·0)	° ′ 90 24	h. m. s. 5 25 18·91
Dec. 27	0·99			18·77
28	0·99			18·80
30	0·99			18·83

B.A.C. 1765, ε Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Jan. 4	0·01	(2·5)	91 17	5 29 33·97
5	0·01			33·95
6	0·01			33·97
Dec. 27	0·99			33·94
28	0·99			33·90
30	0·99			34·00

B.A.C. 1883, α Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Jan. 4	0·01	(1·0)	82 37	5 48 4·91
6	0·01			4·75
26	0·07			4·81
Dec. 28	0·99			4·84
30	0·99			4·79

B.A.C. 1958, ι Orionis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Jan. 6	0·01	(4·5)	75 13	6 0 5·92
26	0·07			5·18

B.A.C. 2163, γ Geminorum.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Jan. 6	0·01	(2·5)	73 30	6 30 8·60
25	0·07			8·64
26	0·07			8·61
Feb. 10	0·11			8·61

B.A.C. 2410, δ Geminorum.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Jan. 15	0·04	(3·0)	67 47	7 12 17·81
25	0·07			17·95
Feb. 2	0·09			17·86
10	0·11			17·87
14	0·12			17·99
Mar. 14	0·20			17·95
18	0·21			17·89
30	0·24			17·99

B.A.C. 2485, α² Geminorum.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Jan. 15	0·04	(1·5)	° ′ 57 50	h. m. s. 7 26 14·30
25	0·07			14·30
26	0·07			14·31
Feb. 2	0·09			14·34
10	0·11			14·26
11	0·11			14·32
14	0·12			14·26
Mar. 14	0·20			14·31
18	0·21			14·34
30	0·24			14·27
April 26	0·31			14·31

B.A.C. 2522, α Canis Minoris.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Jan. 15	0·04	(1·0)	84 26	7 32 26·53
25	0·07			26·43
26	0·07			26·51
Feb. 2	0·09			26·60
12	0·12			26·57
14	0·12			26·60
Mar. 14	0·20			26·47
April 12	0·28			26·62
26	0·31			26·55

B.A.C. 2555, β Geminorum.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Jan. 15	0·04	(2·0)	61 40	7 37 17·80
25	0·07			17·80
26	0·07			17·88
Feb. 2	0·09			17·69
11	0·11			17·75
12	0·12			17·75
14	0·12			17·77
Mar. 14	0·20			17·86
April 12	0·28			17·88
26	0·31			17·81

B.A.C. 2672, 6 Cancri.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Jan. 15	0·04	(5·5)	61 50	7 55 28·29
25	0·07			28·18
26	0·07			28·26
Feb. 2	0·09			28·28
11	0·11			28·04
12	0·12			28·18
Mar. 14	0·20			28·15

B.A.C. 2862, η Cancri.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Feb. 11	0·11	(6·0)	° ′ 69 7	h. m. s. 8 25 7·80
17	0·13			7·81
24	0·15			7·86
25	0·15			7·85
Mar. 5	0·17			7·81

B.A.C. 2971, ι Hydræ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Feb. 2	0·09	(4·0)	83 6	8 39 50·21
10	0·11			50·23
11	0·11			50·21
12	0·12			50·24
17	0·13			50·16
24	0·15			50·19
25	0·15			50·31
Mar. 2	0·16			50·16
5	0·17			50·18
16	0·20			50·20
26	0·23			50·11

B.A.C. 3171, 83 Cancri.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Feb. 16	0·13	(6·0)	71 44	9 11 40·05
17	0·13			40·12
19	0·13			40·07
24	0·15			40·05
25	0·15			40·05
Mar. 2	0·16			40·15
5	0·17			40·01
16	0·20			40·03
26	0·23			40·15

B.A.C. 3223, α Hydræ.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Feb. 16	0·13	(2·0)	98 6	9 21 8·96
17	0·13			8·91
19	0·13			8·91
24	0·15			9·01
25	0·15			8·93
Mar. 2	0·16			8·96

B.A.C. 3331, ε Leonis.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Feb. 16	0·13	(3·0)	65 37	9 38 24·47
19	0·13			24·42
24	0·15			24·63
25	0·15			24·60

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Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
B.A.C. 3331, ε Leonis.				
			° '	h. m. s.
Mar. 2	0·16	(3·0)	65 37	9 38 24·62
17	0·21			24·73
26	0·23			24·64
30	0·24			24·74
April 26	0·31			24·75
B.A.C. 3415, π Leonis.				
Feb. 16	0·13	(4·5)	81 20	9 53 17·32
17	0·13			17·40
19	0·13			17·43
24	0·15			17·33
Mar. 2	0·16			17·30
16	0·20			17·30
19	0·21			17·37
26	0·23			17·31
B.A.C. 3459, α Leonis.				
Feb. 16	0·13	(1·0)	77 24	10 1 23·53
17	0·13			23·48
19	0·13			23·52
24	0·15			23·51
25	0·15			23·53
Mar. 2	0·16			23·57
16	0·20			23·50
17	0·21			23·55
19	0·21			23·51
26	0·23			23·58
30	0·24			23·58
April 26	0·31			23·55
July 6	0·51			23·59
B.A.C. 3523, γ¹ Leonis.				
Feb. 25	0·15	(2·0)	69 30	10 12 44·82
Mar. 5	0·17			44·76
16	0·20			44·83
17	0·21			44·91
18	0·21			44·87
19	0·21			44·85
22	0·22			44·87
B.A.C. 3609, ζ Leonis.				
Mar. 16	0·20	(4·0)	80 1	10 25 54·71
17	0·21			54·69

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
B.A.C. 3609, ζ Leonis.				
			° '	h. m. s.
Mar. 18	0·21	(4·0)	80 1	10 25 54·66
19	0·21			54·64
22	0·22			54·65
B.A.C. 3708, l Leonis.				
Mar. 18	0·21	(6·0)	78 46	10 42 22·17
22	0·22			22·17
29	0·24			22·22
May 4	0·34			22·22
B.A.C. 3788, χ Leonis.				
Mar. 17	0·21	(4·5)	81 57	10 58 15·46
18	0·21			15·48
22	0·22			15·54
29	0·24			15·44
30	0·24			15·49
April 25	0·31			15·48
May 4	0·34			15·54
B.A.C. 3834, δ Leonis.				
Mar. 16	0·20	(2·5)	68 46	11 7 8·38
17	0·21			8·29
18	0·21			8·30
19	0·21			8·32
22	0·22			8·24
29	0·24			8·29
30	0·24			8·27
April 25	0·31			8·34
May 4	0·34			8·29
B.A.C. 3946, υ Leonis.				
Mar. 19	0·21	(4·5)	90 8	11 30 14·56
29	0·24			14·44
30	0·24			14·46
April 25	0·31			14·47
B.A.C. 3995, β Leonis.				
Mar. 29	0·24	(2·5)	74 42	11 42 22·55
30	0·24			22·49
April 25	0·31			22·51
May 24	0·39			22·61
July 15	0·53			22·61

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
B.A.C. 4145, η Virginis.				
			° '	h. m. s.
April 23	0·31	(3·5)	89 56	12 13 12·29
B.A.C. 4401, θ Virginis.				
April 12	0·28	(4·5)	94 50	13 3 10·11
23	0·31			10·18
27	0·32			10·15
30	0·33			10·21
May 4	0·34			10·12
11	0·36			10·22
24	0·39			10·06
B.A.C. 4532, ζ Virginis.				
April 13	0·28	(4·0)	89 56	13 28 1·17
23	0·31			1·14
27	0·32			1·09
30	0·33			1·20
May 4	0·34			1·23
11	0·36			1·16
June 8	0·43			1·22
B.A.C. 4648, η Bootis.				
April 12	0·28	(3·0)	70 57	13 48 26·81
13	0·28			26·86
23	0·31			26·85
27	0·32			26·79
30	0·33			26·82
May 4	0·34			26·74
8	0·35			26·88
11	0·36			26·76
13	0·36			26·82
24	0·39			26·93
June 18	0·46			26·92
July 15	0·53			26·86
B.A.C. 4672, τ Virginis.				
April 12	0·28	(4·5)	87 40	13 54 58·84
13	0·28			58·86
23	0·31			58·82
30	0·33			58·73
May 8	0·35			58·83
13	0·36			58·94
19	0·38			58·89
24	0·39			58·80

B.A.C. 4729, α Bootis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. ° ′	Mean Right Ascension, January 1, 1869. h. m. s.
April 12	0·28	(1·0)	70 8	14 9 41·25
13	0·28			41·19
23	0·31			41·28
27	0·32			41·24
30	0·33			41·20
May 4	0·34			41·17
8	0·35			41·25
11	0·36			41·13
13	0·36			41·15
19	0·38			41·29
24	0·39			41·32
July 15	0·53			41·22

B.A.C. 4808, ρ Bootis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
April 27	0·32	(4·0)	59 3	14 26 11·10
30	0·33			11·09
May 8	0·35			11·07
13	0·36			11·06
14	0·36			11·07

B.A.C. 4876, ε Bootis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
April 23	0·31	(3·0)	62 22	14 39 15·89
30	0·33			16·04
May 4	0·34			15·99
8	0·35			15·95
11	0·36			16·04
13	0·36			15·95
14	0·36			15·96
19	0·38			15·89
28	0·40			15·96
June 9	0·44			15·98

B.A.C. 4969, ψ Bootis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
May 11	0·36	(5·0)	62 32	14 58 50·02
19	0·38			50·04
28	0·40			50·05
June 8	0·43			50·06
9	0·44			50·04
18	0·46			50·04

B.A.C. 5034, β Libræ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
May 14	0·35	(2·5)	98 54	15 9 57·56

B.A.C. 5143, α Coronæ Borealis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. ° ′	Mean Right Ascension, January 1, 1869. h. m. s.
May 11	0·36	(2·5)	62 51	15 29 8·55
13	0·36			8·57
14	0·36			8·54
24	0·39			8·52
28	0·40			8·66
June 8	0·43			8·43
9	0·44			8·49
25	0·48			8·53
July 6	0·51			8·57

B.A.C. 5196, α Serpentis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
May 11	0·36	(2·5)	83 10	15 37 49·01
13	0·36			48·98
14	0·36			48·95
24	0·39			48·91
28	0·40			48·98
June 8	0·43			48·96
9	0·44			48·98
10	0·44			49·04
18	0·46			48·89
25	0·48			49·03
July 6	0·51			48·95

B.A.C. 5414, δ Ophiuchi.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
May 19	0·38	(3·0)	93 21	16 7 28·82
28	0·40			28·84
31	0·41			28·90
June 8	0·43			28·88
10	0·44			28·83
25	0·48			28·86
July 6	0·51			28·97

B.A.C. 5604, ζ Herculis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
June 10	0·44	(3·0)	58 9	16 36 20·97
25	0·48			20·92

B.A.C. 5708, κ Ophiuchi.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
May 31	0·41	(4·0)	80 25	16 51 28·07
June 10	0·44			28·09
July 9	0·52			28·08

B.A.C. 5821, α Herculis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance. ° ′	Mean Right Ascension, January 1, 1869. h. m. s.
May 28	0·40	(3·5)	75 27	17 8 40·13
31	0·41			40·19
June 8	0·43			40·53
9	0·44			40·46
10	0·44			40·50
25	0·48			40·45
July 8	0·51			40·47
9	0·52			40·17
16	0·54			40·43
19	0·54			40·57

B.A.C. 5941, α Ophiuchi.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
May 31	0·41	(2·0)	77 21	17 28 51·21
June 10	0·44			51·11
18	0·46			51·11
25	0·48			51·21
July 6	0·51			51·13
8	0·51			51·17
9	0·52			51·20
16	0·54			51·14
19	0·54			51·19
26	0·56			51·15
31	0·58			51·15

B.A.C. 6021, μ Herculis.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
July 8	0·51	(4·0)	62 12	17 41 19·93
16	0·54			19·95
17	0·54			19·96
26	0·56			19·97

B.A.C. 6355, α Lyræ.

Month and Day.	Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
July 8	0·51	(1·0)	51 20	18 32 30·23
9	0·52			30·16
12	0·53			30·17
15	0·53			30·14
16	0·54			30·27
17	0·54			30·15
19	0·54			30·16
26	0·56			30·09
27	0·57			30·16
28	0·57			30·20
Oct. 27	0·82			30·21

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Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
B.A.C. 6429, β Lyræ.				
July 8	0·51	(3·0)	° ′ 56 47	h m s 18 45 14·67
9	0·52			14·70
12	0·53			14·68
15	0·53			14·54
16	0·54			14·67
17	0·54			14·67
19	0·54			14·63
20	0·55			14·71
26	0·56			14·64
27	0·57			14·77
28	0·57			14·73
31	0·58			14·69
B.A.C. 6528, ζ Aquilæ.				
July 9	0·52	(3·0)	76 20	18 59 23·31
12	0·53			23·32
20	0·55			23·34
26	0·56			23·37
27	0·57			23·41
28	0·57			23·34
31	0·58			23·38
B.A.C. 6595, ω Aquilæ.				
July 12	0·53	(5·0)	78 38	19 11 39·99
20	0·55			40·09
B.A.C. 6646, δ Aquilæ.				
July 12	0·53	(3·5)	87 9	19 18 53·49
20	0·55			53·44
26	0·56			53·52
27	0·57			53·52
28	0·57			53·50
31	0·58			53·55
Sept. 4	0·67			53·53
B.A.C. 6772, γ Aquilæ.				
July 15	0·53	(3·0)	79 42	19 40 1·84
16	0·54			1·82
20	0·55			1·87
26	0·56			1·92
27	0·57			1·69
28	0·57			1·84
B.A.C. 6772, γ Aquilæ.				
July 31	0·58	(3·0)	° ′ 79 42	h m s 19 40 1·87
Sept. 4	0·67			1·82
Oct. 27	0·82			1·75
B.A.C. 6802, α Aquilæ.				
July 15	0·53	(1·5)	81 29	19 44 23·45
16	0·54			23·46
20	0·55			23·37
26	0·56			23·47
27	0·57			23·47
28	0·57			23·41
29	0·57			23·38
31	0·58			23·41
Sept. 4	0·67			23·41
Oct. 27	0·82			23·53
B.A.C. 6833, β Aquilæ.				
July 15	0·53	(3·5)	83 55	19 48 52·78
16	0·54			52·75
20	0·55			52·68
26	0·56			52·62
27	0·57			52·64
28	0·57			52·67
29	0·57			52·68
31	0·58			52·65
Oct. 27	0·82			52·69
B.A.C. 6974, α² Capricorni.				
Aug. 24	0·64	(3·0)	102 57	20 10 47·11
B.A.C. 7171, α Cygni.				
Aug. 24	0·64	(1·0)	45 11	20 36 58·10
B.A.C. 7256, 32 Vulpeculæ.				
July 29	0·57	(4·5)	62 26	20 48 58·74
Aug. 24	0·64			58·74
Sept. 3	0·67			58·74
4	0·67			58·58
14	0·70			58·68
16	0·71			58·59
B.A.C. 7368, ζ Cygni.				
July 29	0·57	(3·0)	° ′ 60 19	h m s 21 7 21·66
Sept. 3	0·67			21·58
4	0·67			21·81
8	0·68			21·68
14	0·70			21·69
16	0·71			21·71
B.A.C. 7478, β Aquarii.				
Aug. 24	0·64	(3·0)	96 9	21 24 39·48
B.A.C. 7561, ε Pegasi.				
Aug. 24	0·64	(2·5)	80 43	21 37 45·17
Sept. 3	0·67			45·11
4	0·67			45·19
7	0·68			45·15
8	0·68			45·03
14	0·70			45·04
B.A.C. 7627, 16 Pegasi.				
Sept. 8	0·68	(5·5)	64 41	21 47 6·20
20	0·72			6·08
B.A.C. 7688, α Aquarii.				
Sept. 7	0·68	(3·0)	90 57	21 59 3·17
21	0·72			3·24
B.A.C. 7773, θ Aquarii.				
Sept. 7	0·68	(4·5)	98 26	22 9 55·12
21	0·72			55·05
B.A.C. 7868, π Aquarii.				
Sept. 7	0·68	(4·0)	90 48	22 28 37·44
17	0·71			37·35
20	0·72			37·30
21	0·72			37·37
B.A.C. 7908, ζ Pegasi.				
Sept. 7	0·68	(3·0)	79 51	22 34 55·66
8	0·68			55·76

B.A.C. 7908, ζ Pegasi.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
			° ′	h. m. s.
Sept. 14	0·70	(3·0)	79 51	22 34 55·67
16	0·71			55·70
17	0·71			55·71
21	0·72			55·72
Oct. 6	0·76			55·75
13	0·78			55·71

B.A.C. 8034, α Pegasi.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Jan. 5	0·01	(2·0)	75 30	22 58 14·16
Sept. 7	0·68			14·20
14	0·70			14·25
16	0·71			14·19
17	0·71			14·14
20	0·72			14·35
21	0·72			14·22
Oct. 13	0·78			14·07
19	0·80			14·11

B.A.C. 8105, γ Piscium.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
			° ′	h. m. s.
Sept. 17	0·71	(4·5)	87 26	23 10 22·44
20	0·72			22·50
Oct. 2	0·75			22·43
4	0·76			22·50
19	0·80			22·41

B.A.C. 8169, κ Piscium.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Sept. 17	0·71	(5·5)	89 28	23 20 13·04
20	0·72			12·93
Oct. 2	0·75			13·04
4	0·76			12·91

B.A.C. 8233, ι Piscium.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Sept. 17	0·71	(4·5)	85 5	23 33 12·74
20	0·72			12·73

B.A.C. 8233, ι Piscium.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
			° ′	h. m. s.
Sept. 21	0·72	(4·5)	85 5	23 33 12·77
Oct. 2	0·75			12·71
4	0·76			12·69
13	0·78			12·75
19	0·80			12·72
				12·70
20	0·80			
26	0·82			12·66
28	0·82			12·79

B.A.C. 8331, ω Piscium.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate North Polar Distance.	Mean Right Ascension, January 1, 1869.
Oct. 2	0·75	(4·5)	83 52	23 52 35·04
4	0·76			35·12
9	0·77			35·11
20	0·80			35·10
26	0·82			35·08
28	0·82			35·07

EXPLANATION OF THE EDINBURGH TRANSIT OBSERVATIONS FOR 1869; AND THE METHODS OF THEIR REDUCTION.

Pages 710 to 725 contain the Transit Observations of stars for 1869, similarly with those for 1849, where the methods of reduction are more fully described; the variable data for the present year being as below.

The star observations were taken almost wholly by Mr Alexander Wallace, M.A., the First Assistant Astronomer. They were actually more numerous than here recorded, because, with a view chiefly to economy in printing, all days of observation with less than four standard stars have been struck out; also parts of a day far removed from the chief observing hours of the night; also those periods of the year when either the Instrumental corrections were uncertain, or the Clock going badly. The said observations, however, had been already computed in our MS. books, and have often served useful temporary purposes, as for approximate clock-corrections and instrumental errors.

The Micrometer observations for instrumental corrections have, on the other hand, always been taken by the Astronomer, and he has also decided on the quantities for computation to be adopted for each day of star observation.

Intervals of the Wires.

From 9 observations of α Ursæ Minoris, above and below the Pole, in the year 1869, the intervals of the wires and their Equatorial distances from their Mean or Middle point were found to be, the star being above the Pole,—

		s.	
Wire	I.	+ 16·527	Equatorial
...	II.	+ 8·226	
...	III.	− 0·073	
...	IV.	− 7·964	
...	V.	− 16·716	

These values, immaterially different from those of 1868, have been employed in the reductions throughout the year; using for Polaris (whose Declination varied between 88° 36′ 22″ and 88° 37′ 12″) the following quantities or those adapted to a declination of 88° 36′, with the amount of alteration due to each additional second of Declination added under the term of n'',—

		m. s.	s.	
Wire	I.	+ 11 16·73	+ n × ·136	Declination 88° 36′
...	II.	+ 5 36·73	+ n × ·067	
...	III.	− 0 2·98		
...	IV.	− 5 26·01	− n × ·066	
...	V.	− 11 24·46	− n × ·137	

and for δ Ursæ Minoris (whose Declination varied between 86° 36′ 6″ and 86° 36′ 44″) the following quantities or those adapted to a declination of 86° 36′,

with the amount of alteration due to each additional second of Declination added under the term of n'',—

			m.	s.		"		s.	
Wire	I.	+	4	38·69	+	n	×	·023	Declination 86° 36′
...	II.	+	2	18·68	+	n	×	·012	
...	III.	−	0	1·23					
...	IV.	−	2	14·30	−	n	×	·012	
...	V.	−	4	41·87	−	n	×	·023	

The correction generally for the imperfect transit of a star, whose North Polar Distance is not very small, being

$$= \frac{\text{Sum of Equatorial intervals for Wires observed}}{\text{Number of Wires}} \times \text{cosecant of Star's N. P. D.},$$

this quantity being applied to the mean of whatever wires were observed.

With close Polar stars, the *Sine* is used in place of the *Arc*.

The signs and order of the Wires are to be changed when the star is below the Pole.

In the column entitled "Reduction to the Mean of the Wires," either the simple arithmetical mean of the Wires—if 5 were observed—is entered; or, if a less number, the reduced mean according to the method already explained and the quantities above given.

CORRECTIONS FOR INSTRUMENTAL DEVIATIONS.

These deviations are three in number, and are severally termed, Collimation error, Level error, and Azimuth error.

The Collimation error is the deviation of the line joining the optical centre of the object-glass and the Mean of the Wires, from the plane perpendicular to the axis of rotation; and is *mechanically* positive, or is positive as a correction for all objects at all altitudes both above and below the horizon, when the object-glass deviates to the east of the said plane:—0^{s}·012, the diurnal aberration, is included, for practical convenience, in the sum representing the collimation.

The Level error is the angle of inclination of the axis of rotation to the horizon, measured in a vertical plane; and is *mechanically* positive, as a correction, for all objects above the horizon, negative for those below, when the Western end is higher than the other.

The Azimuthal error is the angle of deviation of the axis of rotation (presumed approximately horizontal) from the East and West line, measured in a horizontal plane; and is *mechanically* positive as a correction for all objects South of the Zenith, or Nadir, and negative for those North of the same, when the Western end of said axis deviates towards the South.

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COLLIMATION AND LEVEL ERRORS.

These are determined, as explained in former years, by special observations made from time to time with the collimating eye-piece, and by measuring micrometrically the distance between the Middle wire and its reflected image in reversed positions of the transit-instrument's axis.

For dates between the epochs of observation, the errors have been assumed to vary as the time, except where the readings of the earth-thermometers, as noticed in the Introduction, have indicated a modification thereof to be probably desirable.

AZIMUTHAL ERROR.

Of the three usual methods for determining the azimuthal position of a transit-instrument; viz. by a Polar star combined with an Equatorial star, by two successive transits of a Polar star above and below the Pole, or by three consecutive transits of a Polar star, the first plan has alone been adopted; for although the two latter have the advantage of being independent of the Right Ascension assumed for the stars, yet they can only be employed with safety when the stability of the instrument can be depended on through the twelve or twenty-four hours during which the observations extend.

Now grave doubts had long existed on this head; and, as set forth both in the Introduction to this volume and the Report to the Board of Visitors for 1870, towards the end of the volume, see pp. R 50 to R 57, they have since been proved to be only too well founded. The following therefore is the formula which has always been adopted, enabling, for each transit of a Polar star observed, a comparatively instantaneous determination of the Azimuthal error then to be made:—

$$\text{Azimuthal error} = \frac{\text{R.A. 1st} \ast - \text{R.A. 2d} \ast - (\text{obs. tr. 1st} \ast - \text{obs. tr. 2d} \ast) - \text{clock's loss in the interval}}{\left(\frac{\sin \text{Z.D. South}}{\sin \text{N.P.D.}}\ \text{1st} \ast\right) - \left(\frac{\sin \text{Z.D. South}}{\sin \text{N.P.D.}}\ \text{2d} \ast\right)}$$

In the course of the year 40 combinations of either α, or δ, Ursæ Minoris and a Clock star were obtained, from which the Azimuth error at these epochs was computed, and for dates between them the error was made to vary nearly as the time, modified in some cases by the temperature and the annual curve shown in Plate III.

TABLE I.

ADOPTED INSTRUMENTAL CORRECTIONS, EXPRESSED IN SECONDS OF TIME FOR CONVENIENCE OF APPLICATION TO TIME OBSERVATIONS.

Date.	Collimation.	Level.	Azimuth.
1869.	s.	s.	s.
Jan. 3	−0·05	+0·06	+0·09
4	−0·05	+0·06	+0·08
5	−0·05	+0·06	+0·06
6	−0·05	+0·07	+0·07
11	−0·05	+0·07	+0·04
15	−0·05	+0·08	+0·01
17	−0·05	+0·08	−0·02
19	−0·05	+0·08	−0·05
21	−0·05	+0·08	−0·09
22	−0·05	+0·08	−0·07
24	−0·05	+0·08	−0·06
25	−0·05	+0·08	−0·06
26	−0·05	+0·08	−0·06
28	−0·05	+0·08	−0·07
31	−0·05	+0·07	−0·07
Feb. 2	−0·05	+0·07	−0·07
8	−0·05	+0·07	−0·08
10	−0·05	+0·07	−0·08
11	−0·05	+0·06	−0·08
12	−0·05	+0·06	−0·09
14	−0·05	+0·06	−0·09
16	−0·05	+0·06	−0·10
17	−0·05	+0·06	−0·10
19	−0·05	+0·05	−0·10
24	−0·06	+0·05	−0·11
25	−0·06	+0·05	−0·11
26	−0·06	+0·05	−0·12
Mar. 2	−0·06	+0·05	−0·12
5	−0·06	+0·04	−0·12
6	−0·06	+0·04	−0·12
14	−0·06	+0·04	−0·13
16	−0·06	+0·04	−0·13
17	−0·06	+0·04	−0·13
18	−0·06	+0·03	−0·13
19	−0·06	+0·03	−0·13
20	−0·06	+0·03	−0·14
22	−0·06	+0·03	−0·14
26	−0·07	+0·02	−0·15
28	−0·07	+0·02	−0·15
29	−0·07	+0·02	−0·15
30	−0·07	+0·02	−0·16
April 2	−0·07	+0·01	−0·16
3	−0·07	+0·01	−0·17

Date.	Collimation.	Level.	Azimuth.
1869.	s.	s.	s.
April 8	−0·07	+0·01	−0·17
12	−0·08	0·00	−0·18
13	−0·08	0·00	−0·18
17	−0·08	0·00	−0·20
18	−0·08	−0·01	−0·23
21	−0·08	−0·01	−0·26
23	−0·08	−0·01	−0·29
25	−0·08	−0·01	−0·29
26	−0·08	−0·01	−0·29
27	−0·08	−0·02	−0·29
28	−0·08	−0·02	−0·29
30	−0·08	−0·02	−0·29
May 1	−0·08	−0·02	−0·30
4	−0·08	−0·01	−0·32
8	−0·08	−0·02	−0·34
11	−0·09	−0·03	−0·38
12	−0·09	−0·03	−0·38
13	−0·09	−0·03	−0·37
14	−0·09	−0·04	−0·37
19	−0·09	−0·05	−0·37
24	−0·09	−0·06	−0·36
27	−0·10	−0·06	−0·44
28	−0·10	−0·06	−0·42
31	−0·10	−0·07	−0·42
June 1	−0·10	−0·07	−0·42
2	−0·10	−0·07	−0·42
8	−0·10	−0·09	−0·42
9	−0·10	−0·09	−0·43
10	−0·10	−0·09	−0·43
14	−0·10	−0·10	−0·44
16	−0·10	−0·10	−0·44
18	−0·11	−0·10	−0·44
19	−0·11	−0·11	−0·44
20	−0·11	−0·11	−0·44
25	−0·11	−0·12	−0·44
28	−0·11	−0·12	−0·44
30	−0·11	−0·13	−0·46
July 1	−0·11	−0·13	−0·35
2	−0·11	−0·13	−0·20
4	−0·11	−0·13	−0·30
5	−0·11	−0·14	−0·36
6	−0·11	−0·14	−0·43
7	−0·12	−0·14	−0·44

Date.	Collimation.	Level.	Azimuth.
1869.	s.	s.	s.
July 8	−0·12	−0·14	−0·46
9	−0·12	−0·14	−0·44
11	−0·12	−0·15	−0·43
12	−0·12	−0·15	−0·42
15	−0·12	−0·15	−0·41
16	−0·12	−0·15	−0·39
17	−0·12	−0·15	−0·34
19	−0·12	−0·14	−0·36
20	−0·12	−0·14	−0·38
26	−0·12	−0·12	−0·39
27	−0·12	−0·12	−0·38
28	−0·12	−0·12	−0·37
29	−0·12	−0·11	−0·36
31	−0·12	−0·11	−0·35
Aug. 2	−0·12	−0·12	−0·34
3	−0·12	−0·12	[illegible]
4	−0·12	−0·12	−0·32
5	−0·11	−0·13	−0·32
6	−0·11	−0·13	−0·31
7	−0·11	−0·13	−0·30
9	−0·11	−0·14	−0·30
10	−0·11	−0·14	−0·30
11	−0·11	−0·14	−0·30
13	−0·10	−0·14	−0·30
16	−0·10	−0·15	−0·29
17	−0·10	−0·14	−0·29
19	−0·10	−0·14	−0·28
20	−0·10	−0·14	−0·28
24	−0·09	−0·13	−0·28
25	−0·09	−0·13	−0·27
26	−0·09	−0·13	−0·27
27	−0·09	−0·12	−0·27
30	−0·09	−0·12	−0·27
31	−0·09	−0·12	−0·26
Sept. 3	−0·08	−0·11	−0·26
4	−0·08	−0·11	−0·26
7	−0·08	−0·11	−0·26
8	−0·08	−0·11	−0·26
12	−0·08	−0·10	−0·25
14	−0·08	−0·10	−0·25
16	−0·07	−0·10	−0·25
17	−0·07	−0·10	−0·25
20	−0·07	−0·09	−0·24
21	−0·07	−0·08	−0·24

Date.	Collimation.	Level.	Azimuth.	Date.	Collimation.	Level.	Azimuth.	Date.	Collimation.	Level.	Azimuth.
1869	s.	s.	s.	1869.	s.	s.	s.	1869.	s.	s.	s.
Sept. 23	−0·07	−0·08	−0·24	Nov. 1	−0·06	+0·02	−0·06	Nov. 30	−0·04	+0·13	−0·26
26	−0·06	−0·07	−0·24	2	−0·06	+0·02	−0·08				
				4	−0·06	+0·03	−0·10	Dec. 1	−0·04	+0·14	+0·28
Oct. 2	−0·07	−0·06	−0·23	6	−0·06	+0·03	−0·04	2	−0·04	+0·15	+0·26
4	−0·07	−0·05	−0·23	9	−0·05	+0·05	+0·03	3	−0·04	+0·16	+0·26
5	−0·07	−0·05	−0·21	10	−0·05	+0·06	+0·07	5	−0·04	+0·16	+0·26
8	−0·07	−0·05	−0·23	14	−0·05	+0·07	+0·03	14	−0·03	+0·13	+0·25
9	−0·07	−0·06	−0·25	15	−0·05	+0·07	0·00	15	−0·03	+0·13	+0·25
12	−0·07	−0·07	−0·25	16	−0·05	+0·08	−0·03	17	−0·03	+0·14	+0·25
13	−0·07	−0·07	−0·25	17	−0·05	+0·08	−0·03	19	−0·03	+0·14	+0·25
19	−0·07	−0·05	−0·19	19	−0·04	+0·09	−0·04	20	−0·03	+0·15	+0·24
20	−0·07	−0·04	−0·17	20	−0·04	+0·10	0·00	21	−0·03	+0·15	+0·24
23	−0·07	−0·03	−0·15	22	−0·04	+0·11	+0·06	22	−0·03	+0·16	+0·24
25	−0·06	−0·01	−0·13	23	−0·04	+0·11	+0·04	23	−0·03	+0·16	+0·26
26	−0·06	−0·01	−0·10	24	−0·04	+0·11	+0·14	27	−0·03	+0·17	+0·28
27	−0·06	0·00	+0·02	25	−0·04	+0·12	+0·19	28	−0·03	+0·17	+0·30
28	−0·06	0·00	0·00	26	−0·04	+0·12	+0·20	30	−0·03	+0·18	+0·31
30	−0·06	+0·01	−0·01	28	−0·04	+0·13	+0·22	31	−0·03	+0·18	+0·31
31	−0·06	+0·01	−0·03	29	−0·04	+0·13	+0·23				

The correction to the star observations of times of Transit, for each of the above three instrumental deviations successively, is,

$$\text{Collimation correction} \times \frac{1}{\text{sin Star's North Polar Distance,}}$$

the sign being positive for a star above the Pole, and negative when it crosses the Meridian below the Pole.

$$\text{Level correction} \times \frac{\text{cos Star's Zenith Distance South}}{\text{sin Star's North Polar Distance,}}$$

the sign being positive for a star above the Pole, and negative when it crosses the Meridian below the Pole. And

$$\text{Azimuthal correction} = \frac{\text{sin Star's Zenith Distance South}}{\text{sin Star's North Polar Distance,}}$$

the sign being positive for a star above the Pole *and* to the South of the Zenith, also for a star below the Pole and North of the Zenith; but negative when above the Pole and to the North of the Zenith.

CORRECTION OF THE CLOCK.

For computing the errors of the Clock and the Azimuthal errors of the Transit Instrument, the following Table of the Mean Right Ascensions of the principal stars for January 1, 1869, has been employed, and was kindly communicated at the time by G. B. Airy, Esq., Astronomer Royal, as being the same employed by him for reducing the Greenwich Observations of 1869.

TABLE II.

MEAN RIGHT ASCENSIONS ADOPTED OF STANDARD STARS.

Star's Name.	Assumed Mean Right Ascension, January 1, 1869.	Correction to Nautical Almanac.	Star's Name.	Assumed Mean Right Ascension, January 1, 1869.	Correction to Nautical Almanac.
	h. m. s.	s.		h. m. s.	s.
α Andromedæ	0 1 37·21	+0·06	η Geminorum	6 6 58·23	....
γ Pegasi	0 6 29·52	−0·05	μ Geminorum	6 15 2·12	+0·01
ι Ceti	0 12 45·10	....	β Canis Majoris	6 16 55·95	....
12 Ceti	0 23 21·17	−0·04	ε Geminorum	6	....
ε Andromedæ	0 31 38·27	....	γ Geminorum	6 30 8·60	−0·04
β Ceti	0 37 0·71	+0·07	Cephei 51	6 38 13·63	+3·08
μ Andromedæ	0 49 29·32	....	Sirius	6	....
ε Piscium	0 56 8·78	−0·02	δ Canis Majoris	6 48 6·21	....
β Andromedæ	1 2 24·24	....	ε Canis Majoris	6 53 28·66	−0·01
Polaris	1 10 56·94	0·00	γ Canis Majoris	6 57 49·92	−0·02
θ Ceti	1 17 28·50	+0·03	51 Geminorum	7 5 50·85	....
η Piscium	1 24 28·56	+0·06	δ Geminorum	7 12 17·89	0·00
ν Piscium	1 34 36·89	0·00	β Canis Minoris	7 20 2·72	....
β Arietis	1 47 24·37	+0·01	Castor	7 26 14·31	0·00
α Arietis	1 59 47·56	+0·01	Procyon	7 32 26·63	+0·09
67 Ceti	2 10 26·98	+0·01	Pollux	7 37 17·80	+0·02
ξ Ceti	2 21 11·75	0·00	ξ Navis	7 43 47·10	....
δ Ceti	2 32 46·20	....	6 Cancri	7 55 28·11	−0·09
γ Ceti	2 36 30·85	+0·04	15 Argûs	8 1 57·93	+0·01
ε Arietis	2 44 15·75	....	β Cancri	8 9 24·59	....
α Ceti	2 55 25·97	+0·06	ψ² Cancri	8 15 51·61	....
δ Arietis	3 4 8·49	+0·01	π Cancri	8 25 7·50	+0·03
τ Arietis	3 13 40·02	....	γ Cancri	8 35 42·06	....
o Tauri	3 17 45·98	....	ε Hydræ	8 39 50·22	−0·03
f Tauri	3 23 38·62	....	α Cancri	8 51 19·21	....
ε Eridani	3 26 45·57	....	κ Cancri	9 0 39·00	....
11 Tauri	3 32 57·07	....	83 Cancri	9 11 39·98	+0·10
δ Eridani	3 36 58·41	....	α Hydræ	9 21 8·96	+0·02
η Tauri	3 39 42·05	+0·06	ξ Leonis	9 24 52·90	....
γ Eridani	3 51 55·05	+0·05	o Leonis	9 34 9·40	....
λ Tauri	4 1 32·24	....	ε Leonis	9 38 24·70	+0·04
ν Eridani	4 5 28·26	−0·02	μ Leonis	9 45 18·53	....
γ Tauri	4 12 20·45	....	π Leonis	9 53 17·34	0·00
ε Tauri	4 20 58·14	+0·01	Regulus	10 1 23·59	+0·02
Aldebaran	4 28 24·34	−0·01	γ¹ Leonis	10 12 44·81	0·00
μ Eridani	4 38 57·27	....	μ Hydræ	10	....
ι Aurigæ	4 48 27·91	−0·01	ρ Leonis	10 25 54·72	0·00
ε Leporis	4 59 54·93	+0·06	34 Sextantis	10 35 51·53	....
Rigel	5 8 14·54	+0·01	l Leonis	10 42 22·16	+0·02
β Tauri	5 18 0·77	+0·07	d Leonis	10 53 47·64	....
δ Orionis	5 25 18·88	−0·03	χ Leonis	10 58 15·49	−0·01
α Leporis	5 26 57·17	−0·04	δ Leonis	11 7 8·32	+0·01
ε Orionis	5 29 33·06	−0·01	δ Crateris	11 12 47·56	+0·05
α Columbæ	5 34 54·40	−0·14	τ Leonis	11 21 11·96	....
κ Orionis	5 41 32·60	....	υ Leonis	11 30 14·46	−0·03
α Orionis	5 48 4·81	+0·03	β Leonis	11 42 22·56	+0·04
1 Geminorum	5 56 9·47	....	π Virginis	11 54 9·56	....
ν Orionis	6 0 5·55	−0·01	ε Corvi	12 3 23·46	+0·03

Star's Name.	Assumed Mean Right Ascension, January 1, 1869.	Correction to Nautical Almanac.	Star's Name.	Assumed Mean Right Ascension, January 1, 1869.	Correction to Nautical Almanac.
	h. m. s.	s.		h. m. s.	s.
η Virginis	12 13 12·23	+0·05	α Lyræ	18 32 30·19	+0·06
δ Corvi	12 23 5·43	....	2 Aquilæ	18	....
β Corvi	12 27 30·52	+0·14	β Lyræ	18 45 14·62	+0·12
35 Virginis	12 41 11·19	....	ι Aquilæ	18 53 40·57	....
δ Virginis	12 49 0·36	....	ζ Aquilæ	18 59 23·29	+0·13
ε Virginis	12 55 39·33	....	ψ Sagittarii	19 7 30·32	....
θ Virginis	13 3 10·12	+0·03	ω Aquilæ	19 11 40·02	+0·04
Spica	13 18 17·62	+0·03	δ Aquilæ	19 18 53·53	+0·04
ζ Virginis	13 28 1·17	−0·01	α Vulpeculæ	19 23 15·26	....
m Virginis	13 34 44·27	....	μ Aquilæ	19 27 41·37	....
τ Bootis	13 41 2·23	....	h² Sagittarii	19 28 43·92	+0·11
η Bootis	13 48 26·85	+0·04	γ Aquilæ	19 40 1·90	+0·09
τ Virginis	13 54 58·86	+0·06	α Aquilæ	19 44 23·47	+0·05
κ Virginis	14 5 54·63	....	β Aquilæ	19 48 52·67	+0·07
Arcturus	14 9 41·23	+0·07	e Sagittarii	19 54 35·93	....
f Bootis	14 20 21·82	....	λ Ursæ Minoris	19 55 16·66	−0·17
ρ Bootis	14 26 11·06	0·00	θ Aquilæ	20 4 32·66	....
ε Bootis	14 39 15·96	+0·08	α² Capricorni	20 10 47·02	+0·06
α² Libræ	14 43 38·08	+0·05	β Capricorni	20 13 38·89	....
ξ² Libræ	14 49 39·75	....	ρ Capricorni	20 21 23·10	+0·14
ψ Bootis	14 58 44·98	−0·03	ε Delphini	20 26 57·21	....
β Libræ	15 9 57·57	+0·03	α Delphini	20 33 33·22	....
ι¹ Libræ	15 15 43·54	....	ε Aquarii	20 40 31·91	....
ζ¹ Libræ	15 20 52·33	....	32 Vulpeculæ	20 48 58·64	+0·04
α Coronæ	15 29 8·53	+0·08	θ Capricorni	20 58 34·77	....
α Serpentis	15 37 48·99	+0·06	ζ Cygni	21 7 21·68	+0·07
ε Serpentis	15 44 17·24	....	α Equulei	21 9 16·43	....
γ Serpentis	15 50 24·22	....	ι Capricorni	21 14 56·93	....
β¹ Scorpii	15 57 49·36	+0·03	β Aquarii	21 24 39·61	+0·03
δ Ophiuchi	16 7 28·90	+0·05	ξ Aquarii	21 30 46·53	....
γ Herculis	16 16 8·54	....	ε Pegasi	21 37 45·13	+0·03
Antares	16 21 22·70	+0·03	δ Capricorni	21 39 48·39	....
λ Ophiuchi	16 24 18·48	....	16 Pegasi	21 47 6·17	+0·03
ζ Ophiuchi	16 29 56·82	....	α Aquarii	21 59 3·23	+0·04
ζ Herculis	16 36 20·92	+0·02	ι Pegasi	22 0 54·80	....
κ Ophiuchi	16 51 28·06	−0·04	θ Aquarii	22 9 55·13	+0·01
ε Herculis	16 55 16·73	....	γ Aquarii	22 14 53·35	....
η Ophiuchi	17 2 51·98	....	π Aquarii	22 23 42·71	....
α Herculis	17 8 40·50	+0·10	η Aquarii	22 28 37·40	+0·02
θ Ophiuchi	17 13 57·95	+0·07	ζ Pegasi	22 34 55·69	+0·08
ο Ophiuchi	17 20 0·92	....	μ Pegasi	22 43 40·93	....
α Ophiuchi	17 28 51·22	+0·05	λ Aquarii	22 45 46·64	....
β Ophiuchi	17 37 0·05	....	Fomalhaut	22 50 24·34	+0·03
μ Herculis	17 41 19·95	+0·07	α Pegasi	22 58 14·18	+0·03
89 Herculis	17 50 8·15	....	γ Piscium	23 10 22·42	0·00
72 Ophiuchi	18 1 8·33	....	κ Piscium	23 20 12·99	−0·02
μ Sagittarii	18 5 55·70	+0·06	ι Piscium	23 33 12·75	−0·03
η Serpentis	18 14 31·87	....	δ Sculptoris	23 42 5·85	−0·03
δ Ursæ Minoris	18 14 36·01	−0·06	ω Piscium	23 52 35·09	−0·03
λ Sagittarii	18 19 53·16	....	2 Ceti	23 57 1·58	....

The Mean Right Ascensions are converted into Apparent for any day of observation, by the application of the reductions of mean to apparent places taken from the Nautical Almanac. The Correction of the Clock is determined from the observed transits of the stars in the foregoing Table (excepting the

close Polar stars), the corrections of the instrument being previously applied, compared with the Apparent Right Ascensions computed.

The Corrections of the Clock thus determined are contained in the column entitled "Correction of Clock observed."

The sign + prefixed to the Correction of the Clock denotes that the clock is slow; the sign − that it is fast.

On account partly of the variability at times of the Clock-rate, and still more frequently of swerving in the azimuthal position of the Transit Instrument as produced by changes of temperature acting on its supporting stone piers during the observations, the "Adopted Clock Corrections" have been generally obtained by graphical projection, and the stars of each night have been used much more by themselves than with reference to those of preceding and following nights.

At the same time, to afford a tabular view, in the usual manner, of the march of the Clock, its daily errors at 0^h Sidereal Time, as given more or less approximately by the curves, are contained in the following Table.

TABLE III.

CORRECTION FOR TRANSIT CLOCK AT 0^h SIDEREAL TIME.

Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.	Date.	Clock's Correction.
1869.	s	1869.	s	1869.	s	1869.	s	1869.	s
Jan. 4	− 55·12	Mar. 11	+ 6·44	June 8	− 42·54	Sept. 8	24·56	Nov. 9	− 20·10
5	− 55·90	22	+ 8·69	9	− 41·37	14	− 29·53	10	− 20·65
6	− 56·55	26	+ 10·77	10	− 40·29	16	− 31·45	14	− 22·93
15	− 61·77	29	+ 12·91	18	− 32·48	17	32·34	15	− 23·36
25	− 67·04	30	+ 13·79	25	− 23·84	20	− 35·50	16	− 23·87
26	− 67·85	April 12	+ 24·08	(b)		21	− 36·34	19	− 25·13
(a)		13	+ 25·04	July 6	− 10·90	Oct. 2	− 46·30	22	− 26·44
Feb. 2	− 8·85	23	+ 32·36	8	− 12·08	4	− 47·86	24	− 27·78
10	− 5·70	25	+ 33·95	9	− 12·45	6	− 49·42	25	− 28·61
11	− 5·30	26	+ 35·00	12	− 11·82	9	− 51·87	26	− 29·37
12	− 4·85	27	+ 36·12	15	− 11·65	13	− 55·38	28	− 30·86
14	− 3·97	30	+ 39·33	16	− 11·68	19	− 1 4·45	30	− 32·40
16	− 3·03	May 4	+ 43·01	17	− 11·65	20	− 1 6·02	Dec. 1	33·13
17	− 2·61	8	+ 45·62	19	− 11·40	26	− 1 14·68	2	− 34·01
19	− 1·70	11	+ 48·04	20	− 11·29	27	− 15·46	3	− 34·74
24	+ 1·02	13	+ 50·07	26	− 11·60	28	− 15·90	15	− 43·58
25	+ 1·33	14	+ 51·13	27	− 11·74	30	− 16·53	20	− 45·16
Mar. 2	+ 2·40	19	+ 55·57	28	− 12·01	31	− 16·65	21	− 48·92
5	+ 2·83	24	+ 60·54	29	− 12·50	Nov. 1	− 16·72	22	− 49·56
14	+ 5·51	28	+ 64·95	31	− 13·18	2	17·00	23	− 50·02
16	+ 6·04	31	+ 68·39	Aug. 24	− 19·00	4	− 17·68	27	− 52·50
17	+ 6·11			Sept. 4	− 22·08			28	− 53·53
18	+ 6·27							30	− 55·94

(a) Pendulum adjusted. (b) Brisbane Clock taken away, cleaned, and returned.

ROYAL OBSERVATORY, EDINBURGH.

OBSERVATIONS

MADE WITH

THE MURAL CIRCLE,

AND

CALCULATION

OF

APPARENT NORTH POLAR DISTANCES.

1869.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Corr. to Mean N. Polar Dist. Jan. 1, 1869.
1869.				h m s	° ′	′ ″	″	revols.	inches.	°	°				° ′ ″	″
Jan. 4		Nadir ||||		4 2 0	254 0	1 52·9	61·3	0·500	29·34	40·0	40·6					
		Nadir ||||			254 0	1 64·7	72·9	0·500								
	1434			4 31 43	117 40	3 51·2	51·0	0·500	29·34		40·5	3, S.W.	0	7	+43 41 50·3	− 79
	1623	β Orionis		5 9 9	138 15	3 52·3	52·7	0·500	29·34		40·3			6	+64 16 51·3	−114
	1730	δ Orionis		5 26 14	130 20	2 0·6	1·0	0·500	29·35		40·0			7	+56 19 59·2	− 94
		Nadir ||||		6 10 0	254 0	1 52·9	61·7	0·500	29·34	42·0	40·9					
		Nadir ||||			254 0	1 64·3	73·0	0·500								
Jan. 5		Nadir ||||		4 35 0	254 0	1 52·7	62·0	0·500	29·34	43·0	41·1					
		Nadir ||||			254 0	1 63·9	74·3	0·500								
	1623	(a) β Orionis		5 8 41	138 15	3 52·7	53·5	0·500	29·35		41·0			7	+64 16 51·9	−11[illegible]
		Nadir ||||		5 42 0	254 0	1 51·7	62·8	0·500								
		Nadir ||||			254 0	1 64·9	74·0	0·500								
Jan. 6		Nadir ||||		4 36 0	254 0	1 53·1	60·8	0·500	29·75	42·3	41·7					
		Nadir ||||			254 0	1 64·7	73·0	0·500								
	1623	β Orionis		5 9 11	138 15	3 48·7	49·3	0·500	29·75		41·6	5, S.W.	2	6	+64 16 47·5	−1[illegible]
	1730	δ Orionis		5 26 16	130 20	1 56·4	57·9	0·672	29·75		41·5			7	+56 20 0·4	−1[illegible]
	1826			5 40 38	120 30	0 15·1	15·2	0·500	29·75		41·5			9	+46 28 13·5	− 8[illegible]
	2022			6 10 49	119 55	4 17·1	16·9	0·500	29·75		41·3			8	+45 57 16·2	− 8[illegible]
		Nadir ||||		6 40 0	254 0	1 52·7	61·4	0·500								
		Nadir ||||			254 0	1 65·0	72·9	0·500								
Jan. 21		Nadir ||||		6 1 0	254 0	1 51·9	58·3	0·500	29·97	44·0	40·0					
		Nadir ||||			251 0	1 68·1	74·8	0·500								
	2060			6 17 53	125 15	3 54·4	53·9	0·500	29·97		40·0	1, S.	2	6	+51 16 53·1	−104
	2184			6 34 53	113 25	2 45·0	44·3	0·427	29·97		40·0			7	+39 25 41·6	− 8[illegible]
	2238			6 45 7	106 10	3 41·6	40·8	0·196	29·97		39·1			8	+32 11 40·2	− 7[illegible]
	2463	(b)		7 21 35	102 10	0 7·8	7·6	0·415	29·97		39·0			6	+28 8 3·4	− 75
	2488			7 28 5	83 30	1 24·9	21·3	0·450	29·97		38·9			7	+ 9 29 21·5	− 6[illegible]
	2586			7 42 54	101 25	2 34·6	34·0	0·457	29·97		38·8			9	+27 25 31·6	− [illegible]
		Nadir ||||		7 47 0	254 0	1 52·3	58·8	0·500	29·98	42·7	38·8					
		Nadir ||||			251 0	1 67·8	75·6	0·500								
Jan. 22		Nadir ||||		5 11 0	254 0	1 52·2	58·0	0·500	29·91	42·0	37·8					
		Nadir ||||			254 0	1 67·0	73·7	0·500								
	1751			5 30 23	64 20	2 16·2	15·0	0·510	29·91		37·8			7	− 9 39 47·6	− 9[illegible]
		Nadir ||||		5 42 0	254 0	1 53·1	59·0	0·500	29·91	41·1	37·7					
		Nadir ||||			254 0	1 65·8	74·1	0·500								
Jan. 25		Nadir ||||		5 57 0	254 0	1 53·5	59·4	0·500	29·46	40·8	38·1					
		Nadir ||||			254 0	1 67·0	74·4	0·500								
	2022		6·0	6 11 1	119 55	4 16·8	17·8	0·500	29·46		38·0			6	+45 57 16·7	− 9[illegible]
	2101		7·0	6 23 32	107 20	1 8·9	7·3	0·500	29·45		38·5	1, S.W.	0	7	+33 19 6·9	− 7[illegible]
	2292			6 54 50	119 10	0 9·2	8·4	0·500	29·45		38·3			8	+45 8 7·3	− [illegible]
	2334			7 3 1	79 55	4 17·6	17·3	0·510	29·45		38·0			6	+ 5 57 15·9	− 41
	2463			7 21 37	102 10	0 7·0	5·4	0·500	29·45		37·4			8	+28 8 4·4	− 75
	2488			7 28 7	83 30	1 24·2	22·0	0·500	29·45		37·0			7	+ 9 29 21·3	− 5[illegible]
	2586			7 42 56	101 25	2 33·8	31·4	0·500	29·45		36·8			8	+27 25 31·3	− 7[illegible]
		Nadir ||||		7 50 0	254 0	1 53·8	61·3	0·500	29·45	38·1	36·8					
		Nadir ||||			254 0	1 62·5	69·7	0·500								

(a) Sky getting cloudy. (b) Cloudy

Digitized

Date.	Star or other Object Observed. No. in British Association Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South	Cor. to Mean N. Polar Dist., Jan. 1, 1869.
1869.				h. m. s.	° ′	′ ″	″	revols.	inches	°	°				° ′ ″	″
Jan. 26	......	Nadir ‖ |	......	4 55 0	254 0	1 53·0	60·0	0·500	29·25	39·3	38·2	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 63·1	69·9	0·500	......	......	......	......	......	......	......	......
	1623	β Orionis	......	5 9 22	138 15	3 53·2	[illegible]3·2	0·500	29·25	......	38·2	......	......	7	+64 16 52·3	−14·5
	1696	......	......	5 20 47	127 5	4 7·8	8·2	0·500	29·25	......	38·2	......	......	8	+53 7 7·3	−11·5
	1751	......	......	5 30 25	64 20	2 16·4	13·8	0·500	29·25	......	38·2	......	......	7	− 9 39 48·1	+ 3·0
	1813	......	......	5 39 56	61 30	3 55·0	52·1	0·570	29·25	......	38·3	......	......	8	−12 28 7·6	+ 3·0
	1883	α Orionis	3·0	5 49 13	122 35	[illegible] 39·6	39·4	0·500	29·25	......	38·3	......	......	7	+48 33 38·1	−10·3
	2070 (a)	......	8·0	6 19 11	118 40	0 20·4	20·2	0·500	29·25	......	38·3	......	......	5	+44 38 19·0	− 9·6
	2184	......	7·0	6 34 56	113 25	2 44·4	43·4	0·500	29·25	......	38·5	10, W.	0	6	+39 25 43·3	− 6·7
	2238	......	......	6 45 12	106 10	3 43·3	41·0	0·500	29·25	......	38·5	......	......	8	+32 11 41·6	− 7·5
	2292	......	......	6 54 52	119 10	0 13·3	13·2	0·500	29·25	......	38·5	......	......	6	+45 8 11·8	− 9·6
	2463	......	......	7 21 39	102 10	0 7·1	5·7	0·500	29·25	......	38·5	......	......	7	+28 8 4·7	− 7·5
	2488	......	......	7 28 8	83 30	1 25·6	25·0	0·500	29·25	......	38·5	......	......	9	+ 9 29 23·2	− 5·5
	2522	α Canis Minoris	......	7 33 35	124 20	4 54·9	55·9	0·500	29·25	......	38·5	......	......	7	+50 22 54·9	− 9·8
	2586	......	......	7 42 57	101 25	2 35·0	34·0	0·500	29·25	......	38·5	......	......	6	+27 25 33·3	− 7·8
	......	Nadir ‖ |	......	7 54 0	254 0	1 54·0	62·4	0·500	29·25	35·9	38·6	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 65·0	72·0	0·500	......	......	......	......	......	......	......	......
Feb. 2	......	Nadir ‖ |	......	6 5 0	254 0	1 52·8	60·4	0·500	29·43	41·2	35·1	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 62·7	71·9	0·500	......	......	......	......	......	......	......	......
	2184	......	7·0	......	113 25	2 38·7	37·3	0·500	29·43	......	35·0	1, S.W.	0	6	+39 25 37·4	− 8·7
	2238	......	......	6 44 11	106 10	3 42·5	40·1	0·500	29·43	......	35·0	......	......	7	+32 11 40·7	− 7·3
	2292	......	......	6 53 53	119 10	0 11·0	12·0	0·500	29·43	......	35·0	......	......	10	+45 8 10·1	− 9·8
	2334	......	......	7 2 4	79 55	4 16·6	15·9	0·574	29·43	......	35·0	......	......	7	+ 5 57 16·5	− 2·8
	2410	δ Geminorum	......	7 12 26	107 45	0 36·0	36·0	0·500	29·43	......	35·0	......	......	7	+33 43 34·8	− 7·8
	2463	......	......	7 20 40	102 10	0 3·7	2·4	0·500	29·43	......	35·0	......	......	8	+28 8 1·3	− 7·1
	2522	α Canis Minoris	......	7 32 35	124 20	4 50·3	51·1	0·562	29·43	......	35·3	......	......	6	+50 22 51·9	−10·3
	2586	......	......	7 41 59	101 25	2 31·2	29·9	0·500	29·43	......	35·5	......	......	8	+27 25 29·4	− 7·4
	2683	......	......	7 57 19	110 45	1 11·7	10·2	0·516	29·43	......	35·5	......	......	6	+36 44 10·4	− 8·7
	2748	......	......	8 5 11	115 35	0 6·9	8·0	0·500	29·43	......	35·5	......	......	7	+41 33 6·1	− 9·1
	......	Nadir ‖ |	......	8 21 0	254 0	1 53·8	62·1	0·500	29·43	39·7	35·5	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 65·5	71·7	0·500	......	......	......	......	......	......	......	......
Feb. 4	......	Nadir ‖ |	......	6 4 0	254 0	1 52·9	63·5	0·500	29·50	48·3	50·9	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 66·3	70·9	0·500	......	......	......	......	......	......	......	......
	2060	......	......	6 17 20	125 15	3 56·5	55·5	0·550	29·51	......	49·3	5, S.W.	0	7	+51 16 56·4	−11·4
	2410	δ Geminorum	......	7 12 25	107 45	0 37·0	36·7	0·542	29·51	......	49·3	......	......	8	+33 43 36·5	− 7·9
	2586 (b)	......	......	......	101 25	2 38·3	37·7	0·500	29·51	......	49·3	......	......	......	+27 25 36·5	− 7·3
	......	Nadir ‖ |	......	8 2 0	254 0	1 53·3	62·9	0·500	29·50	49·9	49·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 66·0	71·3	0·500	......	......	......	......	......	......	......	......
Feb. 5	......	Nadir ‖ |	......	7 30 0	254 0	1 52·8	63·3	0·500	29·61	43·7	46·9	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 65·7	72·5	0·500	......	......	......	......	......	......	......	......
	2971	ι Hydræ	......	8 39 58	123 0	4 32·2	33·0	0·600	29·62	......	45·0	......	......	5	+49 2 34·4	− 9·4
	......	Nadir ‖ |	......	9 0 0	254 0	1 53·7	63·2	0·500	......	43·9	......	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 65·7	72·0	0·500	......	......	......	......	......	......	......	......
Feb. 8	......	Nadir ‖ |	......	7 21 0	254 0	1 51·7	57·0	0·500	28·68	48·0	48·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 66·0	71·7	0·500	......	......	......	......	......	......	......	......
	2522	α Canis Minoris	......	7 32 32	124 20	4 53·0	54·4	0·570	28·68	......	48·0	3, S.W.	4	7	+50 22 55·4	−10·8
	2586	......	......	7 41 55	101 25	2 35·4	35·0	0·500	28·68	......	48·0	......	......	8	+27 25 34·3	− 7·0
	......	Nadir ‖ |	......	8 25 0	254 0	1 52·3	56·7	0·500	28·66	48·0	47·8	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 65·8	72·1	0·500	......	......	......	......	......	......	......	......

(a) Called nebulous in B.A.C. (b) Not well defined.

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Corr. to Mean N.P. Dist. Jan. 1. 1869.
1869.				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
Feb. 11	......	Nadir ∣∣∣	......	5 54 0	254 0	1 51·9	57·4	0·500	29·60	41·3	40·0	......	......	......	......	......
	......	Nadir ∣∣∣	......	......	254 0	1 66·3	71·7	0·500	......	......	......	......	......	......	......	......
	2292	......	......	6 53 47	119 10	0 8·4	9·2	0·670	29·58	......	38·2	......	......	5	+45 8 12·2	−101
	2363	......	......	7 6 30	105 0	2 58·7	57·0	0·500	29·58	......	36·1	......	......	7	+31 0 57·1	− 74
	2463	......	......	7 20 37	102 10	0 4·9	4·7	0·500	29·58	......	38·0	......	......	6	+28 8 3·2	− 66
	2522	α Canis Minoris	......	7 32 30	124 20	4 48·5	49·0	0·657	29·58	......	38·7	......	......	7	+50 22 52·7	−163
	2688	......	......	7 57 33	102 0	4 57·9	56·0	0·568	29·58	......	38·3	......	......	8	+28 2 58·5	− 74
	2867	......	......	......	119 25	3 3·5	4·0	0·558	29·58	......	38·1	......	......	7	+45 26 4·8	− 86
	2971	ι Hydræ	......	8 39 56	123 5	4 34·0	33·6	0·500	29·58	......	38·0	......	......	9	+49 2 33·4	− 89
	3083	......	......	8 56 8	78 35	3 48·2	46·4	0·538	29·58	......	38·0	......	......	6	+ 4 36 46·5	− 55
	......	Nadir ∣∣∣	......	9 4 0	254 0	1 54·0	61·9	0·600	29·58	39·0	38·0	......	......	......	......	......
	......	Nadir ∣∣∣	......	......	254 0	1 66·1	71·6	0·500	......	......	......	......	......	......	......	......
Feb. 12	......	Nadir ∣∣∣	......	7 14 0	254 0	1 53·3	58·9	0·500	29·36	41·7	39·6	......	......	......	......	......
	......	Nadir ∣∣∣	......	......	254 0	1 68·2	74·7	0·500	......	......	......	......	......	......	......	......
	2522	α Canis Minoris	......	......	124 20	4 51·0	50·5	0·500	29·36	......	39·4	7, W.	0	7	+50 22 49·8	−114
	2971	ι Hydræ	......	8 39 55	123 0	4 34·2	34·0	0·514	29·36	......	39·2	......	......	8	+49 2 33·5	− 88
	......	Nadir ∣∣∣	......	9 0 0	254 0	1 52·2	58·2	0·500	29·36	40·0	39·1	......	......	......	......	......
	......	Nadir ∣∣∣	......	......	254 0	1 67·3	73·2	0·500	......	......	......	......	......	......	......	......
Feb. 16	......	Nadir ∣∣∣	......	8 15 0	254 0	1 52·7	58·0	0·500	29·18	46·4	46·0	......	......	......	......	......
	......	Nadir ∣∣∣	......	......	251 0	1 66·1	72·2	0·500	......	......	......	......	......	......	......	......
	3133	......	......	9 5 26	125 30	4 8·6	6·0	0·500	29·18	......	44·4	10, S.W.	0	7	+51 32 7·3	− [illegible]
	3223	α Hydræ	......	9 21 13	138 0	3 6·0	7·2	0·640	29·18	......	44·4	......	......	7	+64 1 9·2	− [illegible]
	3331	ι Leonis	......	......	105 35	1 24·4	23·7	0·500	29·18	......	44·3	......	......	8	+31 34 22·5	− [illegible]
	......	Nadir ∣∣∣	......	10 2 0	254 0	1 53·0	58·6	0·500	29·18	45·2	44·3	......	......	......	......	......
	......	Nadir ∣∣∣	......	......	254 0	1 66·9	73·7	0·500	......	......	......	......	......	......	......	......
Feb. 17	......	Nadir ∣∣∣	......	6 54 0	254 0	1 52·8	59·3	0·500	29·00	45·0	46·0	......	......	......	......	......
	......	Nadir ∣∣∣	......	......	254 0	1 64·8	74·4	0·500	......	......	......	......	......	......	......	......
	2586	......	......	......	101 25	2 34·2	33·0	0·600	29·08	......	44·0	4, S.W.	2	8	+27 25 32·1	− 61
	2683	......	......	7 57 13	110 45	1 10·5	10·0	0·612	29·08	......	44·0	......	......	7	+36 44 12·0	− 64
	2748	......	......	8 5 6	115 35	0 7·3	8·2	0·600	29·08	......	44·0	......	......	8	+41 33 9·0	− 51
	2971	ι Hydræ	......	8 39 57	123 0	4 33·8	33·9	0·500	29·08	......	44·0	......	......	7	+49 2 33·0	−15[illegible]
	3053	......	......	8 50 39	120 5	0 7·8	7·9	0·500	29·08	......	43·9	......	......	8	+46 3 6·0	− [illegible]
	3133	......	......	9 5 25	125 30	4 10·7	11·3	0·583	29·08	......	43·8	......	......	7	+51 32 12·3	− [illegible]
	3223	α Hydræ	2·0	9 21 12	138 0	3 7·9	9·9	0·500	29·10	......	43·8	......	......	......	+64 1 7·4	−10[illegible]
	......	Nadir ∣∣∣	......	9 30 0	254 0	1 52·6	57·9	0·500	29·10	45·0	43·8	......	......	......	......	......
	......	Nadir ∣∣∣	......	......	254 0	1 66·8	74·4	0·500	......	......	......	......	......	......	......	......
Feb. 24	......	Nadir ∣∣∣	......	6 48 0	254 0	1 53·7	60·9	0·500	29·48	44·3	43·5	......	......	......	......	......
	......	Nadir ∣∣∣	......	......	254 0	1 66·0	73·2	0·600	......	......	......	......	......	......	......	......
	2363	......	......	7 6 26	105 0	2 57·8	56·0	0·500	29·48	......	42·3	......	......	7	+31 0 55·6	− [illegible]
	2683	......	......	7 57 9	110 45	1 3·3	2·4	0·844	29·48	......	42·2	......	......	6	+36 44 10·7	− [illegible]
	2882	......	......	8 5 1	115 35	0 7·1	7·0	0·610	29·48	......	41·1	......	......	7	+41 33 5·5	− [illegible]
	2748	......	......	8 28 28	69 35	0 49·0	47·8	0·655	29·48	......	41·0	......	......	8	− 4 26 11·1	− [illegible]
	2971	ι Hydræ	......	8 39 48	123 0	4 32·5	31·9	0·540	29·48	......	41·0	......	......	7	+49 2 32·3	−1[illegible]
	3013	......	......	8 45 27	124 5	3 53·3	53·9	0·450	29·48	......	41·0	......	......	6	+50 6 50·9	−1[illegible]
	3133	......	......	9 5 21	125 30	4 9·4	9·0	0·570	29·48	......	40·9	......	......	8	+51 32 9·9	−1[illegible]
	3223	α Hydræ	......	......	138 0	3 3·6	4·0	0·557	29·48	......	40·8	......	......	5	+64 1 3·7	−11[illegible]
	......	Nadir ∣∣∣	......	9 47 0	254 0	1 53·9	58·9	0·500	29·48	39·0	40·8	......	......	......	......	......
	......	Nadir ∣∣∣	......	......	254 0	1 65·8	74·7	0·500	......	......	......	......	......	......	......	......

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1869.
1869.				h m s	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
Feb. 25	......	Nadir ‖|	......	8 38 0	254 0	1 52·6	59·3	0·500	29·12	44·0	42·0	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 62·6	69·5	0·500	......	......	......	....	......	......	....	......
	3223	α Hydræ............	......	9 21 8	138 0	3 8·1	9·9	0·500	29·12	......	42·0	18, W.	3	7	+64 1 9·0	−11·1
	3331	ι Leonis............	......	....	105 35	1 28·1	26·8	0·500	29·12	......	42·0	....	......	6	+31 34 27·3	− 7·7
	......	Nadir ‖|	......	10 0 0	254 0	1 53·1	60·0	0·500	29·12	42·1	42·0	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 61·9	69·0	0·503	......	......	......	....	......	......	....	......
Mar. 2	......	Nadir ‖|	......	7 2 0	254 0	1 53·7	60·3	0·500	29·46	37·1	31·4	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 63·3	71·6	0·500	......	......	......	....	......	......	....	......
	2488	....	......	7 27 4	83 30	1 16·0	14·9	0·656	29·46	......	31·7	7, N.N.W.	6	6	+ 9 29 18·5	− 0·2
	2867	....	......	....	119 25	3 3·9	2·3	0·500	29·46	......	31·5	....	......	7	+45 26 3·4	− 9·9
	2971	ι Hydræ............	......	8 39 48	123 0	4 34·2	32·8	0·500	29·46	......	31·4	....	......	8	+49 2 34·0	−10·4
	3083	....	......	8 56 2	78 35	3 43·4	40·3	0·600	29·46	......	31·3	....	......	7	+ 4 36 43·7	− 1·6
	3223	α Hydræ............	......	9 20 7	138 0	3 0·5	0·9	0·615	29·46	......	31·0	....	......	6	+64 1 3·7	−11·7
	3331	ι Leonis............	......	9 38 3	105 35	1 22·0	21·1	0·590	29·50	......	30·7	....	......	9	+31 34 24·3	− 7·4
	3418	....	......	9 53 56	120 20	3 39·7	39·3	0·553	29·50	......	30·0	....	......	7	+46 21 41·4	− 9·1
	3484	....	8·0	10 6 33	97 50	4 37·8	35·9	0·517	29·50	......	29·9	....	......	8	+23 52 37·5	− 6·7
	......	Nadir ‖|	......	10 14 0	254 0	1 52·7	59·3	0·500	29·52	33·7	30·0	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 63·7	70·4	0·5[illegible]0	......	......	......	....	......	......	....	......
Mar. 5	......	Nadir ‖|	......	8 3 0	254 0	1 53·3	60·2	0·500	29·64	42·0	42·7	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 62·8	69·9	0·500	......	......	......	....	......	......	....	......
	2971	ι Hydræ............	......	8 39 48	123 0	4 33·8	31·8	0·500	29·64	......	42·6	....	......	8	+49 2 33·3	−10·4
	3083	....	......	8 55 56	78 35	3 47·4	46·0	0·500	29·64	......	42·6	....	......	7	+ 4 36 45·8	− 1·0
	3223	α Hydræ............	......	9 21 6	138 0	3 2·9	4·1	0·500	29·64	......	42·4	....	......	8	+64 1 3·4	−12·0
	3592	....	......	10 22 45	127 45	3 15·7	18·7	0·500	29·65	......	43·0	....	......	7	+53 46 17·2	− 9·3
	......	Nadir ‖|	......	10 30 0	254 0	1 52·9	60·0	0·500	29·65	43·0	42·9	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 63·3	69·4	0·500	......	......	......	....	......	......	....	......
Mar. 16	......	Nadir ‖|	......	8 30 0	254 0	1 53·4	59·7	0·500	29·12	36·7	32·9	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 62·9	70·6	0·500	......	......	......	....	......	......	....	......
	3153	....	......	9 5 16	125 30	4 12·0	10·7	0·518	29·12	......	33·0	2, E.	1	7	+51 32 12·2	−10·7
	3223	α Hydræ............	......	9 21 4	138 0	3 7·9	9·4	0·542	29·12	......	33·0	....	......	7	+64 1 9·8	−12·8
	3331	ι Leonis............	......	9 38 19	105 35	1 22·8	21·1	0·500	29·12	......	33·0	....	......	8	+31 34 21·8	− 6·2
	3592	....	......	10 22 47	127 45	3 18·8	19·9	0·500	29·13	......	32·9	....	......	7	+53 46 19·4	− 9·6
	3662	....	7·0	10 34 41	118 30	3 17·0	15·0	0·500	29·13	......	32·8	....	......	8	+44 31 16·4	− 8·3
	......	Nadir ‖|	......	11 0 0	254 0	1 53·3	60·1	0·500	29·13	34·7	32·9	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 62·9	70·5	0·500	......	......	......	....	......	......	....	......
Mar. 17	......	Nadir ‖|	......	8 50 0	254 0	1 52·4	61·7	0·500	29·35	39·2	37·0	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 63·3	70·6	0·500	......	......	......	....	......	......	....	......
	3157	....	......	9 10 18	69 35	4 38·7	35·3	0·520	29·35	......	36·3	....	......	7	− 4 22 23·9	+ 3·0
	3242	θ Ursæ Majoris......	......	9 23 59	77 40	3 0·2	0·0	0·500	29·35	......	36·2	....	......	8	+ 3 40 58·9	+ 0·5
	3325	....	6·0	9 37 26	66 5	3 17·0	14·8	0·500	29·35	......	37·0	....	......	7	− 7 53 46·0	+ 2·7
	3418	....	......	9 53 58	120 20	3 43·5	43·1	0·540	29·35	......	36·9	....	......	6	+46 21 44·6	− 9·0
	3484	....	7·0	10 6 32	97 50	4 31·1	30·0	0·500	29·35	......	36·9	....	......	6	+23 52 30·8	− 4·7
	3662	....	......	10 34 41	118 30	3 10·3	10·7	0·513	29·35	......	36·8	....	......	9	+44 31 11·2	− 8·3
	3726	....	......	10 45 25	128 15	0 2·6	1·0	0·513	29·35	......	36·8	....	......	7	+54 13 1·3	− 9·2
	......	Nadir ‖|	......	11 20 0	254 0	1 52·8	60·7	0·500	29·35	38·9	36·7	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 62·2	71·0	0·500	......	......	......	....	......	......	....	......

Date.	Star or other Object Observed. No. in British Assoc. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. P. D., Jan. 1, 1869.
1869.				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
Mar. 18	......	Nadir	......	8 48 0	254 0	1 52·4	60·0	0·500	29·37	41·5	41·0	....	......	......	....	.....
	......	Nadir	......	....	254 0	1 61·9	70·7	0·500	......	......	......	....	......	......	....	.....
	3438	....	......	9 59 57	124 20	1 34·6	34·8	0·500	29·37	......	41·0	7, W.	2	7	+50 19 34·5	− 5·4
	3726	....	6·0	10 45 21	128 15	0 1·3	1·3	0·500	29·42	......	38·6	....	......	7	+54 13 0·6	− 5·3
	3869	....	......	11 15 32	111 45	4 28·8	26·0	0·500	29·42	......	38·5	....	......	......	+37 47 25·3	− 7·8
	......	Nadir	......	11 21 0	254 0	1 52·7	59·8	0·500	29·42	38·6	38·5	....	......	......	....	.....
	......	Nadir	......	....	254 0	1 62·4	71·3	0·500	......	......	......	....	......	......	....	.....
Mar. 19	......	Nadir	......	9 20 0	254 0	1 51·9	58·3	0·500	29·27	40·0	41·3	....	......	......	....	.....
	......	Nadir	......	....	254 0	1 63·4	70·0	0·500	......	......	......	....	......	......	....	.....
	3726	....	......	10 45 24	128 15	0 2·0	2·2	0·500	29·27	......	40·0	....	......	6	+54 13 1·4	− 9[illegible]
	3821	....	......	11 3 39	61 0	0 45·9	44·0	0·500	29·27	......	39·8	....	......	8	−13 1 17·5	+ 1[illegible]
	3869	....	......	11 15 32	111 45	4 28·8	26·9	0·500	29·27	......	39·7	....	......	7	+37 47 25·7	− 7[illegible]
	......	Nadir	......	11 23 0	254 0	1 52·9	59·9	0·500	29·28	39·3	39·5	....	......	......	....	.....
	......	Nadir	......	....	254 0	1 63·4	70·1	0·500	......	......	......	....	......	......	....	.....
Mar. 30	......	Nadir	......	9 50 0	254 0	1 53·1	60·2	0·500	29·78	42·2	37·8	....	......	......	....	.....
	......	Nadir	......	....	254 0	1 62·9	71·5	0·500	......	......	......	....	......	......	....	.....
	3484	....	6·0	10 6 25	97 50	4 36·4	36·6	0·500	29·78	......	37·7	....	......	6	+23 52 36·6	− 9[illegible]
	3592	....	6·0	10 22 45	127 45	3 18·1	18·3	0·500	29·78	......	37·7	....	......	7	+53 46 15·1	− 3[illegible]
	3726	....	6·0	10 45 11	128 15	0 5·3	5·5	0·500	29·78	......	37·6	....	......	6	+54 13 4·5	− 9[illegible]
	3780	....	7·0	10 56 39	121 40	1 11·2	13·7	0·500	29·78	......	37·6	....	......	6	+47 39 12·0	− 6[illegible]
	3834	δ Leonis	......	11 6 56	108 40	4 25·7	25·0	0·450	29·78	......	37·7	....	......	7	+34 42 24·9	− 5[illegible]
	3996	....	6·0	11 42 17	124 0	3 19·6	20·3	0·500	29·78	......	37·8	....	......	8	+50 1 20·4	− 2[illegible]
	......	Nadir	......	12 7 0	254 0	1 52·9	60·8	0·500	29·78	41·8	37·8	....	......	......	....	.....
	......	Nadir	......	....	254 0	1 62·4	72·0	0·500	......	......	......	....	......	......	....	.....
April 2	......	Nadir	......	11 19 0	254 0	1 51·9	60·9	0·500	29·62	43·4	42·0	....	......	......	....	.....
	......	Nadir	......	....	254 0	1 62·3	71·0	0·500	......	......	......	....	......	......	....	.....
	......	Nadir	......	11 58 0	254 0	1 53·3	61·2	0·500	29·62	42·2	41·7	....	......	......	....	.....
	......	Nadir	......	....	254 0	1 61·7	73·5	0·500	......	......	......	....	......	......	....	.....
April 12	......	Nadir	......	11 17 0	254 0	1 51·8	60·8	0·500	29·85	54·4	53·7	....	......	......	....	.....
	......	Nadir	......	....	254 0	1 62·4	70·9	0·500	......	......	......	....	......	......	....	.....
	3996	....	......	11 42 2	124 0	3 22·7	23·4	0·500	29·85	......	53·6	3, S.W.	1	6	+50 1 22·5	− 7[illegible]
	4231	....	7·0	12 26 35	104 45	3 39·2	38·4	0·500	29·84	......	53·6	....	......	7	+30 40 38·5	− 1[illegible]
	4364	....	......	12 54 46	108 0	0 20·9	22·7	0·500	29·84	......	53·5	....	......	8	+33 58 21·0	− 4[illegible]
	4480	α Virginis	1·0	....	140 25	0 49·9	53·5	0·500	29·84	......	53·5	....	......	5	+66 23 50·6	− 5[illegible]
	4575	....	......	13 37 37	106 35	2 7·4	7·9	0·500	29·84	......	53·3	....	......	7	+32 35 7·1	− 4[illegible]
	4652	....	......	13 49 59	97 15	3 42·9	43·7	0·380	29·84	......	53·1	....	......	6	+23 16 39·3	− 4[illegible]
	......	Nadir	......	....	254 0	1 53·5	58·7	0·500	29·74	53·5	51·9	....	......	......	....	.....
	......	Nadir	......	....	254 0	1 64·7	73·9	0·500	......	......	......	....	......	......	....	.....
April 13	......	Nadir	......	11 0 0	254 0	1 54·7	61·9	0·500	29·78	55·6	55·8	....	......	......	....	.....
	......	Nadir	......	....	254 0	1 64·0	71·8	0·500	......	......	......	....	......	......	....	.....
	3996	....	......	11 41 59	124 0	3 19·9	22·7	0·500	29·78	......	55·6	....	......	6	+50 1 20·2	− 7[illegible]
	4153	....	......	12 13 19	102 35	2 55·7	55·3	0·453	29·78	......	55·4	....	......	7	+28 35 53·2	− 3[illegible]
	4205	....	6·0	....	103 0	1 45·7	46·4	0·500	29·78	......	55·4	....	......	8	+28 59 44·8	− 5[illegible]
	4364	....	......	12 54 45	108 0	0 18·1	20·4	0·542	29·77	......	53·9	....	......	7	+33 56 19·1	− 4[illegible]
	4503	....	......	13 22 12	125 25	0 16·6	19·0	0·332	29·77	......	53·7	....	......	6	+51 23 11·5	− 5[illegible]
	4559	....	......	13 32 42	118 30	3 46·3	47·3	0·500	29·77	......	53·7	....	......	7	+44 31 46·1	− 5[illegible]

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Polar Dist., Jan. 1, 1869.
1869.				h. m. s.	° ′	′ ″	″	revs.	inches.	°	°				° ′ ″	″
April 13	4627	....	......	13 44 30	94 30	3 46·6	46·8	0·520	29·77	......	53·7	....	......	9	+20 31 45·9	− 3·7
	4676	....	......	13 55 8	97 45	2 7·7	9·8	0·448	29·77	......	53·6	....	......	7	+23 45 5·9	− 4·1
	......	Nadir ‖|	......	14 7 0	254 0	1 52·9	59·3	0·500	29·77	55·9	53·6	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 65·0	74·0	0·500	......	......	......	....	......	......	....	......
April 23	......	Nadir ‖|	......	11 40 0	254 0	1 53·9	62·7	0·500	29·75	49·0	49·0	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 64·7	72·3	0·500	......	......	......	....	......	......	....	......
	4153	....	6·0	12 14 11	102 35	2 50·0	49·8	0·500	29·73	......	48·9	....	......	6	+28 35 48·6	− 1·5
	4364	....	......	12 54 38	108 0	0 15·7	15·8	0·500	29·75	......	48·4	....	......	7	+33 58 14·2	− 2·7
	4559	....	......	13 32 34	118 30	3 43·8	44·6	0·598	29·75	......	48·4	....	......	6	+44 31 45·9	− 4·0
	4694	....	7·0	14 0 5	98 30	0 26·4	26·4	0·500	29·75	......	48·4	....	......	7	+24 28 24·5	− 2·2
	4797	....	......	....	93 10	2 5·5	7·3	0·500	29·75	......	48·2	....	......	6	+19 10 4·4	− 2·3
	......	Nadir ‖|	......	14 31 0	254 0	1 51·9	61·4	0·500	29·75	48·8	48·0	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 65·3	74·2	0·500	......	......	......	....	......	......	....	......
April 27	......	Nadir ‖|	......	11 30 0	254 0	1 53·9	58·7	0·500	30·16	55·8	51·0	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 66·1	73·2	0·500	......	......	......	....	......	......	....	......
	4153	....	......	12 13 1	102 35	2 43·0	43·3	0·500	30·16	......	50·5	1, N.E.	0	6	+28 35 42·2	− 0·8
	4364	....	......	12 54 33	108 0	0 9·1	10·9	0·500	30·16	......	49·9	....	......	7	+33 58 8·8	− 2·1
	4676	....	......	13 54 57	97 45	2 3·5	5·1	0·500	30·16	......	48·0	....	......	6	+23 45 2·9	− 1·2
	4729	α Bootis	......	14 9 5	110 5	1 48·7	50·5	0·500	30·16	......	47·8	....	......	7	+36 4 48·8	− 3·2
	4797	....	......	14 22 15	93 10	2 5·7	8·0	0·348	30·16	......	47·8	....	......	8	+19 10 1·0	− 1·3
	......	Nadir ‖|	......	14 31 0	254 0	1 52·3	57·9	0·500	30·16	48·9	47·6	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 62·9	71·6	0·500	......	......	......	....	......	......	....	......
April 28	......	Nadir ‖|	......	11 30 0	254 0	1 52·9	60·3	0·500	30·32	52·3	44·5	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 63·8	71·0	0·500	......	......	......	....	......	......	....	......
	4111	....	7·0	12 4 51	51 45	4 33·4	32·7	0·500	30·32	......	44·2	5, N.E.	1	6	−22 12 30·2	+10·2
	4153	....	6·0	12 13 8	102 35	2 47·0	47·0	0·500	30·32	......	44·0	....	......	8	+28 35 46·2	− 0·7
	......	Nadir ‖|	......	14 6 0	254 0	1 53·2	60·7	0·500	30·31	49·6	43·7	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 64·2	70·9	0·500	......	......	......	....	......	......	....	......
April 30	......	Nadir ‖|	......	11 40 0	254 0	1 52·9	60·8	0·500	29·98	50·9	45·0	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 63·1	71·1	0·500	......	......	......	....	......	......	....	......
	4199	....	......	12 21 34	103 20	1 18·1	18·0	0·567	29·98	......	44·0	2, N.E.	0	7	+29 19 13·8	− 0·5
	4364	....	......	12 54 31	108 0	0 11·0	12·4	0·534	29·98	......	43·8	....	......	6	+33 58 11·5	− 1·6
	4421	β Comæ	......	13 6 18	101 25	1 17·1	18·0	0·500	29·98	......	43·7	....	......	7	+27 24 16·3	− 0·4
	4480	α Virginis	......	13 18 42	140 25	0 45·8	49·5	0·500	29·98	......	43·5	....	......	6	+66 23 46·2	− 6·4
	4555	....	......	13 31 [illegible]	76 40	3 33·8	34·2	0·619	29·98	......	43·5	....	......	7	+ 2 41 35·2	+ 3·2
	4694	....	......	13 59 59	98 30	0 14·7	17·0	0·700	29·98	......	43·5	....	......	7	+24 28 19·8	− 0·7
	4723	....	......	....	100 15	0 48·3	49·3	0·497	29·98	......	43·5	....	......	8	+26 13 47·3	− 1·1
	4797	....	......	14 22 11	[illegible] 10	1 59·1	61·1	0·500	29·95	......	43·0	....	......	6	+19 9 58·6	− 0·6
	......	Nadir ‖|	......	14 49 0	254 0	1 53·4	63·8	0·500	29·95	48·7	43·0	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 61·7	75·6	0·500	......	......	......	....	......	......	....	......
May 4	......	Nadir ‖|	......	12 3 0	254 0	1 53·7	61·4	0·500	29·77	48·0	41·1	....	......	......	....	......
	......	Nadir |‖	......	....	254 0	1 62·2	71·0	0·500	......	......	......	....	......	......	....	......
	4231	....	......	12 26 18	104 45	3 27·9	28·4	0·532	29·77	......	41·0	2, N.E.	0	6	+30 46 27·6	− 0·3
	4421	β Comæ	......	13 5 3	101 25	1 19·7	19·2	0·500	29·77	......	41·0	....	......	7	+27 24 18·3	+ 0·3
	4480	α Virginis	......	....	140 25	0 51·2	54·1	0·500	29·80	......	41·0	....	......	7	+66 23 51·4	− 6·4
	4652	....	7·0	13 49 38	97 15	3 36·0	37·5	0·500	29·80	......	41·0	....	......	6	+23 16 35·9	+ 0·5

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Date.	Star or other Object Observed. No. in British Assn. Catalogue.	Star or other Object Observed. Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N.P.D. Jan. 1, 1869.
1869.				h. m. s.	° ′	r. ″	″	revols.	inches.	°	°				° ′ ″	″
May 4	4723	......	......	14 7 21	100 15	0 46·1	46·9	0·500	29·80	......	40·7	......	......	6	+ 26 13 45·3	− 0·3
	4809	......	6·0	14 25 47	102 40	3 27·2	28·5	0·500	29·80	......	40·1	......	......	8	+ 28 41 27·2	− 0·3
	......	Nadir	......	14 39 0	254 0	1 51·9	61·8	0·500	29·80	45·7	40·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 63·8	71·7	0·500	......	......	......	......	......	......	......	......
May 11	......	Nadir	......	12 30 0	254 0	1 52·6	58·4	0·500	29·55	48·2	45·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·9	71·2	0·500	......	......	......	......	......	......	......	......
	4364	......	......	12 54 23	108 0	0 11·1	11·9	0·513	29·55	......	44·4	......	......	7	+ 33 58 10·9	+ 0·1
	4421	β Comae	......	13 5 3	101 25	1 16·9	16·1	0·500	29·55	......	44·2	......	......	6	+ 27 24 15·4	+ 1·4
	4457	......	......	13 12 21	94 10	0 0·0	0·1	0·500	29·53	......	43·8	......	......	6	+ 20 7 58·5	+ 3·1
	4503	......	......	13 21 49	125 25	0 10·0	10·0	0·634	29·55	......	43·7	......	......	7	+ 51 23 12·5	− 3·4
	4575	......	......	13 36 46	106 35	2 2·2	2·3	0·500	29·55	......	43·6	......	......	8	+ 32 35 1·6	+ 6·4
	4621	......	......	13 43 4	110 40	1 49·7	48·5	0·500	29·55	......	43·6	......	......	5	+ 36 39 48·5	− 1·1
	4676	......	......	13 54 46	97 45	2 1·2	1·7	0·457	29·57	......	43·0	......	......	8	+ 23 44 59·1	+ 1·5
	4723	......	......	14 7 7	100 15	0 46·9	46·9	0·484	29·57	......	43·0	......	......	7	+ 26 13 45·2	+ 1·3
	4934	......	......	14 50 16	88 15	4 8·4	10·2	0·550	29·57	......	43·0	......	......	6	+ 14 17 9·4	+ 1·6
	5091	......	......	15 19 39	66 10	0 53·4	53·9	0·602	29·57	......	42·0	......	......	7	− 7 51 6·7	+ 5·[illegible]
	......	Nadir	......	15 50 0	254 0	1 52·8	60·4	0·500	29·57	43·0	41·3	......	......	......	......	......
	......	Nadir	......	......	254 0	1 65·0	73·7	0·500	......	......	......	......	......	......	......	......
May 12	......	Nadir	......	12 36 0	254 0	1 52·7	59·4	0·500	29·82	48·3	45·3	......	......	......	......	......
	......	Nadir	......	......	254 0	1 64·0	72·6	0·500	......	......	......	......	......	......	......	......
	4364	......	......	12 54 31	108 0	0 8·0	6·8	0·500	29·82	......	45·1	1. W.	0	7	+ 33 58 6·7	+ 0·3
	4421	β Comae	......	13 4 56	101 25	1 16·1	14·2	0·537	29·82	......	45·0	......	......	6	+ 27 24 15·3	+ 1·4
	4457	......	......	13 12 23	94 5	4 58·7	56·4	0·500	29·82	......	45·0	......	......	7	+ 20 7 57·0	+ 3·1
	4503	......	......	13 21 48	125 25	0 11·7	11·5	0·500	29·82	......	45·0	......	......	6	+ 51 23 10·6	− 3·4
	4575	......	......	13 36 45	106 35	2 4·6	3·0	0·500	29·82	......	45·0	......	......	7	+ 32 35 3·4	+ 6·3
	4694	......	......	14 59 57	98 30	0 23·7	22·1	0·500	29·82	......	45·0	......	......	6	+ 24 28 21·8	+ 1·6
	4797	......	......	14 22 2	93 10	1 58·9	57·9	0·500	29·85	......	42·0	......	......	6	+ 19 9 57·3	− 2·[illegible]
	4863	......	......	14 36 33	92 40	0 8·0	7·4	0·500	29·85	......	42·0	......	......	7	+ 18 38 6·3	+ 1·4
	4934	......	......	14 50 14	88 15	4 12·9	12·3	0·500	29·55	......	42·0	......	......	8	+ 14 17 11·5	+ 2·1
	5000	......	......	15 4 32	96 20	4 26·0	26·1	0·459	29·85	......	42·0	......	......	7	+ 22 22 24·2	+ 6·4
	5091	......	......	15 19 38	66 10	0 53·0	51·9	0·637	29·85	......	41·9	......	......	6	− 7 51 6·7	+ 3·[illegible]
	......	Nadir	......	15 41 0	254 0	1 53·0	58·9	0·500	29·85	44·7	41·7	......	......	......	......	......
	......	Nadir	......	......	251 0	1 65·3	71·8	0·500	......	......	......	......	......	......	......	......
May 13	......	Nadir	......	12 44 0	254 0	1 51·0	57·9	0·500	30·00	49·0	46·8	......	......	......	......	......
	......	Nadir	......	......	254 0	1 66·2	72·9	0·500	......	......	......	......	......	......	......	......
	4421	β Comae	......	13 4 50	101 25	1 16·7	16·1	0·500	30·00	......	46·6	0 0	1	6	+ 27 24 13·5	− 1·[illegible]
	4457	(a)	......	13 12 13	94 5	4 58·8	56·5	0·500	30·00	......	46·5	......	......	7	+ 20 7 57·0	+ [illegible]
	4652	(b)	......	13 49 33	97 15	3 34·1	33·0	0·539	30·00	......	46·4	......	......	6	+ 23 16 34·0	+ 2·[illegible]
	4797	......	......	14 22 1	93 10	1 58·2	59·3	0·500	30·00	......	46·2	......	......	7	+ 19 9 57·7	+ 5·[illegible]
	4863	......	......	14 36 33	92 40	0 0·3	1·4	0·700	30·00	......	46·0	......	......	......	+ 18 38 4·9	+ 5·[illegible]
	......	Nadir	......	15 46 0	254 0	1 50·9	59·3	0·500	30·00	46·9	46·0	......	......	......	......	......
	......	Nadir	......	......	254 0	1 66·4	73·1	0·500	......	......	......	......	......	......	......	......
May 14	......	Nadir	......	12 40 0	254 0	1 51·4	58·3	0·500	29·95	48·9	46·1	......	......	......	......	......
	......	Nadir	......	......	254 0	1 66·2	73·5	0·600	......	......	......	......	......	......	......	......
	4421	β Comae	......	13 4 55	101 25	1 19·5	19·7	0·417	29·95	......	46·0	1. E.	0	6	+ 27 24 16·6	+ 2·[illegible]
	4457	......	......	13 12 12	94 5	4 56·8	55·0	0·540	29·95	......	46·0	......	......	7	+ 20 7 56·6	+ 1·[illegible]
	4503	......	......	13 21 46	125 25	0 11·9	13·6	0·510	29·95	......	46·0	......	......	8	+ 51 23 12·3	− 3·[illegible]

(a) Aurora in S. and W.

(b) Aurora very beautiful; radiating from the Zenith towards the Horizon in all directions.

Date.	Star or other Object Observed: No. in British Asso. Catalogue	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A.	Microscopes. B.	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity (in miles per hour), and Direction.	Clouds. Max. = 10.	Est. Value of Obs. Max. = 10.	Apparent Zenith Distance South.	Cor. to Mean N. Pole Dist., Jan. 1 1869.
1869.				h m s	° ′	′ ″	″		inches.	°	°				° ′ ″	″
May 14	4559	......	6·0	13 32 17	118 30	3 42·8	42·9	0·500	29·95	......	45·0	......	......	7	+44 31 42·8	− 1·
	4610	......	6·0	13 41 53	98 5	3 24·1	23·6	0·500	29·95	......	45·0	......	......	7	+24 6 23·5	+ 2·
	4694	......	......	14 59 47	98 30	0 17·7	18·2	0·500	29·95	......	44·9	......	......	6	+24 28 17·1	+ 2·
	4797	......	......	14 22 0	93 10	1 55·0	55·7	0·620	29·95	......	44·7	......	......	7	+19 9 57·8	+ 2·
	4820	......	......	14 27 47	96 50	2 23·9	26·0	0·318	29·95	......	44·7	......	......	8	+22 50 19·2	+ 2·
	4876	ε Bootis	......	14 36 20	102 20	1 7·7	9·2	0·500	29·95	......	44·3	......	......	7	+28 19 7·8	+ 1·
	4934	......	......	14 50 10	88 15	4 11·0	12·4	0·485	29·95	......	44·0	......	......	6	+14 17 10·3	+ 2·
	4965	......	......	14 57 38	84 45	4 52·2	51·1	0·567	29·95	......	43·8	......	......	7	+10 47 52·6	+ 2·
	5071	......	......	15 15 22	77 30	3 27·8	30·0	0·500	29·93	......	43·7	......	......	8	+ 3 31 27·4	+ 2·
	5284	γ Serpentis	......	15 49 34	113 50	3 6·7	7·1	0·500	29·92	......	43·4	......	......	7	+39 51 7·1	− 0·
	......	Nadir ‖ |	......	15 58 0	254 0	1 53·3	61·4	0·500	29·92	46·1	43·4	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 63·0	70·4	0·500	......	......	......	......	......	......	......	......
May 19	......	Nadir ‖ |	......	13 44 0	254 0	1 50·9	59·0	0·500	29·20	49·4	47·1	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 64·8	72·1	0·500	......	......	......	......	......	......	......	......
	4876	ε Bootis	......	14 38 41	102 20	1 15·2	13·3	0·500	29·20	......	46·8	......	......	6	+28 19 13·8	+ 2·
May 21	......	Nadir ‖ |	......	13 32 0	254 0	1 51·8	58·8	0·500	29·69	51·1	45·0	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 63·7	71·7	0·500	......	......	......	......	......	......	......	......
	4723	......	......	14 7 4	100 15	0 44·1	44·3	0·495	29·69	......	45·0	1, E.	0	6	+20 13 43·5	+ 3·
	4797	......	......	14 21 30	93 10	1 54·3	54·2	0·632	29·69	......	44·8	......	......	7	+19 9 57·2	+ 5·
	4863	......	......	14 36 21	92 35	4 59·7	59·9	0·500	29·69	......	44·8	......	......	8	+18 37 59·5	+ 4·
	4934	......	......	14 50 3	88 15	4 10·8	12·2	0·402	29·69	......	44·7	......	......	7	+14 17 8·1	+ 5·
	4965	......	......	14 57 28	84 45	4 39·8	39·0	0·500	29·69	......	44·7	......	......	7	+10 47 38·7	+ 5·
	5071	......	......	15 15 14	77 30	3 20·8	21·0	0·611	29·69	......	43·5	......	......	7	+ 3 31 22·7	+ 5·7
	5284	γ Serpentis	......	15 49 21	113 50	3 4·9	5·2	0·500	29·69	......	43·4	......	......	8	+39 51 5·3	+ 1·
	5452	......	......	16 13 23	108 30	1 35·1	36·0	0·690	29·69	......	43·3	......	......	7	+34 29 40·9	+ 1·
	5504	......	......	16 21 27	114 20	0 2·9	5·4	0·575	29·69	......	43·3	......	......	6	+40 18 6·2	+ 1·
	......	Nadir ‖ |	......	16 32 0	254 0	1 52·0	57·9	0·500	29·69	46·1	43·3	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 65·7	71·3	0·500	......	......	......	......	......	......	......	......
May 27	......	Nadir ‖ |	......	13 41 0	254 0	1 52·0	58·3	0·500	29·77	46·8	43·9	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 64·9	72·6	0·500	......	......	......	......	......	......	......	......
May 28	......	Nadir ‖ |	......	13 31 0	254 0	1 52·8	59·3	0·500	29·96	49·0	44·1	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 64·0	70·1	0·500	......	......	......	......	......	......	......	......
	4676	......	......	13 51 27	97 45	1 55·3	56·2	0·535	29·96	......	44·0	1, E.	0	7	+23 44 56·9	+ 5·
	4756	......	......	14 12 51	77 20	0 54·0	56·6	0·687	29·96	......	43·9	......	......	6	+ 3 18 58·8	+ 9·
	4820	......	......	......	96 50	2 16·7	18·8	0·500	29·96	......	43·9	......	......	7	+22 50 17·4	+ 5·
	4942	......	......	14 53 20	89 45	4 3·0	3·2	0·500	29·96	......	43·7	......	......	7	+15 47 2·7	+ 5·
	5034	β Libræ	......	15 8 55	138 50	1 9·3	11·3	0·500	29·96	......	43·5	......	......	9	+64 49 9·9	+ 1·
	5091	......	......	15 19 23	66 10	0 55·0	55·0	0·418	29·95	......	43·5	......	......	7	− 7 51 9·7	+ 7·
	5284	γ Serpentis	......	15 49 21	113 50	3 5·0	6·0	0·500	29·95	......	43·5	......	......	8	+39 51 5·9	+ 2·
	5452	......	......	16 13 19	108 30	1 34·3	35·0	0·677	29·95	......	43·5	......	......	7	+34 29 39·6	+ 2·
	5537	......	......	16 26 18	119 15	4 20·4	26·5	0·680	29·95	......	43·5	......	......	8	+45 17 31·8	+ 2·
	5634	......	......	16 40 52	118 35	1 24·2	26·1	0·518	29·95	......	43·5	......	......	7	+44 34 25·7	+ 2·
	5716	......	......	16 51 38	114 15	4 23·9	25·9	0·500	29·95	......	43·5	......	......	......	+40 17 25·5	+ 2·
	......	Nadir ‖ |	......	17 0 0	254 0	1 52·3	59·0	0·500	29·95	45·9	43·5	......	......	......	......	......
	......	Nadir | ‖	......	......	254 0	1 63·8	70·8	0·500	......	......	......	......	......	......	......	......

Date.	Star or other Object Observed. No. in British Asso. Catalogue.	Name or Description.	Magnitude observed.	Clock Sidereal Time of Observation.	Pointer.	Microscopes. A	Microscopes. B	Micrometer.	Barometer.	Interior Thermometer, Fahr.	Exterior Thermometer, Fahr.	Wind. Velocity in miles per hour, and Direction.	Clouds. Max. = 10.	Est. Value of the [illegible] Max. = 10.	Apparent [illegible]
1869. May 31	......	Nadir ||	......	14 21 0	254 0	1 52·3	57·9	0·500	29·85	50·7	47·0	....	......	......	....
	......	Nadir ||	......	....	254 0	1 64·2	71·5	0·500	......	......	......	....	......	......	....
	6716	....	6·0	16 51 14	114 15	4 28·5	27·4	0·500	29·86	......	46·8	3, E.	5	7	+49 17 58·6
	......	Nadir ||	......	17 20 0	254 0	1 51·9	59·7	0·500	29·86	47·1	46·5	....	......	......	....
	......	Nadir ||	......	....	254 0	1 65·2	72·6	0·500	......	......	......	....	......	......	....
June 2	......	Nadir ||	......	15 10 0	254 0	1 51·9	58·8	0·500	29·67	53·3	50·0	....	......	......	....
	......	Nadir ||	......	....	254 0	1 63·7	72·4	0·500	......	......	......	....	......	......	....
	5414	δ Ophiuchi	......	16 6 19	133 15	4 6·8	[illegible]	0·500	29·61	......	45·3	....	......	6	+59 17 [illegible]
	......	Nadir ||	......	16 21 0	254 0	1 52·1	60·3	0·500	......	48·2	......	....	......	......	....
	......	Nadir ||	......	....	254 0	1 64·0	71·6	0·500	......	......	......	....	......	......	....
June 4	......	Nadir ||	......	14 23 0	254 0	1 52·5	58·3	0·500	29·55	53·9	51·1	....	......	......	....
	......	Nadir ||	......	....	254 0	1 65·5	72·0	0·500	......	......	......	....	......	......	....
	4876	ε Bootis	......	14 38 39	102 25	1 12·1	12·0	0·400	29·55	......	51·0	4, W.	5	6	+28 19 55
	......	Nadir ||	......	15 3 [illegible]	254 0	1 53·1	58·0	0·500	29·54	51·7	49·7	....	......	......	....
	......	Nadir ||	......	....	254 0	1 66·3	71·6	0·500	......	......	......	....	......	......	....
June 8	......	Nadir ||	......	14 19 0	254 0	1 52·9	59·2	0·500	29·91	58·3	59·0	....	......	......	....
	......	Nadir ||	......	....	254 0	1 66·2	72·[illegible]	0·500	......	......	......	....	......	......	....
	4876	ε Bootis	......	14 39 59	102 20	1 8·8	9·7	0·500	29·91	......	58·9	3, W.	0	7	+28 19 5[illegible]
	5091	....	6·0	15 21 10	66 10	0 45·0	45·7	0·582	29·91	......	58·7	....	......	7	− 7 5[illegible] 15·4
	5264	γ Serpentis	......	15 51 0	113 50	3 4·9	5·4	0·500	29·91	......	58·7	....	......	7	+39 51 1[illegible]
	5414	δ Ophiuchi	......	16 8 12	133 15	4 0·1	1·1	0·500	29·92	......	58·0	....	......	6	+59 16 59·[illegible]
	......	Nadir ||	......	16 41 0	254 0	1 53·2	59·7	0·500	29·92	56·2	57·3	....	......	......	....
	......	Nadir ||	......	....	254 0	1 64·7	73·5	0·500	......	......	......	....	......	......	....
June 9	......	Nadir ||	......	15 0 0	254 0	1 51·3	60·5	0·500	29·86	53·3	48·2	....	......	......	....
	......	Nadir ||	......	....	254 [illegible]	1 66·1	74·1	0·500	......	......	......	....	......	......	....
	5071	....	......	15 16 56	77 30	3 16·1	15·5	0·683	29·56	......	48·1	2, N.W.	1	7	+ 3 31 1[illegible]
	5264	γ Serpentis	......	15 51 6	113 50	3 6·3	6·6	0·500	29·86	......	48·0	....	......	8	+39 51 6[illegible]
	5414	δ Ophiuchi	......	16 8 12	133 15	3 59·2	60·4	0·500	29·86	......	48·0	....	......	7	+59 16 59·[illegible]
	5537	....	......	16 27 4	119 15	4 26·2	27·4	0·500	29·86	......	47·8	....	......	6	+45 17 26·[illegible]
	5821	(a) α Herculis	2·0	17 9 23	115 25	0 59·0	62·1	0·500	29·85	......	47·5	....	......	7	+41 24 [illegible]
	......	Nadir ||	......	17 29 0	254 0	1 51·5	58·3	0·500	29·85	49·9	47·0	....	......	......	....
	......	Nadir ||	......	....	254 0	1 61·8	71·0	0·500	......	......	......	....	......	......	....
June 16	......	Nadir ||	......	16 12 0	254 0	1 52·7	60·6	0·500	29·90	50·1	47·9	....	......	......	....
	......	Nadir ||	......	....	254 0	1 62·5	70·9	0·500	......	......	......	....	......	......	....
	5537	....	......	16 27 57	119 15	4 29·9	28·0	0·500	29·90	......	47·7	....	......	6	+45 17 25·[illegible]
	......	Nadir ||	......	17 13 0	254 0	1 51·9	61·3	0·500	29·89	48·3	47·5	....	......	......	....
	......	Nadir ||	......	....	254 0	1 62·7	71·0	0·500	......	......	......	....	......	......	....
July 28	......	Nadir ||	......	18 12 0	254 0	1 52·0	60·2	0·500	......	60·5	......	....	......	......	....
	......	Nadir ||	......	....	254 0	1 64·9	75·2	0·500	......	......	......	....	......	......	....
	6420	β Lyræ	......	....	96 45	0 49·3	53·5	0·633	29·65	58·8	59·2	....	......	......	+22 41 51·[illegible]
	6855	....	......	19 52 31	113 45	4 24·0	29·7	0·500	29·66	......	59·1	....	......	......	+39 47 26·[illegible]

(a) Sky getting cloudy.

ROYAL OBSERVATORY, EDINBURGH.

Individual Observations of Mean North Polar Distances of Stars observed at the Royal Observatory, Edinburgh, in the Year 1869, reduced to January 1, 1869.

Date: Month and Day.	Date: Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1869.
B.A.C. 1434.				
			h. m.	° ′ ″
Jan. 4	0·01	(5·0) (a)	4 31	77 45 14·7
B.A.C. 1623, β Orionis.				
Jan. 4	0·01	(1·0)	5 8	98 21 16·7
5	0·01			17·0
6	0·01			14·3
26	0·07			14·9
B.A.C. 1696.				
Jan. 26	0·07	(7·5)	5 20	87 10 50·0
B.A.C. 1730, δ Orionis.				
Jan. 4	0·01	(2·0)	5 25	90 23 53·4
6	0·01			55·0
B.A.C. 1751.				
Jan. 22	0·06	(5·5)	5 29	24 22 41·2
26	0·07			41·8
B.A.C. 1813.				
Jan. 26	0·07	(6·0)	5 39	21 34 19·3
B.A.C. 1826.				
Jan. 6	0·01	(6·0)	5 40	60 31 43·4
B.A.C. 1883, α Orionis.				
Jan. 26	0·07	(1·0)	5 48	82 37 10·5
B.A.C. 2022.				
			h. m.	° ′ ″
Jan. 6	0·01		6 10	80 0 45·1
25	0·07	6·0		44·3
B.A.C. 2060.				
Jan. 21	0·05	(8·0)	6 17	85 20 33·5
Feb. 4	0·09			33·4
B.A.C. 2070 (Nebula reputed). (b)				
Jan. 26	0·07	(Neb.)	6 18	78 41 43·6
B.A.C. 2101.				
Jan. 25	0·07	(7·5)	6 23	67 22 14·8
B.A.C. 2184.				
Jan. 21	0·05	(7·0)	6 34	73 28 58·7
26	0·07			59·2
Feb. 2	0·09			54·0
B.A.C. 2238.				
Jan. 21	0·05	(6·0)	6 44	66 14 46·8
26	0·07			47·5
Feb. 2	0·09			47·4
B.A.C. 2292.				
Jan. 25	0·07	(6·0)	6 54	79 11 33·4
26	0·07			37·4
Feb. 2	0·09			36·3
11	0·11			36·0
B.A.C. 2334.				
Jan. 25	0·07	(6·0)	7 2	39 59 54·6
Feb. 2	0·09			56·7
B.A.C. 2363.				
			h. m.	° ′ ″
Feb. 11	0·11	(7·5)	7 6	65 4 2·3
24	0·15			1·0
B.A.C. 2410, δ Geminorum.				
Feb. 2	0·09	(3·0)	7 12	67 46 43·2
4	0·09			43·7
B.A.C. 2463.				
Jan. 21	0·05	(7·0)	7 21	62 11 4·2
25	0·07			5·0
26	0·07			5·1
Feb. 2	0·09			2·5
11	0·11			4·9
B.A.C. 2488.				
Jan. 21	0·05	(6·0)	7 27	43 32 2·0
25	0·07			2·3
26	0·07			4·2
Mar. 2	0·16			5·0
B.A.C. 2522, α Canis Minoris.				
Jan. 26	0·07	(1·0)	7 32	84 26 32·1
Feb. 2	0·09			29·5
8	0·10			28·9
11	0·11			29·6
12	0·12			25·9
B.A.C. 2586.				
Jan. 21	0·05	(7·0)	7 42	61 28 31·2
25	0·07			30·7
26	0·07			32·5
Feb. 2	0·09			29·4
4	0·09			33·8
8	0·10			33·1
17	0·13			32·3

(a) Magnitudes in parenthesis are the tabular ones of the British Association Catalogue.

(b) Differs from Tab. N. P. D. by 2″.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1869.
B.A.C. 2683.				
Feb. 2	0·09	(6·0)	h. m. 7 57	° ′ ″ 70 47 22·5
17	0·13			23·1
24	0·15			22·8
B.A.C. 2688.				
Feb. 11	0·11	(7·0)	7 58	62 5 59·6
B.A.C. 2748.				
Feb. 2	0·09	(7·0)	8 5	75 36 26·0
17	0·13			27·2
24	0·15			24·8
B.A.C. 2867.				
Feb. 11	0·11	(6·5)	8 26	79 29 31·7
Mar. 2	0·16			30·6
B.A.C. 2882.				
Feb. 24	0·15	(7·0)	8 29	29 36 21·1
B.A.C. 2971, ι Hydræ.				
Feb. 5	0·10	(4·0)	8 40	83 6 8·7
11	0·11			8·2
12	0·12			7·6
17	0·13			5·5
24	0·15			6·0
Mar. 2	0·16			8·9
5	0·17			7·0
B.A.C. 3013.				
Feb. 24	0·15	(6·0)	8 45	84 10 27·0
B.A.C. 3053.				
Feb. 17	0·13	(6·0)	8 51	80 6 39·5
B.A.C. 3083.				
Feb. 11	0·11	(6·5)	8 56	38 39 22·6
Mar. 2	0·16			23·7
5	0·17			26·3
B.A.C. 3133.				
Feb. 16	0·13	(6·0)	h. m. 9 5	° ′ ″ 85 35 46·3
17	0·13			51·1
24	0·15			49·7
Mar. 16	0·20			51·0
B.A.C. 3157.				
Mar. 17	0·21	(7·0)	9 10	29 40 11·4
B.A.C. 3223, α Hydræ.				
Feb. 16	0·13	(2·0)	9 21	98 5 33·1
17	0·13			31·3
24	0·15			28·7
25	0·15			32·1
Mar. 2	0·16			30·4
5	0·17			27·7
16	0·20			33·5
B.A.C. 3242, θ Ursæ Majoris.				
Mar. 17	0·21	(3·0)	9 24	37 43 40·0
B.A.C. 3325.				
Mar. 17	0·21	(6·0)	9 37	26 8 45·4
B.A.C. 3331, ε Leonis.				
Feb. 16	0·13	(3·0)	9 38	65 37 26·2
25	0·15			31·7
Mar. 2	0·16			30·3
16	0·20			28·4
B.A.C. 3418.				
Mar. 2	0·16	(8·0)	9 54	80 25 11·7
17	0·21			14·0
B.A.C. 3484.				
Mar. 2	0·16		10 7	57 55 34·1
17	0·21			28·8
30	0·24	6·0		36·8
B.A.C. 3592.				
Mar. 5	0·17		h. m. 10 23	° ′ ″ 87 50 4·3
16	0·20			6·5
30	0·24	6·0		5·9
B.A.C. 3652.				
Mar. 16	0·20	(7·5)	10 34	78 34 42·5
17	0·21			37·3
B.A.C. 3726.				
Mar. 17	0·21		10 45	88 16 50·1
18	0·21			49·2
19	0·21			49·3
30	0·24	6·0		54·2
B.A.C. 3780.				
Mar. 30	0·24	7·0	10 57	81 42 45·9
B.A.C. 3821. (a)				
Mar. 19	0·21	(6·0)	11 4	21 1 6·0
B.A.C. 3834, δ Leonis.				
Mar. 30	0·24	(2·5)	11 7	68 45 37·1
B.A.C. 3869.				
Mar. 18	0·21	(6·0)	11 16	71 50 43·2
19	0·21			43·3
B.A.C. 3996.				
Mar. 30	0·24	6·0	11 42	84 4 59·9
April 12	0·28			60·8
13	0·28			58·0
B.A.C. 4111.				
April 28	0·32	(7·5)	12 5	11 49 52·4
B.A.C. 4153.				
April 13	0·28	(6·0)	12 14	62 38 58·1
23	0·31			55·5

(a) Differs from Tab. N. P. D. by 1′.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1869.
B.A.C. 4153.				
April 27	0·32	(6·0)	h. m. 12 14	° ′ ″ 62 38 50·1
28	0·32			54·8
B.A.C. 4205.				
April 13	0·28	6·0	12 22	63 2 50·1
B.A.C. 4231.				
April 12	0·28	7·0	12 27	64 49 45·9
May 4	0·34			39·2
B.A.C. 4364.				
April 12	0·28	(6·0)	12 55	68 1 32·3
13	0·28			30·3
23	0·31			27·3
27	0·32			23·0
30	0·33			26·4
May 11	0·36			26·9
12	0·36			23·1
B.A.C. 4421, β Comæ.				
April 30	0·33	(4·5)	13 6	61 27 23·3
May 4	0·34			25·9
11	0·36			23·9
12	0·36			21·2
13	0·36			24·6
14	0·36			25·9
B.A.C. 4457.				
May 11	0·36	(6·5)	13 13	54 10 59·7
12	0·36			58·6
13	0·36			58·8
14	0·36			58·6
B.A.C. 4480, α Virginis.				
April 12	0·28	1·0	13 18	100 28 32·5
30	0·33			31·0
May 4	0·34			36·0
B.A.C. 4503.				
April 13	0·28	(7·0)	h. m. 13 23	° ′ ″ 85 26 54·7
May 11	0·36			58·6
12	0·36			57·2
14	0·36			59·3
B.A.C. 4555.				
April 30	0·33	(7·5)	13 32	36 44 18·0
B.A.C. 4559.				
April 13	0·28		13 33	78 35 14·3
23	0·31			15·7
May 14	0·36	6·0		15·8
B.A.C. 4575.				
April 12	0·28	(6·0)	13 38	66 38 16·2
May 11	0·36			16·0
12	0·36			18·1
B.A.C. 4610.				
May 14	0·36	6·0	13 43	58 9 29·1
B.A.C. 4621.				
May 11	0·36	(6·0)	13 43	70 43 9·0
B.A.C. 4627.				
April 13	0·28	(7·0)	13 45	54 34 40·5
B.A.C. 4652.				
April 12	0·28		13 50	57 19 36·7
May 4	0·34	7·0		38·6
13	0·36			38·5
B.A.C. 4676.				
April 13	0·28	(7·0)	13 56	57 48 3·9
27	0·32			4·4
May 11	0·36			3·3
28	0·40			4·9
B.A.C. 4694.				
April 23	0·31	7·0	h. m. 14 1	° ′ ″ 58 31 25·5
30	0·33			22·7
May 12	0·36			27·0
14	0·36			23·0
B.A.C. 4723.				
April 30	0·33	(7·0)	14 8	60 16 52·1
May 4	0·34			51·0
11	0·36			51·9
24	0·39			52·9
B.A.C. 4729, α Bootis.				
April 27	0·32	(1·0)	14 10	70 8 5·3
B.A.C. 4756. (a)				
May 28	0·40	(6·0)	14 14	37 21 48·0
B.A.C. 4797.				
April 23	0·31	(6·0)	14 23	53 12 59·1
27	0·32			57·0
30	0·33			55·3
May 12	0·36			56·9
13	0·36			57·4
14	0·36			57·8
24	0·39			59·3
B.A.C. 4809.				
May 4	0·34	6·0	14 26	62 44 35·5
B.A.C. 4820.				
May 14	0·36	(6·0)	14 29	56 53 22·9
28	0·40			24·2
B.A.C. 4863.				
May 12	0·36	(6·0)	14 37	52 41 5·0
13	0·36			3·7
24	0·39			0·9

(a) Differs from Tab. N. P. D. by 1′.

Date. Month and Day.	Date. Fraction of Year.	Magnitude observed.	Approximate Right Ascension.	Mean North Polar Distance, January 1, 1869.
B.A.C. 4876, ε Bootis.				
May 14	0·36	(3·0)	h. m. 14 39	° ′ ″ 62 22 17·4
19	0·38			24·0
June 4	0·42			21·5
8	0·43			21·8
B.A.C. 4934.				
May 11	0·36	(6·5)	14 51	48 20 2·8
12	0·36			5·4
14	0·36			4·7
24	0·39			5·0
B.A.C. 4942.				
May 28	0·40	(6·0)	14 54	49 50 2·1
B.A.C. 4965.				
May 14	0·36	(5·5)	14 58	44 50 43·4
24	0·39			32·1
B.A.C. 5000.				
May 12	0·36	(6·5)	15 5	56 25 26·2
B.A.C. 5034, β Libræ.				
May 28	0·40	(2·5)	15 10	98 53 52·7
B.A.C. 5071. (a)				
May 14	0·36	(6·0)	h. m. 15 16	° ′ ″ 37 34 10·6
24	0·39			8·8
June 9	0·44			9·6
B.A.C. 5091.				
May 11	0·36	(6·0)	15 20	26 11 24·7
12	0·36			25·0
28	0·40			26·9
June 8	0·43			24·5
B.A.C. 5284, γ Serpentis.				
May 14	0·36	(3·0)	15 50	73 54 32·7
24	0·39			32·4
28	0·40			34·1
June 8	0·43			33·6
9	0·44			36·0
B.A.C. 5414, δ Ophiuchi.				
June 2	0·42	(3·0)	16 7	93 21 17·1
8	0·43			14·7
9	0·44			15·8
B.A.C. 5452.				
May 24	0·39	(6·0)	16 14	68 32 59·5
28	0·40			59·4
B.A.C. 5504.				
May 24	0·39	(7·0)	16 22	74 21 34·0
B.A.C. 5537.				
May 28	0·40	(6·0)	h. m. 16 27	° ′ ″ 79 21 10·2
June 9	0·44			6·2
16	0·45			9·7
B.A.C. 5634.				
May 28	0·40	(7·0)	16 42	78 38 2·6
B.A.C. 5716.				
May 28	0·40	(6·5)	16 53	74 20 54·4
31	0·41			57·5
B.A.C. 5821, α Herculis.				
June 9	0·44	(3·5)	17 9	75 27 32·5
B.A.C. 6429, β Lyræ.				
July 28	0·57	(3·0)	18 45	56 47 9·4
B.A.C. 6855.				
July 28	0·57	(7·5)	19 52	73 51 3·7

(a) Differs from Tab. N. P. D. by 2″.

EXPLANATIONS OF THE MURAL CIRCLE OBSERVATIONS IN 1869.

The observations with the Mural Circle in 1869 were taken by Mr Peter Williamson, Second Assistant Astronomer, under the supervision of the Astronomer.

The subjects observed were chiefly stars remarkable for proper motion. They are designated as far as possible by the number in the British Association Catalogue in col. 2, and by proper name or description in col. 3, assisted if necessary by notes at the foot of the page, as well as by approximate estimate of the magnitude in col. 4, and time of transit past centre of field (by an uncorrected sidereal journeyman clock, but showing fairly differences from star to star) in col. 5.

In Polar distance the star was always carefully bisected when crossing the centre of the field, either at the precise instant if its motion was steady, or in its mean path through several seconds if unsteady or undulatory, as was too often the case. Such bisection being performed by bringing the stellar image between two parallel lines about 7 seconds of space apart: the lines being illuminated in a dark field.

The same general principles of observation as in former years have been kept up with improved details described in 1860. The completion of every observation therefore in Polar distance still depends largely on the Telescope micrometer, whose numbers are a necessary addition to the readings both of the Pointer on the Limb of the Circle and of the two horizontal Microscopes A, B; all which numerical particulars are given in columns 6, 7, 8, and 9.

In columns 10 and 12, the readings of the Barometer and exterior thermometer are noted for refraction purposes: the interior thermometer being assumed to be practically the same as the exterior, for all star-observations when a thorough draught was kept up through the observing room, as was always the case during star observations. During observations for the Nadir-point, on the contrary, all shutters and windows were closed to prevent disturbance to the mercury, and then a sensible difference between the thermometers usually occurred, and is shown by the figures in the narrow column 11, compared with those in column 12.

Columns 13, 14, and 15 contain various points connected with the meteorologic and other circumstances of the observations, as they appeared to the observer at the time; and column 16 contains the reduction of the angular observations in columns 6 to 9, to the stage of "Apparent Zenith Distance South."

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To this end, the readings of the Microscopes have been corrected for the error of their runs, as ascertained over 5′ spaces on the limb of the Circle, with the telescope directed first to the Zenith and then to the Nadir: also for the difference between the mean of two and the mean of six Microscopes as ascertained by examination in 1855 (see p. 76, vol. xii.); also for the Telescope micrometer readings converted into arc on the estimate of one revolution being equal to 27·704″, as ascertained by observations in the Mercury trough with the collimating eye-piece, combined with readings of all the six circumferential Microscopes. The Circle positions are then converted into Apparent Zenith Distances, by the application of a reading for the Zenith point derived from observation of the Nadir, as shown by making the bisecting wire cover its illuminated image in the Mercury trough, an observation made generally both at the beginning and conclusion of every series of star measures. The chief data of these several corrections are contained in the following Tables I., II., and III.

TABLE I.

CORRECTION FOR RUNS OF MICROSCOPES IN 1869.

Date.	Thermometer.		Runs Correction observed.				Adopted Runs Correction.	For Period.
	Interior.	Exterior.	Nadir.	Zenith.	Means of Obs.	Collected Means.		
1869.	° F.	° F.	″	″	″	″	″	1869.
Jan. 22	40·9	37·1	+1·0 +0·2	+1·6 +1·6	+1·3 +0·9	+1·1	+1·2	Jan. 1 to Mar. 30.
Mar. 18	38·6	38·5	+0·2	+2·2	+1·2	+1·2		
April 19	48·8	47·1	+0·1 +0·4	+0·6 +0·8	+0·4 +0·6	+0·5	+0·8	April 2 to April 30.
May 4	45·7	40·0	−0·6	+2·0	+0·7	+0·7	+0·7	May 4 to June 16.
							+0·3	July 23 to July 28.

TABLE II.

CORRECTION TO REDUCE THE MEAN OF THE TWO HORIZONTAL, TO THE MEAN OF THE WHOLE SIX, MICROSCOPES FOR THE YEAR 1869.

Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.
0° & 180°	+1·0	30° & 210°	+0·2
1 181	+0·9	31 211	+0·2
2 182	+0·8	32 212	+0·1
3 183	+0·8	33 213	+0·1
4 184	+0·7	34 214	0·0
5 185	+0·6	35 215	0·0
6 186	+0·6	36 216	0·0
7 187	+0·6	37 217	+0·1
8 188	+0·5	38 218	+0·1
9 189	+0·5	39 219	+0·2
10 190	+0·5	40 220	+0·2
11 191	+0·4	41 221	+0·2
12 192	+0·4	42 222	+0·2
13 193	+0·3	43 223	+0·1
14 194	+0·3	44 224	+0·1
15 195	+0·2	45 225	+0·1
16 196	+0·2	46 226	+0·2
17 197	+0·2	47 227	+0·2
18 198	+0·2	48 228	+0·3
19 199	+0·2	49 229	+0·3
20 200	+0·2	50 230	+0·4
21 201	+0·2	51 231	+0·4
22 202	+0·2	52 232	+0·3
23 203	+0·2	53 233	+0·3
24 204	+0·2	54 234	+0·2
25 205	+0·2	55 235	+0·2
26 206	+0·2	56 236	+0·3
27 207	+0·2	57 237	+0·3
28 208	+0·2	58 238	+0·4
29 209	+0·2	59 239	+0·4

Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.
60° & 210°	+0·5	90° & 270°	+2·4
61 241	+0·6	91 271	+2·4
62 242	+0·7	92 272	+2·5
63 243	+0·7	93 273	+2·5
64 244	+0·8	94 274	+2·6
65 245	+0·9	95 275	+2·6
66 246	+0·9	96 276	+2·6
67 247	+1·0	97 277	+2·7
68 248	+1·0	98 278	+2·7
69 249	+1·1	99 279	+2·8
70 250	+1·1	100 280	+2·8
71 251	+1·2	101 281	+2·9
72 252	+1·2	102 282	+2·9
73 253	+1·3	103 283	+3·0
74 254	+1·3	104 284	+3·0
75 255	+1·4	105 285	+3·1
76 256	+1·5	106 286	+3·1
77 257	+1·6	107 287	+3·2
78 258	+1·7	108 288	+3·2
79 259	+1·8	109 289	+3·3
80 260	+1·9	110 290	+3·3
81 261	+1·9	111 291	+3·3
82 262	+2·0	112 292	+3·3
83 263	+2·0	113 293	+3·4
84 264	+2·1	114 294	+3·4
85 265	+2·1	115 295	+3·4
86 266	+2·2	116 296	+3·3
87 267	+2·2	117 297	+3·3
88 268	+2·3	118 298	+3·2
89 269	+2·3	119 299	+3·2

Circle Reading on Microscope A.	Correction.	Circle Reading on Microscope A.	Correction.
120° & 300°	+3·1	150° & 330°	+2·4
121 301	+3·1	151 331	+2·4
122 302	+3·0	152 332	+2·3
123 303	+3·0	153 333	+2·3
124 304	+2·9	154 334	+2·2
125 305	+2·9	155 335	+2·2
126 306	+2·9	156 336	+2·1
127 307	+2·9	157 337	+2·1
128 308	+2·8	158 338	+2·0
129 309	+2·8	159 339	+2·0
130 310	+2·8	160 340	+1·9
131 311	+2·8	161 341	+1·9
132 312	+2·8	162 342	+1·9
133 313	+2·7	163 343	+1·8
134 314	+2·7	164 344	+1·8
135 315	+2·7	165 345	+1·8
136 316	+2·7	166 346	+1·7
137 317	+2·7	167 347	+1·6
138 318	+2·8	168 348	+1·6
139 319	+2·8	169 349	+1·5
140 320	+2·8	170 350	+1·4
141 321	+2·8	171 351	+1·4
142 322	+2·8	172 352	+1·3
143 323	+2·7	173 353	+1·3
144 324	+2·7	174 354	+1·2
145 325	+2·7	175 355	+1·2
146 326	+2·6	176 356	+1·2
147 327	+2·6	177 357	+1·1
148 328	+2·5	178 358	+1·1
149 329	+2·5	179 359	+1·0

TABLE III.

NADIR AND ZENITH POINTS ON MURAL CIRCLE IN 1869.

Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.	Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1869. Jan. 4	41·0°	254° 2′ 18″·8 18·8	74° 2′ 18″·8	18″·8	1869. Feb. 24	41·6°	254° 2′ 19″·2 19·1	74° 2′ 19″·2	19″·0
5	43·0	19·0 19·1	19·0	18·6	25	43·0	16·8 16·8	16·8	17·5
6	43·3	18·7 18·8	18·8	18·8	Mar. 2	35·4	18·0 17·3	17·6	17·5
21	43·4	19·0 19·4	19·2	18·8	5	42·5	17·4 17·2	17·3	17·5
22	41·6	18·6 18·8	18·7	18·8	16	35·7	17·5 17·5	17·5	17·5
25	39·4	19·4 17·6	18·5	18·6	17	39·0	17·8 17·5	17·6	17·5
26	39·1	17·3 19·2	18·2	18·5	18	40·0	17·0 17·3	17·2	17·4
Feb. 2	40·4	17·8 19·1	18·4	18·5	19	39·6	16·7 17·4	17·0	17·4
4	49·1	19·2 19·2	19·2	18·8	30	42·0	17·7 17·8	17·8	17·6
5	43·8	19·4 19·4	19·4	19·0	April 2	42·8	17·1 18·0	17·6	17·6
8	46·0	17·4 17·6	17·5	18·2	12	54·0	17·0 18·3	17·6	17·9
11	40·2	17·6 19·2	18·4	18·4	13	55·8	18·7 18·4	18·6	18·4
12	40·8	20·6 18·5	19·6	19·0	23	48·9	19·0 18·8	18·9	18·7
16	45·8	18·1 18·8	18·4	18·8	27	52·4	18·6 16·8	17·7	18·3
17	45·0	18·6 18·7	18·6	18·8	28	51·0	17·6 17·9	17·8	18·1

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Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.	Date.	Mean Interior Thermometer.	Nadir Point observed.	Zenith Point computed.	Seconds of Zenith Point adopted.
1869.					1869.				
April 30	49°·8	254° 2′ 17″·6 19·2	74° 2′ 18″·4	18″·2	May 28	47°·4	254° 2′ 16″·9 17·0	74° 2′ 17″·0	17″·3
May 4	40·0	17·7 17·9	17·8	18·0	31	48·9	17·0 18·0	17·5	17·3
11	45·6	17·4 18·6	18·0	18·0	June 2	50·8	17·2 17·6	17·4	17·4
12	46·5	17·8 17·9	17·8	17·8	4	52·8	17·7 17·9	17·8	17·7
13	48·0	17·6 18·0	17·8	17·8	8	57·2	18·2 18·4	18·3	18·0
14	47·5	17·9 17·6	17·8	17·6	9	51·6	18·8 17·0	17·9	17·9
19	49·4	17·3	17·3	17·4	16	49·2	17·2 17·4	17·3	17·8
24	48·6	17·1 17·4	17·2	17·4	July 28	60·5	18·4	18·4	17·9
27	46·8	17·6	17·6	17·3					

For the remaining reductions, the refractions have been computed by Bessel's Table, as represented in the Rev. R. Sheepshank's compendious forms; the Latitude of the Observatory has been assumed as in former years $=55° 57' 23''\cdot2$; and the *Apparent* N. Polar Distances on the day of observation have been converted into *Mean* North Polar Distances for the beginning of the year of observation, by applying the corrections for precession, nutation, aberration, and proper motions, taken from the elements and subsidiary tables given in the Nautical Almanac and the British Association Catalogue; and whose sum is represented in the last column of each observation-page. The individual results for magnitude and place of each star are collected on pp. 751 to 754.

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ROYAL OBSERVATORY, EDINBURGH.

CATALOGUE

OF

THE MEAN PLACES OF ALL STARS

OBSERVED WITH

EITHER THE TRANSIT INSTRUMENT OR MURAL CIRCLE,

DURING

THE YEAR, AND

REDUCED TO JANUARY 1,

1869.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h m s		° ′ ″			
4	α Andromedæ	(1·0) (a)	......	0 1 37·19	0·65	61 38 ...	......	11	0
26	γ Pegasi	(2·0)	......	0 6 29·52	0·69	75 33 ...	......	9	0
112	12 Ceti	(6·0)	......	0 23 21·22	0·79	94 41 ...	......	2	0
288	ε Piscium	(4·0)	......	0 56 8·75	0·84	82 49 ...	......	15	0
420	θ Ceti	(3·0)	......	1 17 28·52	0·90	98 52 ...	......	2	0
453	η Piscium	(4·0)	......	1 24 28·62	0·83	75 20 ...	......	3	0
518	ν Piscium	(5·0)	......	1 34 36·91	0·86	85 11 ...	......	12	0
577	β Arietis	(3·0)	......	1 47 24·42	0·86	69 50 ...	......	17	0
648	α Arietis	(2·0)	......	1 59 47·54	0·82	67 10 ...	......	16	0
704	67 Ceti	(6·0)	......	2 10 26·98	0·86	97 2 ...	......	11	0
837	γ Ceti	(3·0)	......	2 36 30·84	0·89	87 19 ...	......	17	0
949	α Ceti	(2·5)	......	2 55 25·95	0·86	86 26 ...	......	18	0
986	δ Arietis	(4·0)	......	3 4 8·51	0·90	70 46 ...	......	6	0
1166	η Tauri	(3·0)	......	3 39 42·06	0·92	66 18 ...	......	11	0
1376	ε Tauri	(3·5)	......	4 20 58·22	0·96	71 7 ...	......	9	0
1420	α Tauri	(1·0)	......	4 28 24·32	0·58	73 45 ...	......	11	0
1434	......	......	(5·0)	4 31 ...	......	77 45 14·7	0·01	0	1
1520	ι Aurigæ	(4·0)	......	4 48 27·92	0·77	57 3 ...	......	9	0
1623	β Orionis	(1·0)	......	5 8 14·54	0·36	98 21 15·7	0·02	3	4
1681	β Tauri	(2·0)	......	5 19 0·76	0·70	61 30 ...	......	10	0
1696	......	......	(7·5)	5 20 ...	......	87 10 50·0	0·07	0	1
1730	δ Orionis	(2·0)	......	5 25 18·84	0·50	90 23 54·2	0·01	6	2
1751	......	......	(5·5)	5 29 ...	......	24 22 41·5	0·06	0	2
1765	ε Orionis	(2·5)	......	5 29 33·96	0·50	91 17 ...	......	6	0
1813	......	......	(6·0)	5 30 ...	......	21 34 19·3	0·07	0	1
1826	......	......	(6·0)	5 40 ...	......	80 31 43·4	0·01	0	1
1883	α Orionis	(1·0)	......	5 48 4·82	0·41	82 37 10·5	0·07	5	1
1958	ν Orionis	(4·5)	......	6 0 5·55	0·01	75 13 ...	......	2	0
2022	......	......	6·0	6 10 ...	......	80 0 44·7	0·04	0	2
2060	......	......	(8·0)	6 17 ...	......	8 20 33·4	0·07	0	2
2070	(b) Reputed Nebula	......	(Neb.)	6 18 ...	......	78 41 43·6	0·07	0	1
2101	......	......	(7·5)	6 23 ...	......	67 22 14·8	0·07	0	1
2163	γ Geminorum	(2·5)	......	6 30 8·62	0·06	73 30 ...	......	4	0
2184	......	......	(7·0)	6 34 ...	......	73 28 57·3	0·07	0	3
2238	......	......	(6·0)	6 44 ...	......	66 14 47·2	0·07	0	3
2292	......	......	(6·0)	6 54 ...	......	79 11 36·3	0·08	0	4
2334	......	......	(6·0)	7 2 ...	......	39 59 55·6	0·08	0	2
2363	......	......	(7·5)	7 6 ...	......	65 4 1·6	0·13	0	2
2410	δ Geminorum	(3·0)	......	7 12 17·91	0·14	67 46 43·4	0·09	8	2
2463	......	......	(7·0)	7 21 ...	......	62 11 4·3	0·08	0	5
2485	α² Geminorum	(1·5)	......	7 26 14·30	0·14	57 50 ...	......	11	0
2488	......	......	(6·0)	7 27 ...	......	43 32 3·4	0·09	0	4
2522	α Canis Minoris	(1·0)	......	7 32 26·54	0·14	84 26 29·2	0·10	9	5
2555	β Geminorum	(2·0)	......	7 37 17·80	0·14	61 40 ...	......	10	0
2586	......	......	(7·0)	7 42 ...	......	61 28 31·9	0·09	0	7
2672	6 Cancri	(5·5)	......	7 55 28·20	0·10	61 50 ...	......	7	0
2683	......	......	(6·0)	7 57 ...	......	70 47 22·8	0·12	0	3
2688	......	......	(7·0)	7 58 ...	......	62 5 59·6	0·11	0	1
2748	......	......	(7·0)	8 5 ...	......	75 36 26·0	0·12	0	3
2862	η Cancri	(6·0)	......	8 25 7·83	0·14	69 7 ...	......	5	0
2867	......	...	(6·5)	8 26 ...	......	79 29 31·2	0·14	0	2

(a) Numbers in parenthesis are the magnitudes of the British Association Catalogue.

(b) Differs from Tab. N. P. D. by 2′.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.			h. m. s.		° ′ ″		R. A.	N. P. D.
2882	....	......	(7·0)	8 29 ...	......	29 36 21·1	0·15	0	1
2971	ι Hydræ..............................	(4·0)	......	8 39 50·21	0·15	83 6 7·4	0·13	11	7
3013	....	......	(6·0)	8 45 ...	......	84 10 27·0	0·15	0	1
3053	....	......	(6·0)	8 51 ...	......	80 6 32·5	0·13	0	1
3083	....	......	(6·5)	8 56 ...	......	38 39 24·2	0·15	0	3
3133	....	......	(6·0)	9 5 ...	......	85 35 49·8	0·15	0	4
3157	....	......	(7·0)	9 10 ...	......	29 40 11·4	0·21	0	1
3171	83 Cancri............................	(6·0)	......	9 11 40·09	0·16	71 44 ...	......	9	0
3223	α Hydræ..............................	(2·0)	......	9 21 8·94	0·14	98 5 31·0	0·16	6	7
3242	θ Ursæ Majoris......................	......	(3·0)	9 24 ...	......	37 43 40·0	0·21	0	1
3325	....	......	(6·0)	9 37 ...	......	26 8 45·4	0·21	0	1
3331	ε Leonis..............................	(3·0)	......	9 38 24·67	0·19	65 37 29·2	0·16	9	4
3415	π Leonis..............................	(4·5)	......	9 53 17·34	0·17	81 20 ...	......	8	0
3418	....	......	(8·0)	9 54 ...	......	80 25 12·8	0·18	0	2
3459	α Leonis..............................	(1·0)	......	10 1 23·54	0·21	77 24 ...	......	13	0
3484	....	......	6·0	10 7 ...	......	57 55 33·2	0·20	0	3
3523	γ^1 Leonis..............................	(2·0)	......	10 12 44·84	0·20	69 30 ...	......	7	0
3592	....	......	6·0	10 23 ...	......	87 50 5·6	0·20	0	3
3609	ρ Leonis..............................	(4·0)	......	10 25 54·67	0·21	80 1 ...	......	5	0
3662	....	......	(7·5)	10 34 ...	......	78 34 39·9	0·20	0	2
3708	l Leonis..............................	(6·0)	......	10 42 22·20	0·25	78 46 ...	......	4	0
3726	....	......	6·0	10 45 ...	......	88 16 50·7	0·22	0	4
3760	....	......	7·0	10 57 ...	......	81 42 45·9	0·24	0	1
3788	χ Leonis..............................	(4·5)	......	10 58 15·49	0·25	81 57 ...	......	7	0
3821	(a)	......	(6·0)	11 4 ...	......	21 1 6·0	0·21	0	1
3834	δ Leonis..............................	(2·5)	......	11 7 8·30	0·24	68 45 37·1	0·24	9	1
3869	....	......	(6·0)	11 16 ...	......	71 50 43·2	0·21	0	2
3946	υ Leonis..............................	(4·5)	......	11 30 14·49	0·25	90 6 ...	......	4	0
3995	β Leonis..............................	(2·5)	......	11 42 22·55	0·34	74 42 ...	......	5	0
3996	....	......	6·0	11 42 ...	......	84 4 59·6	0·27	0	3
4111	....	......	(7·5)	12 5 ...	......	11 49 52·4	0·32	0	1
4145	η Virginis............................	(3·5)	......	12 13 12·29	0·31	89 56 ...	......	1	0
4153	....	......	(6·0)	12 14 ...	......	62 38 54·6	0·31	0	4
4205	....	......	6·0	12 22 ...	......	63 2 50·1	0·28	0	1
4231	....	......	7·0	12 27 ...	......	64 49 42·8	0·31	0	2
4364	....	......	(6·0)	12 55 ...	......	68 1 27·0	0·32	0	7
4401	θ Virginis............................	(4·5)	......	13 3 10·15	0·33	94 50 ...	......	7	0
4421	β Comæ..............................	......	(4·5)	13 6 ...	......	61 27 24·6	0·35	0	6
4457	....	......	(6·5)	13 13 ...	......	54 10 58·9	0·36	0	4
4460	α Virginis............................	......	1·0	13 18 ...	......	100 28 33·2	0·32	0	3
4503	....	......	(7·0)	13 23 ...	......	85 26 57·4	0·34	0	4
4532	ζ Virginis............................	(4·0)	......	13 28 1·17	0·34	89 56 ...	......	7	0
4555	....	......	(7·5)	13 32 ...	......	36 44 18·0	0·33	0	1
4559	....	......	6·0	13 33 ...	......	78 35 15·3	0·32	0	3
4575	....	......	(6·0)	13 38 ...	......	66 38 16·8	0·33	0	3
4610	....	......	6·0	13 43 ...	......	58 9 29·1	0·36	0	1
4621	....	......	(6·0)	13 43 ...	......	70 43 9·0	0·36	0	1
4627	....	......	(7·0)	13 45 ...	......	54 34 40·5	0·28	0	1
4648	η Bootis..............................	(3·0)	......	13 48 26·84	0·36	70 57 ...	......	12	0
4652	....	......	7·0	13 50 ...	......	57 19 37·9	0·33	0	3
4672	τ Virginis............................	(4·5)	......	13 54 58·84	0·34	87 49 ...	......	8	0

(a) Differs from Tab. N. P. D. by 1′.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
4676	....	......	(7·0)	13 56 ...	......	57 48 4·1	0·34	0	4
4694	....	......	7·0	14 1 ...	......	58 31 24·6	0·34	0	4
4723	....	......	(7·0)	14 8 ...	......	60 16 52·0	0·36	0	4
4729	α Bootis	(1·0)	......	14 9 41·22	0·35	70 8 5·3	0·32	12	1
4756	(a)	......	(6·0)	14 14 ...	......	37 21 48·0	0·40	0	1
4797	....	......	(6·0)	14 23 ...	......	53 12 57·5	0·35	0	7
4808	ε Bootis	(4·0)	......	14 26 11·08	0·34	59 3 ...	......	5	0
4809	....	......	6·0	14 26 ...	......	62 44 35·5	0·34	0	1
4820	....	......	(6·0)	14 29 ...	......	56 53 23·6	0·38	0	2
4863	....	......	(6·0)	14 37 ...	......	52 41 3·2	0·37	0	3
4876	ι Bootis	(3·0)	......	14 39 15·96	0·36	62 22 21·4	0·40	10	4
4934	....	......	(6·5)	14 51 ...	......	48 20 4·5	0·37	0	4
4942	....	......	(6·0)	14 54 ...	......	49 50 2·1	0·40	0	1
4965	....	......	(5·5)	14 58 ...	......	44 50 37·8	0·38	0	2
4969	ψ Bootis	(5·0)	......	14 58 50·04	0·41	62 32 ...	......	6	0
5000	....	......	(6·5)	15 5 ...	......	56 25 26·2	0·36	0	1
5034	β Libræ	(2·5)	......	15 9 57·56	0·36	98 53 52·7	0·40	1	1
5071	(b)	......	(6·0)	15 16 ...	......	37 34 9·7	0·40	0	3
5091	....	......	(6·0)	15 20 ...	......	26 11 25·3	0·39	0	4
5143	α Coronæ Borealis	(2·5)	......	15 29 8·54	0·41	62 51 ...	......	9	0
5196	α Serpentis	(2·5)	......	15 37 46·97	0·42	83 10 ...	......	11	0
5284	γ Serpentis	......	(3·0)	15 50 ...	......	73 54 33·8	0·40	0	5
5414	δ Ophiuchi	(3·0)	......	16 7 28·87	0·44	93 21 15·9	0·43	7	3
5452	....	......	(6·0)	16 14 ...	......	68 32 59·4	0·40	0	2
5504	....	......	(7·0)	16 22 ...	......	74 21 34·0	0·39	0	1
5537	....	......	(6·0)	16 27 ...	......	79 21 8·7	0·43	0	3
5604	ζ Herculis	(3·0)	......	16 36 20·94	0·46	58 9 ...	......	2	0
5634	....	......	(7·0)	16 42 ...	......	76 38 2·6	0·40	0	1
5708	κ Ophiuchi	(4·0)	......	16 51 28·08	0·46	80 25 ...	......	3	0
5716	....	......	(6·5)	16 53 ...	......	74 20 56·0	0·40	0	2
5821	α Herculis	(3·5)	......	17 8 40·47	0·47	75 27 32·5	0·44	10	1
5941	α Ophiuchi	(2·0)	......	17 28 51·18	0·50	77 21 ...	......	11	0
6021	μ Herculis	(4·0)	......	17 41 19·95	0·54	62 12 ...	......	4	0
6355	α Lyræ	(1·0)	......	18 32 30·18	0·57	51 20 ...	......	11	0
6429	β Lyræ	(3·0)	......	18 45 14·68	0·54	56 47 9·4	0·57	12	1
6523	ζ Aquilæ	(3·0)	......	18 59 23·35	0·55	76 20 ...	......	7	0
6595	ω Aquilæ	(5·0)	......	19 11 40·04	0·54	78 38 ...	......	2	0
6646	δ Aquilæ	(3·5)	......	19 18 53·51	0·58	87 9 ...	......	7	0
6772	γ Aquilæ	(3·0)	......	19 40 1·82	0·60	79 42 ...	......	9	0
6802	α Aquilæ	(1·5)	......	19 44 23·44	0·60	81 29 ...	......	10	0
6833	β Aquilæ	(3·5)	......	19 48 52·68	0·59	83 55 ...	......	9	0
6855	....	......	(7·5)	19 52 ...	......	73 51 3·7	0·57	0	1
6974	α² Capricorni	(3·0)	......	20 10 47·11	0·64	102 57 ...	......	1	0
7171	α Cygni	(1·0)	......	20 36 58·10	0·64	45 11 ...	......	1	0
7256	32 Vulpeculæ	(4·5)	......	20 48 58·68	0·66	62 26 ...	......	6	0
7368	ζ Cygni	(3·0)	......	21 7 21·69	0·67	60 19 ...	......	6	0
7478	β Aquarii	(3·0)	......	21 24 39·46	0·64	96 9 ...	......	1	0
7561	ι Pegasi	(2·5)	......	21 37 45·12	0·67	80 43 ...	......	6	0
7627	16 Pegasi	(5·5)	......	21 47 6·14	0·70	64 41 ...	......	2	0
7688	α Aquarii	(3·0)	......	21 59 3·20	0·70	90 57 ...	......	2	0
7773	δ Aquarii	(4·5)	......	22 9 55·08	0·70	98 26 ...	......	2	0

(a) Differs from Tab. N. P. D. by 1′.

(b) Differs from Tab. N. P. D. by 2′.

Stars.		Magnitude by Transit Observations.	Magnitude by Circle Observations.	Mean Right Ascension.	Fraction of Year.	Mean North Polar Distance.	Fraction of Year.	No. of Observations for Place.	
No. in B. A. C.	Name or Description.							R. A.	N. P. D.
				h. m. s.		° ′ ″			
7868	η Aquarii	(4·0)	......	22 28 37·36	0·71	90 48 ...	......	4	0
7908	ζ Pegasi	(3·0)	......	22 34 55·71	0·72	79 51 ...	......	8	0
8034	α Pegasi	(2·0)	......	22 58 14·19	0·65	75 30 ...	......	9	0
8105	γ Piscium	(4·5)	......	23 10 22·46	0·75	87 26 ...	......	5	0
8169	κ Piscium	(5·5)	......	23 20 12·99	0·74	89 28 ...	......	4	0
8233	ι Piscium	(4·5)	......	23 33 12·73	0·77	85 5 ...	......	10	0
8331	ω Piscium	(4·5)	......	23 52 35·09	0·79	83 52 ...	......	6	0

OBSERVATIONS

OF THE

EARTH-THERMOMETERS,

AT THE

ROYAL OBSERVATORY, EDINBURGH.

FROM 1860 TO 1869 INCLUSIVE:

PREFACED BY AN EXPLANATION,

AND APPENDIXED WITH TABLES CONTAINING MEANS OF THE WHOLE SERIES FROM 1837 TO 1869 INCLUSIVE.

EXPLANATION OF THE EARTH-THERMOMETER OBSERVATIONS.

These observations are in sequence to those for 1855 to 1859 inclusive contained in vol. xii. pp. 393 to 400; and these again to the series for 1837 to 1854 inclusive, contained in vol. xi. pp. 225 to 265.

At pp. 226 to 234 of vol. xi. there is a full description in the words of the late lamented Principal Forbes of the construction, and establishment of the instruments and the several corrections which the observations made with them require; and at pp. 263 to 265 there is a short note by myself touching the corrections actually applied, and which were all computed rigorously according to Principal Forbes' formulæ.

The same method was employed in vol. xii., for the observations from 1855 to 1859, and it was commenced in the present volume for the year 1860, and carried on until December 24 of the same year, when, in the midst of the intense cold which then prevailed, t_2 or the second deepest thermometer was found to have its glass stem cracked off close below the surface of the ground, and with this forced cessation of any readings from that quarter the beautiful system of series for computing the "first correction," or that for the temperature of the stem, immersed in the earth, of t_1 became impossible.

I had some correspondence with Principal Forbes, after that misfortune to one of the instruments which he had taken a lively interest in for so many years, as to what *he* thought ought to be done, or what he would *like* to have done; feeling sure that he would be content with nothing but the best and most accurate result possible; and his idea seemed to be, that no recasting of the formulæ would be so certain as the mean of former years when the important datum of t_2 was in existence and made use of; for, while the correction is exceedingly small, or seldom amounting to three-hundredths of a degree Fahrenheit, the greater part of its component and regulating cause depends on temperature so many feet below the surface of the earth, as to be nearly constant, or at all events very similar, year by year.

To guard, however, against any secular change I proceeded first to take the

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means of the corrections of t_1 computed in the life-time of t_2 for the years 1838 to 1847; and then for the period 1851 to 1860 inclusive and found as below.

DATE.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1838 to 1847	+ ·015	+ ·025	+ ·027	+ ·023	+ ·011	− ·003	− ·011	− ·019	− ·018	− ·012	− ·003	+ ·010
1851 to 1860	+ ·012	+ ·023	+ ·024	+ ·019	+ ·011	+ ·001	− ·009	− ·018	− ·021	− ·011	− ·002	+ ·009
Mean,	+ ·01	+ ·02	+ ·03	+ ·02	+ ·01	·00	− ·01	− ·02	− ·02	− ·01	·00	+ ·01

Hence the numbers entered in the third horizontal line opposite to the title "Mean," will be the corrections in terms of degrees Fahrenheit to be applied to readings of t_1 or the deepest thermometer for its "first correction" or that for the temperature of its long earth-immersed tube, for all dates succeeding Dec. 24, 1860.

The "first corrections" for t_3 and t_4 have been rigidly computed according to the full formula, but the result being almost invariably insensible in the second place of decimals of a degree, will be neglected in future.

The "second correction" on the contrary is always sensible and as it depends on each earth-thermometer compared with its own normal point and with the air temperature as shown by a thermometer always in place, it is computable for each earth-thermometer whenever observations were made with it, without reference to its neighbours, and is thus computed.

"SECOND CORRECTION."

Table of Double Entry (Vol. xi. p. 234).

For t_1	First Argument,	$= t_1 - 41°$	and for the same thermometers	Second Argument,		$= t_1 - \mathrm{T}$
t_2	"	$= t_2 - 40°$	"	"	"	$= t_2 - \mathrm{T}$
t_3	"	$= t_3 - 35°$	"	"	"	$= t_3 - \mathrm{T}$
t_4	"	$= t_4 - 28°$	"	"	"	$= t_4 - \mathrm{T}$

the sign of this correction is the *same* as that of the second argument;
where T = the thermometer (small mercurial) showing the air temperature inside the box covering the tops of the earth thermometers so far as they rise above the ground.

t_1 = the great spirit thermometer having its bulb 24 French (=25·6 English) feet below the surface of the soil, and having for the degree on its scale from which its column of liquid is to be considered exposed to external temperature, 41°·0.

t_2 = the second great spirit thermometer, having its bulb 12 French feet

below the surface and its column point for air temperature = 40°·5 ; this thermometer being extinct after Dec. 24, 1860.

t_3 = the spirit thermometer whose bulb is six French feet* below the surface of the soil, and its column air-point = 35°·0.

t_4 = the spirit thermometer whose bulb is three feet beneath the surface of the soil, and its column air-point = 28°·5.

While t_5 is also a spirit thermometer, but has its bulb only just covered with earth, and the whole column therefore in the air.

The process of taking the observations had gone on uniformly until September 1869, when the stems and scales had by degrees become almost illegible from increasing dirt and oxidation ; the covering box had also become unsafe from the rottenness of its lower parts ; and the surface of the ground inside the box amongst the stems of the thermometers had become lower than the soil outside by 1·5 inches ; the latter condition being apparently a peculiar effect arising from wind and rain blowing or washing away all the finer particles. In that month accordingly a delicate cleaning of stems and scales was performed ; the box was strengthened and made firmer than it ever was before, by strong foundation slabs screwed to it *in situ*, and filled in round about by coal tar and earth ; while finely powdered local rock earth was sifted in among the thermometer stems up to an anciently marked level. The box moreover, whose once green paint had become dingy black, and was very provocative of intense temperature on a sunshiny day, was painted white. In this state we hope that the remnant of the thermometers, now by far the longest lived of any similar set in the country, may go on for a further continued period of usefulness.

Subsequently to p. T23, or that containing the monthly, quarterly, and yearly means for 1869 in the manner heretofore practised ;—there will be found several special tables prepared for the discussion of the whole series from 1837 to 1869, with the interposition of a collection of means for the year 1837, which should be employed in place of those given for that year in vol. xi. They are defective as given in that volume, because they are the means of a portion only of the year, without any attempt to reduce them to a mean of the whole year :

* In speaking of British observations, at a British Royal Observatory and upon instruments paid for by a British Association, I cannot but apologise for having to give one of the chief features in terms of *French* feet. This has been forced upon me by the founders of the instruments, viz., the Members of the British Association for the advancement of science having chosen to drop their proper national distinction in metrology in this case in 1836 ; and having then purposely made the instruments in round and even numbers of these foreign measures of French feet, but in such awkward fractions of British feet that if stated therein not only would many more figures be employed, but the proportions existing between the different thermometers would not be so instantly perceptible.

It is allowable for me I presume now (June 1870) to speak against *that* attempted introduction of *those* French measures into the British country, because the same British Association has for several years past been striving exceedingly to introduce other and antagonistic French measures, viz., the *metre* of the Revolution and its companions into Great Britain, to the extinguishing alike of the historical and traditional hereditary feet of both the French and British nations.

and were indeed inserted merely to show that the observations were commenced in 1837, though the full means only began in 1838.

Now 1838 was an abnormal year, colder than all that have ever occurred since;—and hence, when I found every successive year warmer, I feared some change of zero-points was going on, and suggested from time to time to the Board of Visitors that some precautions to test such a subject should be taken, as by having a new set of thermometers prepared on a similar plan, and keeping them in the air, where they could be tested occasionally; for of course it was impossible to try any such experiments with those already sunk and fixed deep down in the solid rock.

Principal Forbes did not encourage the idea. We had no suitable place, he said, in our very confined Observatory for keeping such instruments, and he believed that the thermometers would be found practically invariable; for, besides their having been kept under examination for a whole season before being committed to the earth, he had retained one of the series, or a duplicate of its smallest member, and had tested it after an interval of nine years, and found no sensible change of zero-point in it; certainly not to the $\frac{1}{50}$th of a degree Fahrenheit.

As time passed on, I myself became sensible that the thermometers were not *always* increasing in their readings, but going through a complicated series of waves of supra-annual period; and it became therefore a crucial point to settle whether 1838 was the coldest year in 32 years really in nature, or apparently so, only, in our series, by the thermometer-zeros having always been rising ever since their first insertion in their present place. To this end I appealed to the year 1837, and found that by supplying a very few early observations (and which have been marked in every case by brackets) through the method of differences, according to time, derived from subsequent years, the whole year might be presented complete and practically comparable in its returns with subsequent years.

What then was the result; was it to show that 1837 was marked colder still than 1838, which would have strengthened the suspicion of change of zero points; or, on the other hand, to show that it was warmer?

To show that it was eminently warmer, and that the coldness of 1838 was a physical phenomenon of extreme importance for the series of instruments to have chronicled.

The additional Tables which I have alluded to therefore, for the whole series, are

TABLE 2 at p. T25.

Or, annual means of the Edinburgh Observatory earth-thermometers, also certain Scottish air-thermometers, Edinburgh, Scottish, and Liverpool rain-fall

observations, and sun-spot measures by MM. Schwabe, Wolff, and the Kew Observatory from 1826 to 1869.

TABLE 3, p. T26.

Annual mean-temperatures by the Edinburgh Observatory earth-thermometers at four several sub-annual epochs for the earth-thermometers from 1837 to 1869.

TABLE 4, p. T27.

Eleven year means for every successive year from 1842 to 1864, for the Edinburgh Observatory earth-thermometers and Schwabe's number of new groups of sun-spots, supplemented for the later years by Kew observations;

Also, Constants of Correction from 33 years' observation.

TABLE 5, p. T28.

Quarterly observations of temperature, by the Edinburgh Observatory earth-thermometers, corrected for the annual cycle by reference to the 33 years' observation.

TABLE 6, p. T29.

Means and corrections for quarters and years of the Edinburgh Observatory earth-thermometers; in three successive eleven year periods, and also for the whole 33 year period.

TABLE 7, p. T31.

Quarterly observations of temperature by the Edinburgh Observatory earth-thermometers in the raw state, or wholly uncorrected for the annual cycle, and exhibiting therefore both the annual cycle and the several supra-annual and infra-annual cycles discussed in the several preceding pages and tables.

There are also prepared five diagram plates, whereof,

The Plate numbered 10, represents the local circumstances of the thermometers within the Observatory grounds; and of the Observatory grounds themselves on the summit of the Calton Hill, on a scale of $\frac{1}{2500}$.

Plate 11, represents graphically to the eye the contents of Table 2, with some important modifications of the curves between the points of observation, to enable the law of time in the passage of heat through the soil to be duly respected; and to give their full prominence to the important supra-annual cycles of temperature now being investigated.

Plate 12, deals similarly with the contents of Table 3, and proves the propriety of the modifications alluded to in Plate 11.

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Plate 13, with Table 4.

Plate 14, with Table 5; showing therefore the beginning of the *infra*-annual cycles of temperature, which seem to be exceedingly numerous and violent, but not to be distinguished, by such dark instruments as thermometers, as to a solar radiation, or terrestrial climate, origin.

And Plate 15 with Table 7.

Upon these data I founded a discussion communicated to the Royal Society of London, on March 2, 1870; and resulting as I hope in the discovery of one infra-annual cycle of heat of the duration of 0·75 year; and of three supra-annual cycles of the lengths respectively of

2·6 year
11·1 year, and
40, or more, years.

For the particulars of these cycles, and their probable cause, I beg to refer to the paper mentioned.

ROYAL OBSERVATORY, EDINBURGH.

OBSERVATIONS OF THE EARTH-THERMOMETERS AT THE ROYAL OBSERVATORY, EDINBURGH, FROM 1860–1869 INCLUSIVE.

Date.	t_1 or 24 French Feet deep Therm.				t_2 or 12 French deep Feet Therm.				t_3 or 6 French Feet deep Therm.				t_4 or 3 French Feet deep Therm.				t_5, or Surface Therm.	T. or Air Therm.
	t_1, Uncorrected.	Correction for Column.	Correction for Air.	t_1, Corrected.	t_2, Uncorrected.	Correction for Column.	Correction for Air.	t_2, Corrected.	t_3, Uncorrected.	Correction for Column.	Correction for Air.	t_3, Corrected.	t_4, Uncorrected.	Correction for Column	Correction for Air.	t_4, Corrected.		
1860.	°			°	°			°	°			°	°			°	°	°
Jan. 2	48·38	+·02	+·01	48·41	47·39	+·01	·00	47·40	42·98	·00	−·01	42·97	39·59	·00	−·04	39·55	38·90	45·7
9	48·34	+·02	+·04	48·40	47·00	+·01	+·04	47·05	42·93	·00	+·03	42·96	39·78	·00	+·05	39·73	34·60	37·0
16	48·32	+·02	+·03	48·37	46·71	+·01	+·03	46·75	42·70	·00	+·01	42·71	39·61	·00	+·01	39·62	35·50	40·4
23	48·26	+·03	+·03	48·32	46·41	+·01	+·02	46·44	42·43	·00	+·01	42·44	39·12	·00	−·01	39·11	35·50	40·3
30	48·20	+·03	+·04	48·27	46·14	+·01	+·03	46·18	42·09	·00	+·02	42·11	38·32	·00	+·01	39·33	31·30	37·1
Feb. 6	48·14	+·03	+·05	48·22	45·87	+·01	+·03	45·91	41·53	·00	+·02	41·55	37·90	·00	+·01	37·91	31·20	35·6
13	48·06	+·03	+·07	48·16	45·62	+·01	+·05	45·68	41·20	·00	+·04	41·24	37·39	·00	+·04	37·43	30·10	29·9
20	48·00	+·04	+·05	48·09	45·33	+·01	+·03	45·37	40·75	·00	+·02	40·77	37·28	·00	+·01	37·29	31·00	36·4
27	47·93	+·03	+·04	48·00	45·09	+·01	+·02	45·12	40·62	·00	+·01	40·63	37·82	·00	+·01	37·83	34·30	38·2
March 5	47·87	+·03	+·02	47·92	44·87	+·01	+·01	44·89	40·69	·00	−·01	40·68	38·10	·00	−·03	38·07	34·90	43·2
12	47·77	+·03	+·03	47·83	44·66	+·01	+·01	44·68	40·72	·00	·00	40·72	38·18	·00	−·02	38·16	33·90	41·1
19	47·71	+·03	·00	47·74	44·51	+·01	−·01	44·51	40·64	·00	−·03	40·61	38·61	·00	−·06	38·55	39·00	49·6
26	47·60	+·04	+·01	47·65	44·35	+·01	·00	44·36	40·82	·00	−·01	40·81	39·00	·00	−·04	38·96	35·30	45·1
April 2	47·51	+·04	+·01	47·56	44·23	·00	·00	44·23	40·99	·00	−·01	40·98	39·69	·00	−·03	39·66	38·60	43·4
9	47·41	+·03	+·02	47·46	44·14	·00	+·01	44·15	41·26	·00	·00	41·26	40·31	·00	−·01	40·30	36·40	41·4
16	47·34	+·03	+·01	47·38	44·11	·00	·00	44·11	41·49	·00	−·01	41·48	40·38	·00	−·03	40·35	39·60	45·3
23	47·25	+·03	−·02	47·26	44·08	·00	−·02	44·06	41·76	·00	−·04	41·72	40·80	·00	−·08	40·72	38·80	51·6
30	47·17	+·02	−·03	47·16	44·09	·00	−·02	44·07	42·04	·00	−·05	41·99	42·14	·00	−·10	42·04	45·70	55·0
May 7	47·11	+·02	−·04	47·09	44·12	·00	−·04	44·08	42·89	·00	−·08	42·81	44·49	·00	−·14	44·35	45·20	59·9
14	47·00	+·01	·00	47·01	44·19	·00	−·01	44·18	43·61	·00	−·02	43·59	45·43	·00	−·02	45·41	44·20	47·1
21	47·00	+·01	−·09	46·92	44·39	·00	−·06	44·33	44·40	·00	−·14	44·26	46·41	·00	−·27	46·14	53·20	73·3
28	46·87	+·01	−·02	47·86	44·60	·00	−·02	44·58	45·20	·00	−·05	45·15	48·01	·00	−·06	47·95	43·40	53·0
June 4	46·77	·00	−·03	46·74	44·76	·00	−·03	44·73	45·80	·00	−·04	45·76	47·40	·00	−·08	47·32	46·70	54·7
11	46·75	+·01	−·04	46·72	45·05	·00	−·04	45·01	46·12	·00	−·06	46·06	47·98	·00	−·12	47·86	50·02	59·2
18	46·72	·00	−·04	46·68	45·29	·00	−·04	45·25	46·59	·00	−·09	46·50	48·80	·00	−·13	48·67	51·40	60·5
25	46·68	·00	−·04	46·64	45·52	·00	−·04	45·48	47·19	·00	−·07	47·12	50·22	·00	−·10	50·12	52·40	58·3
July 2	46·68	·00	−·07	46·61	45·80	·00	−·07	45·73	47·91	·00	−·14	47·77	50·69	·00	−·22	50·47	54·90	67·5
9	46·69	−·01	−·08	46·60	46·08	−·01	−·08	45·99	48·60	·00	−·16	48·44	52·71	·00	−·24	52·47	58·20	69·9
16	46·67	−·01	−·07	46·59	46·37	−·01	−·07	46·29	49·54	·00	−·14	49·40	54·06	·00	−·19	53·87	57·60	67·0
23	46·66	−·01	−·03	46·62	46·68	−·01	−·03	46·64	50·20	·00	−·05	50·15	53·60	·00	−·03	53·57	52·80	56·5
30	46·70	−·01	−·06	46·63	47·07	−·01	−·07	46·99	50·50	·00	−·13	50·37	53·29	·00	−·18	53·11	55·70	66·5
Aug. 6	46·70	−·01	−·03	46·66	47·35	−·01	−·03	47·31	50·60	·00	−·04	50·56	53·30	·00	−·03	53·27	51·20	55·2
13	46·76	−·01	−·06	46·69	47·68	−·01	−·08	47·59	50·83	·00	−·13	50·70	52·93	·00	−·17	52·76	54·00	65·0
20	46·78	−·01	−·05	46·72	47·92	−·01	−·07	47·84	50·98	·00	−·11	50·87	53·39	·00	−·14	53·25	53·70	63·1
27	46·84	−·01	−·04	46·79	48·13	−·01	−·05	48·07	51·05	·00	−·07	50·98	52·61	·00	−·08	52·53	50·06	59·0
Sept. 3	46·90	−·01	−·04	46·85	48·34	·00	−·05	48·29	50·90	·00	−·07	50·83	52·10	·00	−·09	52·01	50·01	59·2

Date.	t_1 or 24 French Feet deep Therm. t_1, Uncorrected.	Correction for Column.	Correction for Air.	t_1, Corrected.	t_2 or 12 French Feet deep Therm. t_2, Uncorrected.	Correction for Column.	Correction for Air.	t_2, Corrected.	t_3 or 6 French Feet deep Therm. t_3, Uncorrected.	Correction for Column.	Correction for Air.	t_3, Corrected.	t_4 or 3 French Feet deep Therm. t_4, Uncorrected.	Correction for Column.	Correction for Air.	t_4, Corrected.	t_5, or Surface Therm.	T, or Air Therm.
1860.																		
Sept. 10	46·96	−·01	−·03	46·92	48·47	−·01	−·04	48·43	50·82	·00	−·04	50·78	52·80	·00	−·04	52·76	48·40	56·4
17	47·02	−·02	−·03	46·97	48·59	·00	−·04	48·55	50·79	·00	−·04	50·75	51·70	·00	−·05	51·65	50·02	55·9
24	47·09	−·01	−·03	47·05	48·69	·00	−·04	48·65	50·52	·00	−·04	50·48	50·61	·00	−·06	50·55	46·10	55·7
Oct. 1	47·15	−·01	−·03	47·11	48·77	·00	−·04	48·73	50·02	·00	−·06	49·96	49·30	·00	−·09	49·21	47·60	57·3
8	47·21	−·01	−·01	47·19	48·76	·00	−·01	48·75	49·54	·00	·00	49·54	49·30	·00	−·01	49·29	44·70	50·9
15	47·28	−·01	−·03	47·24	48·75	·00	−·03	48·72	49·10	·00	−·05	49·05	47·02	·00	−·08	46·94	45·80	54·6
22	47·36	−·01	−·04	47·31	48·71	·00	−·05	48·66	48·50	·00	−·07	48·43	47·09	·00	−·12	46·97	46·50	58·0
29	47·40	−·01	·00	47·39	48·60	·00	+·02	48·62	48·19	·00	+·01	48·20	47·53	·00	+·02	47·55	42·50	46·0
Nov. 5	47·47	−·01	−·01	47·45	48·45	·00	·00	48·45	48·07	·00	−·01	48·06	46·50	·00	−·03	46·47	41·10	48·7
12	47·48	·00	+·03	47·51	48·31	·00	+·04	48·35	47·40	·00	+·05	47·45	44·99	·00	+·06	45·05	38·50	39·4
19	47·53	+·01	+·03	47·57	48·18	·00	+·03	48·21	46·71	·00	+·04	46·75	43·38	·00	+·02	43·40	33·80	41·0
26	47·57	+·01	+·03	47·61	48·00	·00	+·03	48·03	45·87	·00	+·03	45·90	42·84	·00	+·02	42·86	36·80	40·8
Dec. 3	47·60	+·01	+·02	47·63	47·76	+·01	+·03	47·80	45·18	·00	+·02	45·20	42·19	·00	+·01	42·20	39·30	42·5
10	47·64	+·01	+·02	47·67	47·50	+·01	+·02	47·53	44·88	·00	+·01	44·89	42·82	·00	−·01	42·81	41·20	44·0
17	47·64	·00	+·04	47·68	47·25	·00	+·04	47·29	44·80	·00	+·04	44·84	42·30	·00	+·04	42·34	33·50	37·2
24	47·59	+·01	+·11	47·71	46·99	+·01	+·11	47·11	44·16	·00	+·12	44·28	40·30	·00	+·13	40·43	29·60	20·0
31	47·62	+·01	+·05	47·68	49·87	……	……	……	43·39	·00	+·03	43·42	38·52	·00	+·02	38·54	30·00	36·0
1861.					Tube	broken												
Jan. 7	47·60	+·01	+·07	47·68	……	……	……	……	42·52	·00	+·06	42·58	38·00	·00	+·04	38·04	28·20	30·0
14	47·60	+·01	+·05	47·66	……	……	……	……	41·80	·00	+·03	41·83	37·74	·00	+·02	37·76	32·00	35·2
21	47·62	+·01	·00	47·63	……	……	……	……	41·56	·00	−·03	41·53	38·24	·00	−·06	38·18	41·50	49·2
28	47·60	+·02	−·01	47·61	……	……	……	……	41·79	·00	−·03	41·76	40·71	·00	−·07	40·64	43·30	50·9
Feb. 4	47·52	+·02	+·02	47·56	……	……	……	……	42·40	·00	−·01	42·39	41·82	·00	−·02	41·80	39·40	44·0
11	47·44	+·02	+·04	47·50	……	……	……	……	42·62	·00	+·04	42·66	40·79	·00	+·04	40·83	33·00	35·0
18	47·39	+·02	+·02	47·43	……	……	……	……	42·25	·00	·00	42·25	39·68	·00	−·01	39·67	38·80	42·0
25	47·34	+·03	+·01	47·38	……	……	……	……	42·16	·00	·00	42·16	40·61	·00	−·01	40·60	35·80	43·1
Mar. 4	47·26	+·03	+·02	47·31	……	……	……	……	42·18	·00	·00	42·18	40·48	·00	−·01	40·47	35·20	42·4
11	47·18	+·03	+·03	47·24	……	……	……	……	42·17	·00	+·02	42·19	40·99	·00	+·02	41·01	35·20	38·1
18	47·14	+·03	+·01	47·18	……	……	……	……	42·23	·00	−·01	42·22	40·72	·00	−·02	40·70	36·70	44·5
25	47·19	+·02	−·01	47·20	……	……	……	……	42·20	·00	−·03	42·17	40·79	·00	−·07	40·72	39·30	49·7
April 1	47·01	+·02	+·01	47·04	……	……	……	……	42·32	·00	·00	42·32	41·46	·00	−·01	41·45	39·60	43·4
8	46·96	+·02	−·01	46·97	……	……	……	……	42·52	·00	−·03	42·49	41·86	·00	−·06	41·80	39·90	49·7
15	46·90	+·02	+·01	46·93	……	……	……	……	42·78	·00	·00	42·78	42·82	·00	·00	42·82	41·60	43·3
22	46·86	+·02	−·02	46·86	……	……	……	……	43·18	·00	−·04	43·14	43·41	·00	−·08	43·33	44·00	53·1
29	46·80	+·01	−·02	46·79	……	……	……	……	43·67	·00	−·04	43·63	44·21	·00	−·07	44·14	41·60	51·6
May 6	46·76	+·01	−·04	46·73	……	……	……	……	44·08	·00	−·07	44·01	44·80	·00	−·12	44·68	45·00	58·0
13	46·70	+·01	−·03	46·68	……	……	……	……	44·39	·00	−·06	44·33	44·53	·00	−·10	44·43	43·10	54·9
20	46·68	+·01	−·07	46·62	……	……	……	……	44·73	·00	−·12	44·61	46·38	·00	−·21	46·17	53·30	66·8
27	46·64	+·01	−·05	46·60	……	……	……	……	45·56	·00	−·09	45·47	47·99	·00	−·14	47·85	50·20	60·8
June 3	46·58	·00	−·02	46·56	……	……	……	……	46·29	·00	−·04	46·25	49·10	·00	−·04	49·06	48·20	52·0
10	46·55	·00	−·03	46·52	……	……	……	……	46·98	·00	−·05	46·93	49·84	·00	−·06	49·78	50·05	54·7
……	……	……	……	……	……	……	……	……	……	……	……	……	……	……	……	……	……	……
24	46·53	·00	−·06	46·47	……	……	……	……	48·79	·00	−·12	48·67	53·00	·00	−·17	52·83	56·00	64·8
July 1	46·54	−·01	−·06	46·47	……	……	……	……	49·57	·00	−·13	49·44	53·61	·00	−·17	53·44	56·20	66·2
8	46·55	−·01	−·05	46·49	……	……	……	……	50·19	·00	−·11	50·08	53·58	·00	−·13	53·45	56·40	63·4
15	46·56	−·01	−·08	46·47	……	……	……	……	50·52	·00	−·17	50·35	53·01	·00	−·24	52·77	55·60	69·8

Date.	t_1 or 24 French Feet deep Therm. t_1, Uncorrected.	Correction for Column.	Correction for Air.	t_1, Corrected.	t_2 or 12 French Feet deep Therm. t_2, Uncorrected.	Correction for Column.	Correction for Air.	t_2, Corrected.	t_3 or 6 French Feet deep Therm. t_3, Uncorrected.	Correction for Column.	Correction for Air.	t_3, Corrected.	t_4 or 3 French Feet deep Therm. t_4, Uncorrected.	Correction for Column.	Correction for Air.	t_4, Corrected.	t_5, or Surface Therm.	T, or Air Therm.
1861.																		
July 22	46·57	−·01	−·05	46·51	......	......	......	......	50·50	·00	−·11	50·40	52·98	·00	−·13	52·85	55·90	62·3
29	46·62	−·01	−·07	46·54	......	......	......	......	50·86	·00	−·16	50·70	53·41	·00	−·22	53·19	54·80	69·0
Aug. 5	46·65	−·02	−·05	46·58	......	......	......	......	51·00	·00	−·11	50·89	53·82	·00	−·13	53·69	56·30	62·9
12	46·70	−·02	−·07	46·61	......	......	......	......	51·38	·00	−·16	51·22	54·32	·00	−·22	54·10	58·90	69·0
19	46·76	−·02	−·05	46·69	......	......	......	......	51·67	·00	−·10	51·57	54·31	·00	−·13	54·18	53·70	63·0
26	46·83	−·02	−·06	46·75	......	......	......	......	51·71	·00	−·11	51·60	53·48	·00	−·15	53·33	53·80	64·0
Sept. 2	46·89	−·02	−·06	46·81	......	......	......	......	51·70	·00	−·12	51·58	53·59	·00	−·16	53·43	56·30	65·0
9	46·95	−·02	−·04	46·89	......	......	......	......	51·71	·00	−·08	51·63	53·41	·00	−·10	53·31	52·70	60·0
16	47·04	−·02	−·03	46·99	......	......	......	......	51·64	·00	−·04	51·60	52·90	·00	−·04	52·86	49·90	56·0
23	47·10	−·02	·00	47·08	......	......	......	......	51·32	·00	+·04	51·36	51·99	·00	+·08	52·07	47·00	46·2
30	47·18	−·02	−·04	47·12	......	......	......	......	51·07	·00	−·06	51·01	51·12	·00	−·09	51·03	50·80	58·0
Oct. 7	47·26	−·01	−·03	47·22	......	......	......	......	50·80	·00	−·05	50·75	50·09	·00	−·09	50·00	49·30	57·4
14	47·37	−·01	−·05	47·31	......	......	......	......	50·65	·00	−·11	50·54	51·23	·00	−·15	51·08	53·00	62·9
21	47·42	−·01	−·03	47·38	......	......	......	......	50·49	·00	−·04	50·45	50·10	·00	−·06	50·04	49·40	55·3
28	47·47	−·01	·00	47·46	......	......	......	......	50·10	·00	+·02	50·12	49·74	·00	+·02	49·76	43·60	47·7
Nov. 4	47·53	·00	−·01	47·52	......	......	......	......	49·59	·00	·00	49·59	47·22	·00	−·03	47·19	42·60	50·0
11	47·57	·00	+·03	47·60	......	......	......	......	48·55	·00	+·07	48·62	45·25	·00	+·05	45·30	37·00	39·9
18	47·64	·00	+·01	47·68	......	......	......	......	47·49	·00	+·06	47·55	43·60	·00	+·05	43·65	33·60	38·1
25	47·72	·00	−·01	47·71	......	......	......	......	46·63	·00	−·02	46·61	43·12	·00	−·06	43·06	39·40	49·7
Dec. 2	47·76	+·01	+·03	47·80	......	......	......	......	45·90	·00	+·04	45·94	43·00	·00	+·02	43·02	34·60	40·4
9	47·80	+·01	·00	47·81	......	......	......	......	45·50	·00	−·01	45·49	42·38	·00	−·05	42·33	37·00	47·8
16	47·75	+·01	−·01	47·75	......	......	......	......	45·19	·00	−·03	45·16	43·31	·00	−·06	43·25	40·38	49·9
23	47·85	+·01	+·03	47·89	......	......	......	......	45·18	·00	+·02	45·20	42·71	·00	−·02	42·69	36·80	40·7
30	47·85	+·01	+·03	47·89	......	......	......	......	44·60	·00	+·03	44·63	40·50	·00	·00	40·50	32·80	40·1
1862.																		
Jan. 6	47·73	+·01	+·04	47·78	......	......	......	......	43·79	·00	+·03	43·82	40·12	·00	+·01	40·13	33·50	38·1
13	47·81	+·01	+·04	47·86	......	......	......	......	43·40	·00	+·02	43·42	40·76	·00	+·01	40·77	35·60	38·1
20	47·79	+·01	+·05	47·85	......	......	......	......	43·19	·00	+·04	43·23	40·00	·00	+·04	40·04	31·20	34·0
27	47·80	+·02	·00	47·82	......	......	......	......	42·78	·00	−·02	42·76	39·59	·00	−·05	39·54	38·40	46·8
Feb. 3	47·77	+·02	·00	47·79	......	......	......	......	42·68	·00	−·02	42·66	40·98	·00	−·04	40·94	41·60	47·0
10	47·70	+·02	+·04	47·76	......	......	......	......	42·94	·00	+·02	42·96	40·91	·00	+·02	40·93	32·20	37·5
17	47·65	+·02	+·03	47·70	......	......	......	......	42·79	·00	+·01	42·80	40·60	·00	+·01	40·61	35·20	40·2
24	47·60	+·02	+·03	47·65	......	......	......	......	42·71	·00	+·01	42·72	41·59	·00	+·02	41·61	39·60	39·6
Mar. 3	47·50	+·03	+·06	47·59	......	......	......	......	42·85	·00	+·05	42·90	40·96	·00	+·07	41·03	32·20	32·5
10	47·47	+·03	−·01	47·49	......	......	......	......	42·51	·00	−·03	42·48	40·16	·00	−·06	40·10	41·00	49·3
17	47·40	+·03	+·02	47·45	......	......	......	......	42·52	·00	+·01	42·53	41·30	·00	+·01	41·31	36·70	40·1
24	47·32	+·03	+·02	47·37	......	......	......	......	42·49	·00	·00	42·49	40·11	·00	−·01	40·10	34·80	41·3
31	47·27	+·03	·00	47·30	......	......	......	......	42·19	·00	−·02	42·17	40·13	·00	−·04	40·90	38·70	45·6
April 7	47·22	+·02	−·01	47·23	......	......	......	......	42·30	·00	−·03	42·27	41·70	·00	−·05	41·65	39·80	48·6
14	47·13	+·02	+·03	47·18	......	......	......	......	42·70	·00	+·02	42·72	41·70	·00	+·02	41·72	35·20	38·8
21	47·11	+·02	−·02	47·11	......	......	......	......	42·79	·00	−·05	42·74	42·22	·00	−·09	42·13	43·70	54·2
28	47·05	+·02	−·03	47·04	......	......	......	......	43·28	·00	−·06	43·22	43·72	·00	−·12	43·60	45·20	57·3
May 5	46·98	+·01	−·03	46·96	......	......	......	......	43·92	·00	−·07	43·85	45·49	·00	−·11	45·38	46·80	56·9
12	46·90	+·01	−·02	46·89	......	......	......	......	44·69	·00	−·04	44·65	46·55	·00	−·05	46·50	46·00	52·0
19	46·86	+·01	−·04	46·83	......	......	......	......	45·29	·00	−·07	45·22	47·02	·00	−·12	46·90	51·10	57·6
26	46·83	+·01	−·04	46·80	......	......	......	......	45·86	·00	−·09	45·77	47·72	·00	−·13	47·59	49·70	60·0

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Date.	t_1 or 24 French Feet deep Therm.				t_2 or 12 French Feet deep Therm.				t_3 or 6 French Feet deep Therm.				t_4 or 3 French Feet deep Therm.				t_0, or Surface Therm.	T, or Air Therm.
	t_1, Uncorrected.	Correction for Column.	Correction for Air.	t_1, Corrected.	t_2, Uncorrected.	Correction for Column.	Correction for Air.	t_2, Corrected.	t_3, Uncorrected.	Correction for Column.	Correction for Air.	t_3, Corrected.	t_4, Uncorrected.	Correction for Column.	Correction for Air.	t_4, Corrected.		
1862.	°			°	°			°	°			°	°			°	°	°
June 2	46·79	·00	−·06	46·73	......	......	......	......	46·37	·00	−·12	46·25	48·58	·00	−·19	48·39	51·70	65·3
9	46·74	·00	−·04	46·70	......	......	......	......	46·92	·00	−·07	46·85	49·03	·00	−·11	48·92	49·40	57·5
16	46·71	·00	−·05	46·66	......	......	......	......	47·39	·00	−·11	47·28	49·52	·00	−·16	49·36	51·00	63·2
23	46·68	·00	−·05	46·63	......	......	......	......	47·80	·00	−·11	47·69	49·80	·00	−·16	49·64	50·10	62·9
30	46·66	·00	−·04	46·62	......	......	......	......	48·12	·00	−·07	48·05	50·40	·00	−·10	50·30	49·60	58·0
July 7	46·65	−·01	−·03	46·61	......	......	......	......	48·40	·00	−·06	48·34	50·41	·00	−·07	50·34	49·20	55·6
14	46·69	−·01	−·05	46·63	......	......	......	......	48·76	·00	−·09	48·67	51·01	·00	−·13	50·88	54·40	60·7
21	46·70	−·01	−·04	46·65	......	......	......	......	49·14	·00	−·09	49·05	51·52	·00	−·11	51·41	51·50	60·1
28	46·70	−·01	−·04	46·65	......	......	......	......	49·40	·00	−·08	49·32	51·38	·00	−·10	51·28	51·00	59·1
Aug. 4	46·75	−·02	−·06	46·67	......	......	......	......	49·65	·00	−·13	49·52	52·09	·00	−·19	51·90	55·00	66·1
11	46·76	−·02	−·04	46·70	......	......	......	......	50·00	·00	−·08	49·92	52·20	·00	−·09	52·11	52·10	59·0
18	46·81	−·02	−·06	46·73	......	......	......	......	50·38	·00	−·12	50·26	53·20	·00	−·15	53·05	54·70	64·0
25	46·86	−·02	−·06	46·78	......	......	......	......	50·77	·00	−·12	50·65	53·06	·00	−·15	52·91	53·10	64·0
Sept. 1	46·90	−·02	−·03	46·85	......	......	......	......	50·90	·00	−·05	50·85	53·41	·00	−·06	53·35	52·70	57·4
8	46·96	−·02	−·06	46·88	......	......	......	......	51·15	·00	−·12	51·03	53·19	·00	−·15	53·04	53·40	63·9
15	47·00	−·02	−·03	46·95	......	......	......	......	51·50	·00	−·03	51·47	51·23	·00	−·05	51·18	48·60	55·0
22	47·06	−·02	−·03	47·01	......	......	......	......	50·80	·00	−·04	50·76	52·20	·00	−·05	52·15	50·20	55·8
29	47·13	−·02	−·05	47·06	......	......	......	......	50·79	·00	−·10	50·69	51·74	·00	−·13	51·61	52·60	61·5
Oct. 6	47·19	−·01	−·04	47·14	......	......	......	......	50·72	·00	−·07	50·65	51·75	·00	−·09	51·66	50·09	58·6
13	47·24	−·01	−·02	47·21	......	......	......	......	50·50	·00	−·02	50·48	50·80	·00	−·03	50·77	46·60	53·0
20	47·26	−·01	+·02	47·27	......	......	......	......	50·02	·00	+·08	50·10	48·83	·00	+·09	48·92	39·40	41·0
27	47·35	−·01	·00	47·34	......	......	......	......	49·21	·00	+·02	49·23	47·05	·00	+·01	47·06	42·40	46·0
Nov. 3	47·45	·00	−·03	47·42	......	......	......	......	48·48	·00	−·06	48·42	46·33	·00	−·10	46·23	45·90	56·0
10	47·42	·00	+·04	47·46	......	......	......	......	47·79	·00	+·10	47·89	45·11	·00	+·10	45·21	34·90	34·1
17	47·51	·00	+·04	47·55	......	......	......	......	46·89	·00	+·06	46·95	43·03	·00	+·04	43·07	34·80	38·3
24	47·54	·00	+·05	47·59	......	......	......	......	45·92	·00	+·07	45·99	42·19	·00	+·06	42·25	32·40	33·9
Dec. 1	47·59	+·01	+·03	47·63	......	......	......	......	46·00	·00	+·04	46·04	40·88	·00	+·01	40·89	34·80	38·9
8	47·64	+·01	+·02	47·67	......	......	......	......	44·60	·00	+·02	44·62	42·52	·00	+·01	42·53	38·50	41·6
15	47·67	+·01	+·01	47·69	......	......	......	......	44·67	·00	−·01	44·66	42·26	·00	−·03	42·23	40·00	45·6
22	47·67	+·01	+·03	47·71	......	......	......	......	44·51	·00	+·02	44·53	42·15	·00	+·01	42·16	35·50	41·0
29	47·67	+·01	+·01	47·69	......	......	......	......	44·30	·00	·00	44·30	42·37	·00	−·02	42·35	41·40	45·0
1863.																		
Jan. 5	47·66	+·01	+·03	47·70	......	......	......	......	44·19	·00	+·03	44·22	41·78	·00	+·02	41·80	35·20	39·0
12	47·65	+·01	+·04	47·70	......	......	......	......	43·68	·00	+·03	43·71	40·70	·00	+·02	40·72	34·80	37·8
19	47·62	+·01	+·03	47·66	......	......	......	......	43·29	·00	+·01	43·30	40·60	·00	·00	40·60	36·20	41·4
26	47·62	+·02	−·01	47·63	......	......	......	......	43·04	·00	−·03	43·01	40·60	·00	−·07	40·53	40·80	50·2
Feb. 2	47·57	+·02	·00	47·59	......	......	......	......	43·00	·00	−·02	42·98	41·31	·00	−·05	41·26	39·60	48·1
9	47·50	+·02	+·03	47·55	......	......	......	......	42·97	·00	+·01	42·98	41·49	·00	+·01	41·50	34·80	40·1
16	47·46	+·02	+·03	47·51	......	......	......	......	42·93	·00	+·02	42·95	40·70	·00	+·01	40·71	33·20	39·0
23	47·42	+·02	−·01	47·43	......	......	......	......	42·69	·00	−·03	42·66	40·80	·00	−·06	40·74	40·80	48·7
Mar. 2	47·38	+·03	−·01	47·40	......	......	......	......	42·82	·00	−·04	42·78	42·01	·00	−·07	41·94	42·40	51·1
9	47·32	+·03	·00	47·35	......	......	......	......	43·24	·00	−·02	43·22	43·10	·00	−·03	43·07	38·40	46·7
16	47·25	+·03	+·01	47·29	......	......	......	......	43·30	·00	·00	43·30	41·62	·00	−·02	41·60	36·60	43·8
23	47·24	+·03	−·04	47·23	......	......	......	......	43·13	·00	−·07	43·06	41·89	·00	−·12	41·77	46·80	58·2
30	47·14	+·03	+·01	47·18	......	......	......	......	43·40	·00	·00	43·40	43·56	·00	+·01	43·57	39·40	43·4
April 6	47·10	+·02	−·01	47·11	......	......	......	......	43·78	·00	−·03	43·75	43·71	·00	−·05	43·66	40·06	49·6

Date.	t_1 or 24 French Feet deep Therm.				t_2 or 12 French Feet deep Therm.				t_3 or 6 French Feet deep Therm.				t_4 or 3 French Feet deep Therm.				t_5, or Surface Therm.	T, or Air Therm.
	t_1, Uncorrected.	Correction for Column.	Correction for Air.	t_1, Corrected.	t_2, Uncorrected.	Correction for Column.	Correction for Air.	t_2, Corrected.	t_3, Uncorrected.	Correction for Column.	Correction for Air.	t_3, Corrected.	t_4, Uncorrected.	Correction for Column.	Correction for Air.	t_4, Corrected.		
1863. April 13	47·05	+·02	−·02	47·05	......	......	......	......	43·90	·00	−·05	43·85	43·65	·00	−·09	43·56	42·80	54·0
20	46·99	+·02	−·01	47·00	......	......	......	......	44·10	·00	−·04	44·06	44·17	·00	−·06	44·11	42·00	51·0
27	46·93	+·02	·00	46·95	......	......	......	......	44·22	·00	−·02	44·20	44·09	·00	−·04	44·05	42·80	48·5
May 4	46·90	+·01	−·02	46·89	......	......	......	......	44·40	·00	−·05	44·35	44·81	·00	−·08	44·73	47·00	53·2
11	46·83	+·01	·00	46·84	......	......	......	......	44·78	·00	−·02	44·76	45·81	·00	−·02	45·79	43·50	47·7
18	46·82	+·01	−·03	46·80	......	......	......	......	45·23	·00	−·06	45·17	46·14	·00	−·10	46·04	44·80	56·0
25	46·79	+·01	−·03	46·77	......	......	......	......	45·55	·00	−·07	45·48	46·60	·00	−·11	46·49	46·70	56·9
June 1	46·77	·00	−·05	46·72	......	......	......	......	46·17	·00	−·10	46·07	48·21	·00	−·16	48·05	52·80	62·5
8	46·73	·00	−·01	46·72	......	......	......	......	46·80	·00	−·01	46·79	48·94	·00	·00	48·94	47·00	49·4
15	46·72	·00	−·04	46·68	......	......	......	......	47·25	·00	−·08	47·17	49·39	·00	−·12	49·27	52·60	59·0
22	46·73	·00	−·07	46·66	......	......	......	......	47·91	·00	−·14	47·74	51·00	·00	−·22	50·78	55·40	68·2
29	46·71	·00	−·06	46·65	......	......	......	......	48·57	·00	−·12	48·45	51·50	·00	−·17	51·33	53·40	65·0
July 6	46·74	−·01	−·08	46·65	......	......	......	......	49·20	·00	−·17	49·03	52·30	·00	−·25	52·05	57·60	71·0
13	46·74	−·01	−·08	46·65	......	......	......	......	49·86	·00	−·18	49·68	54·40	·00	−·25	54·15	58·90	71·2
20	46·72	−·01	−·03	46·68	......	......	......	......	50·55	·00	−·06	50·49	53·83	·00	−·04	53·79	51·00	57·2
27	46·77	−·01	−·07	46·69	......	......	......	......	50·81	·00	−·16	50·65	53·22	·00	−·22	53·00	57·60	69·0
Aug. 3	46·81	−·02	−·09	46·70	......	......	......	......	51·11	·00	−·20	50·91	54·48	·00	−·27	54·21	59·00	73·0
10	46·83	−·02	−·06	46·75	......	......	......	......	51·55	·00	−·11	51·44	55·12	·00	−·14	54·98	56·60	63·6
17	46·86	−·02	−·04	46·80	......	......	......	......	51·80	·00	−·08	51·72	54·35	·00	−·09	54·26	53·40	60·3
24	46·93	−·02	−·05	46·86	......	......	......	......	51·81	·00	−·10	51·71	53·66	·00	−·13	53·53	53·90	63·0
31	46·95	−·02	−·01	46·92	......	......	......	......	51·60	·00	+·01	51·61	52·59	·00	+·03	52·62	50·10	51·0
Sept. 7	47·02	−·02	−·01	46·99	......	......	......	......	51·30	·00	·00	51·30	52·04	·00	+·01	52·05	47·50	50·9
14	47·20	−·02	−·03	47·15	......	......	......	......	50·99	·00	−·04	50·95	51·00	·00	−·06	50·94	50·30	55·9
21	47·16	−·02	−·04	47·10	......	......	......	......	50·61	·00	−·06	50·55	50·90	·00	−·09	50·81	47·20	57·9
28	47·22	−·02	−·01	47·19	......	......	......	......	50·23	·00	·00	50·23	49·59	·00	·00	49·59	44·60	50·4
Oct. 5	47·29	−·01	·00	47·28	......	......	......	......	49·76	·00	+·02	49·78	49·21	·00	+·01	49·22	43·60	48·3
12	47·39	−·01	−·03	47·35	......	......	......	......	49·40	·00	−·06	49·34	48·69	·00	−·09	48·60	48·00	56·8
19	47·44	−·01	−·02	47·41	......	......	......	......	49·19	·00	−·03	49·16	48·89	·00	−·05	48·84	46·20	52·8
26	47·50	−·01	·00	47·49	......	......	......	......	48·96	·00	+·02	48·98	48·00	·00	+·01	48·01	44·80	46·8
Nov. 2	47·53	·00	+·03	47·56	......	......	......	......	48·50	·00	+·06	48·56	46·36	·00	+·06	46·42	38·00	40·2
9	47·58	·00	+·03	47·61	......	......	......	......	47·70	·00	+·05	47·75	44·71	·00	+·04	44·75	37·10	41·0
16	47·67	·00	−·02	47·65	......	......	......	......	46·92	·00	−·05	46·87	44·74	·00	−·08	44·66	47·60	53·2
23	47·70	·00	−·01	47·69	......	......	......	......	47·89	·00	−·01	47·88	46·22	·00	−·04	46·18	43·40	49·9
30	47·71	·00	+·03	47·74	......	......	......	......	46·96	·00	+·04	47·00	46·21	·00	+·05	46·26	38·20	41·2
Dec. 7	47·76	+·01	−·01	47·76	......	......	......	......	46·60	·00	−·02	46·58	44·04	·00	−·05	43·09	43·30	49·8
14	47·77	+·01	−·01	47·77	......	......	......	......	46·12	·00	−·03	46·09	44·36	·00	−·06	44·30	43·80	51·0
21	47·77	+·01	+·02	47·80	......	......	......	......	45·91	·00	+·02	45·93	44·16	·00	+·02	44·18	38·40	41·8
28	47·74	+·01	+·06	47·81	......	......	......	......	45·69	·00	+·09	45·69	43·66	·00	+·11	43·77	32·40	32·2
1864. Jan. 4	47·72	+·01	+·07	47·80	......	......	......	......	45·07	·00	+·08	45·15	41·50	·00	+·09	41·59	30·40	29·9
11	47·74	+·01	+·02	47·77	......	......	......	......	44·19	·00	+·01	44·20	39·42	·00	−·02	39·40	32·60	42·0
18	47·73	+·01	+·03	47·77	......	......	......	......	43·35	·00	+·02	43·37	39·68	·00	+·01	39·69	34·10	38·9
25	47·72	+·01	+·01	47·74	......	......	......	......	43·03	·00	−·01	43·02	40·40	·00	−·04	40·36	38·20	45·6
Feb. 1	47·70	+·02	·00	47·72	......	......	......	......	43·10	·00	−·02	43·08	41·19	·00	−·04	41·15	40·00	47·0
8	47·64	+·02	+·07	47·73	......	......	......	......	43·00	·00	+·05	43·05	39·84	·00	+·06	39·90	30·60	31·1
15	47·64	+·02	·00	47·66	......	......	......	......	42·47	·00	−·02	42·45	39·02	·00	−·05	38·97	40·40	47·3

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Date.	t_1 or 24 French Feet deep Therm.				t_2 or 12 French Feet deep Therm.				t_3 or 6 French Feet deep Therm.				t_4 or 3 French Feet deep Therm.				t_5, or Surface Therm.	T, or Air Therm.
	t_1, Uncorrected.	Correction for Column.	Correction for Air.	t_1, Corrected.	t_2, Uncorrected.	Correction for Column.	Correction for Air.	t_2, Corrected.	t_3, Uncorrected.	Correction for Column.	Correction for Air.	t_3, Corrected.	t_4, Uncorrected.	Correction for Column.	Correction for Air.	t_4, Corrected.		
1864.																		
Feb. 22	47·55	+·02	+·06	47·63	......	......	......	......	42·14	·00	+·03	42·17	38·86	·00	+·04	38·90	30·08	32·8
29	47·52	+·02	+·03	47·57	......	......	......	......	41·63	·00	+·01	41·64	37·80	·00	−·01	37·79	34·90	39·0
Mar. 7	47·44	+·03	+·06	47·53	......	......	......	......	41·30	·00	+·04	41·34	38·50	·00	+·05	38·55	32·30	29·3
14	47·42	+·03	·00	47·45	......	......	......	......	41·15	·00	−·02	41·13	38·10	·00	−·05	38·05	39·60	47·1
21	47·34	+·03	+·02	47·39	......	......	......	......	41·13	·00	·00	41·13	39·17	·00	−·01	39·16	36·20	41·0
28	47·27	+·03	+·02	47·32	......	......	......	......	41·28	·00	·00	41·28	39·46	·00	−·02	39·44	34·60	42·0
April 4	47·19	+·02	+·02	47·23	......	......	......	......	41·36	·00	·00	41·36	39·70	·00	−·01	39·69	38·60	41·4
11	47·15	+·02	−·01	47·16	......	......	......	......	41·63	·00	−·03	41·60	41·98	·00	−·06	41·92	43·70	50·3
18	47·06	+·02	·00	47·08	......	......	......	......	42·39	·00	−·02	42·37	42·84	·09	−·04	42·80	41·50	47·8
25	47·00	+·02	−·01	47·01	......	......	......	......	43·02	·00	−·03	42·99	44·43	·00	−·05	44·38	44·70	50·0
May 2	46·94	+·01	−·04	46·91	......	......	......	......	43·75	·00	−·07	43·68	45·06	·00	−·12	44·94	47·70	57·6
9	46·85	+·01	−·02	46·84	......	......	......	......	44·35	·00	−·04	44·31	45·90	·00	−·06	45·84	44·20	51·8
16	46·83	+·01	−·08	46·76	......	......	......	......	44·88	·00	−·14	44·74	46·40	·00	−·24	46·16	53·40	69·5
23	46·75	+·01	−·05	46·71	......	......	......	......	45·78	·00	−·09	45·69	49·09	·00	−·14	48·95	49·00	60·9
30	46·67	+·01	−·01	46·67	......	......	......	......	46·50	·00	−·02	46·48	48·42	·00	−·02	48·40	43·40	50·0
June 6	46·66	·00	−·05	46·61	......	......	......	......	46·70	·00	−·11	46·59	48·06	·00	−·17	47·89	50·40	63·2
13	46·61	·00	−·04	46·57	......	......	......	......	47·06	·00	−·07	46·99	49·60	·00	−·10	49·50	50·12	58·1
20	46·61	·00	−·06	46·55	......	......	......	......	47·68	·00	−·12	47·56	50·50	·00	−·17	50·33	55·00	64·2
27	46·60	·00	−·07	46·53	......	......	......	......	48·21	·00	−·14	48·07	50·74	·00	−·20	50·54	52·60	67·0
July 4	46·57	−·01	−·05	46·51	......	......	......	......	48·60	·00	−·11	48·49	51·02	·00	−·15	50·87	51·20	62·7
11	46·58	−·01	−·04	46·53	......	......	......	......	48·90	·00	−·07	48·83	51·81	·00	−·08	51·73	52·00	58·3
18	46·64	−·01	−·10	46·53	......	......	......	......	49·51	·00	−·23	49·28	52·63	·00	−·33	52·30	60·08	77·2
25	46·62	−·01	−·05	46·56	......	......	......	......	50·12	·00	−·10	50·02	53·67	·00	−·12	53·55	53·90	62·2
Aug. 1	46·65	−·02	−·05	46·58	......	......	......	......	50·58	·00	−·11	50·47	53·63	·00	−·13	53·50	54·40	63·3
8	46·68	−·02	−·04	46·62	......	......	......	......	50·70	·00	−·08	50·62	53·13	·00	−·10	53·03	53·20	60·2
15	46·75	−·02	−·07	46·66	......	......	......	......	50·89	·00	−·20	50·69	53·10	·00	−·28	52·82	58·30	72·8
22	46·75	−·02	−·04	46·69	......	......	......	......	51·08	·00	−·06	51·02	51·29	·00	−·09	51·20	49·99	58·2
29	46·83	−·02	−·05	46·76	......	......	......	......	51·08	·00	−·11	50·89	52·58	·00	−·14	52·44	54·10	62·9
Sept. 5	46·87	−·02	−·04	46·81	......	......	......	......	51·10	·00	−·06	51·04	52·93	·00	−·07	52·86	51·60	58·0
12	46·93	−·02	−·02	46·89	......	......	......	......	51·06	·00	−·03	51·03	52·22	·00	−·03	52·19	47·60	53·7
19	47·10	−·02	−·04	47·04	......	......	......	......	50·85	·00	−·08	50·77	51·30	·00	−·12	51·18	50·45	60·5
26	47·07	−·02	−·05	47·00	......	......	......	......	50·59	·00	−·11	50·48	51·09	·00	−·15	50·94	52·40	62·7
Oct. 3	47·13	−·01	−·02	47·10	......	......	......	......	50·40	·00	−·02	50·38	50·53	·00	−·03	50·50	45·80	53·0
10	47·20	−·01	−·01	47·18	......	......	......	......	49·99	·00	−·01	49·98	49·40	·00	−·02	49·38	45·40	51·0
17	47·26	−·01	−·02	47·23	......	......	......	......	49·57	·00	−·02	49·55	48·75	·00	−·04	48·71	46·00	51·7
24	47·34	−·01	·00	47·33	......	......	......	......	49·02	·00	+·02	49·04	47·30	·00	+·01	47·31	41·30	46·2
31	47·40	−·01	+·01	47·40	......	......	......	......	48·38	·00	+·02	48·40	47·13	·00	+·02	47·15	42·80	44·7
Nov. 7	47·46	·00	·00	47·46	......	......	......	......	48·06	·00	+·01	48·07	46·38	·00	·00	46·38	40·40	46·2
14	47·50	·00	·00	47·50	......	......	......	......	47·44	·00	·00	47·44	44·52	·00	−·02	44·50	41·00	47·4
21	47·56	·00	·00	47·56	......	......	......	......	46·68	·00	−·01	46·67	44·45	·00	−·04	44·41	42·40	49·3
28	47·60	·00	−·02	47·58	......	......	......	......	46·37	·00	−·04	46·33	43·64	·00	−·07	43·57	44·40	52·1
Dec. 5	47·65	+·01	−·02	47·64	......	......	......	......	45·93	·00	−·04	45·89	44·30	·00	−·08	44·22	47·00	42·9
12	47·65	+·01	+·01	47·67	......	......	......	......	45·97	·00	+·01	45·98	44·29	·00	−·01	44·28	41·80	45·2
19	47·64	+·01	+·04	47·69	......	......	......	......	45·64	·00	+·06	45·70	42·96	·00	+·05	43·01	34·30	36·9
26	47·64	+·01	+·05	47·70	......	......	......	......	44·90	·00	+·05	44·95	41·16	·00	+·04	41·20	33·00	36·1

(T–9)

Date.	t_1, or 24 French Feet deep Therm.				t_2, or 12 French Feet deep Therm.				t_3, or 6 French Feet deep Therm.				t_4, or 3 French Feet deep Therm.				t_5, or Surface Therm.	T, or Air Therm.
	t_1, Uncorrected.	Correction for Column.	Correction for Air.	t_1, Corrected.	t_2, Uncorrected.	Correction for Column.	Correction for Air.	t_2, Corrected.	t_3, Uncorrected.	Correction for Column.	Correction for Air.	t_3, Corrected.	t_4, Uncorrected.	Correction for Column.	Correction for Air.	t_4, Corrected.		
1865.																		
Jan. 2	47·63	+·01	+·04	47·68	......	......	......	......	44·22	·00	+·04	44·26	40·91	·00	+·03	40·94	32·40	37·0
9	47·65	+·01	+·03	47·69	......	......	......	......	43·68	·00	+·02	43·70	40·42	·00	−·01	40·41	37·20	40·9
16	47·63	+·01	+·03	47·67	......	......	......	......	43·49	·00	+·01	43·50	40·80	·00	+·01	40·81	36·00	39·9
23	47·60	+·02	+·05	47·67	......	......	......	......	43·13	·00	+·04	43·17	39·69	·00	+·03	39·72	31·30	35·0
30	47·56	+·02	+·05	47·63	......	......	......	......	42·56	·00	+·03	42·59	38·59	·00	+·02	38·61	30·06	35·7
Feb. 6	47·52	+·02	+·05	47·59	......	......	......	......	41·96	·00	+·03	41·99	38·60	·00	+·03	38·63	30·08	33·5
13	47·49	+·02	+·04	47·55	......	......	......	......	41·64	·00	+·03	41·67	37·95	·00	+·02	37·97	30·09	34·3
20	47·43	+·02	+·05	47·50	......	......	......	......	41·21	·00	+·03	41·24	37·32	·00	+·02	37·34	29·60	32·8
27	47·41	+·03	+·02	47·46	......	......	......	......	40·85	·00	·00	40·85	38·21	·00	−·02	38·19	34·60	40·9
Mar. 6	47·34	+·03	+·02	47·39	......	......	......	......	41·00	·00	·00	41·00	38·78	·00	−·01	38·77	34·30	41·1
13	47·26	+·03	+·03	47·32	......	......	......	......	40·97	·00	+·01	40·98	38·50	·00	−·01	38·49	34·30	39·4
20	47·22	+·03	+·03	47·28	......	......	......	......	39·30	·00	·00	39·30	38·62	·00	+·01	38·63	32·20	37·9
27	47·14	+·03	+·02	47·19	......	......	......	......	40·80	·00	·00	40·80	38·13	·00	−·02	38·11	31·20	41·0
April 3	47·10	+·02	−·01	47·11	......	......	......	......	40·69	·00	−·03	40·66	39·61	·00	−·06	39·55	40·30	49·2
10	47·03	+·02	−·02	47·03	......	......	......	......	41·35	·00	−·04	41·31	41·83	·00	−·09	41·74	43·60	54·0
17	46·94	+·02	−·02	46·94	......	......	......	......	42·28	·00	−·04	42·24	42·91	·00	−·08	42·83	44·80	51·8
24	46·85	+·02	·00	46·87	......	......	......	......	42·79	·00	−·02	42·77	43·28	·00	−·03	43·25	40·70	46·8
May 1	46·76	+·01	−·02	46·75	......	......	......	......	43·25	·00	−·04	43·21	44·03	·00	−·07	43·96	43·00	51·6
8	46·72	+·01	−·01	46·72	......	......	......	......	43·75	·00	−·03	43·72	44·93	·00	−·04	44·89	46·00	49·1
15	46·64	+·01	−·01	46·64	......	......	......	......	44·13	·00	−·03	44·10	44·32	·00	−·05	44·27	43·90	60·0
22	46·62	+·01	−·07	46·56	......	......	......	......	44·40	·00	−·13	44·27	46·07	·00	−·23	45·84	52·20	69·0
29	46·54	+·01	−·03	46·52	......	......	......	......	45·32	·00	−·06	45·26	48·80	·00	−·08	48·72	50·05	56·3
June 5	46·50	·00	−·05	46·45	......	......	......	......	46·21	·00	−·11	46·10	48·55	·00	−·18	48·37	50·40	63·7
12	46·45	·00	−·05	46·40	......	......	......	......	46·95	·00	−·11	46·84	50·48	·00	−·17	50·51	50·16	64·1
19	46·45	·00	−·07	46·38	......	......	......	......	47·88	·00	−·16	47·72	52·30	·00	−·24	52·06	57·10	70·0
26	46·44	·00	−·06	46·38	......	......	......	......	48·93	·00	−·15	48·78	53·22	·00	−·21	53·01	55·60	68·5
July 3	46·54	−·01	−·09	46·44	......	......	......	......	49·64	·00	−·19	49·45	53·73	·00	−·27	53·46	60·00	72·8
10	46·50	−·01	−·04	46·45	......	......	......	......	50·35	·00	−·08	50·27	54·51	·00	−·08	54·43	53·40	60·5
17	46·45	−·01	−·07	46·37	......	......	......	......	50·80	·00	−·18	50·62	54·11	·00	−·25	53·86	57·30	71·0
24	46·46	−·01	−·06	46·39	......	......	......	......	51·10	·00	−·16	50·94	54·78	·00	−·21	54·57	60·20	69·0
31	46·47	−·01	−·04	46·42	......	......	......	......	51·58	·00	−·07	51·51	55·02	·00	−·06	54·96	51·60	59·0
Aug. 7	46·54	−·02	−·08	46·44	......	......	......	......	51·71	·00	−·17	51·54	54·35	·00	−·23	45·12	57·60	70·2
14	46·56	−·02	−·05	46·49	......	......	......	......	51·79	·00	−·10	51·69	54·32	·00	−·12	54·20	55·00	62·3
21	46·61	−·02	−·03	46·56	......	......	......	......	51·80	·00	−·03	51·77	53·90	·00	−·01	53·89	52·40	54·6
28	46·72	−·02	−·06	46·64	......	......	......	......	51·85	·00	−·12	51·73	54·14	·00	−·16	53·98	56·40	64·8
Sept. 4	46·80	−·02	−·07	46·71	......	......	......	......	51·97	·00	−·14	51·83	53·93	·00	−·19	53·74	58·00	67·3
11	46·87	−·02	−·04	46·81	......	......	......	......	52·09	·00	−·08	52·01	54·99	·00	−·08	54·91	56·00	60·0
18	46·97	−·02	−·07	46·88	......	......	......	......	52·42	·00	−·14	52·28	55·29	·00	−·18	55·11	57·40	66·8
25	47·04	−·02	−·04	46·98	......	......	......	......	52·56	·00	−·07	52·49	54·21	·00	−·09	54·12	52·70	60·0
Oct. 2	47·13	−·02	−·05	47·06	......	......	......	......	52·31	·00	−·10	52·21	53·30	·00	−·14	53·16	53·20	62·9
9	47·19	−·01	−·03	47·15	......	......	......	......	51·98	·00	−·03	51·95	52·52	·00	−·02	52·50	50·14	55·0
16	47·25	−·01	−·01	47·23	......	......	......	......	51·59	·00	+·03	51·62	51·32	·00	+·03	51·35	55·11	49·0
23	47·40	−·01	+·01	47·40	......	......	......	......	50·82	·00	+·05	50·87	46·57	·00	+·02	46·59	39·60	45·1
30	47·43	−·01	−·02	47·40	......	......	......	......	49·71	·00	−·02	49·69	46·60	·00	−·05	46·55	41·20	52·3
Nov. 6	47·49	·00	+·02	47·51	......	......	......	......	48·64	·00	+·07	48·71	45·61	·00	+·06	45·67	36·20	40·0

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Date.	t_1 or 24 French Feet deep Therm.				t_2 or 12 French Feet deep Therm.				t_3 or 6 French Feet deep Therm.				t_4 or 3 French Feet deep Therm.				t_5. or Surface Therm.	T. or Air Therm.
	t_1. Uncorrected.	Correction for Column.	Correction for Air.	t_1. Corrected.	t_2. Uncorrected.	Correction for Column.	Correction for Air.	t_2. Corrected.	t_3. Uncorrected.	Correction for Column.	Correction for Air.	t_3. Corrected.	t_4. Uncorrected.	Correction for Column.	Correction for Air.	t_4. Corrected.		
1865.	°			°					°			°	°			°	°	°
Nov. 13	47·57	·00	+·01	47·58	......	......	......	......	47·80	·00	+·02	47·82	44·65	·00	·00	44·65	37·60	44·8
20	47·65	·00	+·01	47·66	......	......	......	......	47·12	·00	+·01	47·13	44·59	·00	·00	44·59	41·00	44·9
27	47·66	·00	+·04	47·72	......	......	......	......	46·79	·00	+·06	46·85	44·75	·00	+·07	44·82	36·60	38·5
Dec. 4	47·75	+·01	+·02	47·78	......	......	......	......	46·48	·00	+·01	46·49	44·10	·00	·00	44·10	38·20	44·0
11	47·80	+·01	+·02	47·83	......	......	......	......	46·17	·00	+·02	46·19	44·70	·00	+·03	44·73	39·20	41·8
18	47·83	+·01	+·02	47·86	......	......	......	......	46·02	·00	+·01	46·03	43·71	·00	·00	43·71	40·60	44·0
25	47·85	+·01	·00	47·86	......	......	......	......	45·80	·00	+·01	45·81	44·32	·00	−·03	44·29	42·60	47·2
1866.																		
Jan. 1	47·82	+·01	+·04	47·87	......	......	......	......	45·65	·00	+·06	45·71	43·41	·00	+·05	43·46	34·80	37·0
8	47·82	+·01	+·04	47·87	......	......	......	......	45·18	·00	+·04	45·22	42·37	·00	+·03	42·40	35·60	36·2
15	47·83	+·01	+·03	47·87	......	......	......	......	44·56	·00	+·03	44·59	40·92	·00	+·01	40·93	37·80	39·0
22	47·83	+·01	+·01	47·85	......	......	......	......	44·16	·00	−·01	44·15	41·97	·00	−·02	41·95	38·40	41·8
29	47·80	+·02	+·03	47·85	......	......	......	......	44·10	·00	+·03	44·13	42·59	·00	+·03	42·62	35·60	38·8
Feb. 5	47·79	+·02	+·02	47·83	......	......	......	......	44·50	·00	·00	44·50	42·20	·00	−·02	42·18	37·20	43·7
12	47·74	+·02	+·04	47·80	......	......	......	......	43·83	·00	+·04	43·87	41·29	·00	+·03	41·32	33·20	36·7
19	47·70	+·02	+·03	47·75	......	......	......	......	43·32	·00	+·01	43·33	39·65	·00	·00	39·65	33·50	40·3
26	47·67	+·02	+·03	47·72	......	......	......	......	42·68	·00	+·01	42·69	39·50	·00	·00	39·50	34·00	39·9
Mar. 5	47·60	+·03	+·05	47·68	......	......	......	......	42·25	·00	+·02	42·27	38·15	·00	+·01	38·16	30·80	36·4
12	47·58	+·03	+·02	47·63	......	......	......	......	41·72	·00	−·01	41·71	38·21	·00	−·03	38·18	37·30	43·8
19	47·52	+·03	+·03	47·58	......	......	......	......	41·52	·00	+·01	41·53	38·97	·00	−·01	38·96	36·20	39·6
26	47·48	+·03	·00	47·51	......	......	......	......	41·55	·00	−·02	41·53	39·12	·00	−·06	39·06	38·00	47·6
April 2	47·40	+·02	+·03	47·45	......	......	......	......	41·82	·00	+·01	41·83	41·39	·00	+·01	41·40	36·50	39·3
9	47·34	+·02	+·01	47·37	......	......	......	......	42·20	·00	·00	42·20	40·92	·00	−·01	40·91	38·80	43·2
16	47·31	+·02	−·03	47·30	......	......	......	......	42·41	·00	−·03	42·39	42·28	·00	−·10	42·18	44·60	54·7
23	47·25	+·02	·00	47·27	......	......	......	......	42·95	·00	−·02	42·93	43·16	·00	−·03	43·13	45·20	57·4
30	47·15	+·02	−·01	47·16	......	......	......	......	43·47	·00	−·03	43·44	44·05	·00	−·04	44·01	38·90	49·2
May 7	47·10	+·01	−·04	47·07	......	......	......	......	43·73	·00	−·08	43·65	43·45	·00	−·14	43·31	46·00	59·9
14	47·01	+·01	·00	47·02	......	......	......	......	44·04	·00	−·02	44·02	44·68	·00	−·03	44·65	41·80	47·9
21	47·01	+·01	−·07	46·95	......	......	......	......	44·54	·00	−·13	44·41	45·96	·00	−·23	45·73	51·20	67·8
28	46·91	+·01	−·03	46·89	......	......	......	......	45·26	·00	−·07	45·19	47·63	·00	−·10	47·53	47·80	56·9
June 4	46·85	·00	−·03	46·82	......	......	......	......	45·95	·00	−·06	45·89	47·56	·00	−·08	47·48	49·00	55·2
11	46·93	·00	−·05	46·78	......	......	......	......	46·45	·00	−·10	46·35	49·10	·00	−·15	48·95	52·20	61·5
18	46·79	·00	−·05	46·74	......	......	......	......	47·24	·00	−·10	47·14	49·90	·00	−·15	49·75	47·70	62·2
25	46·79	·00	−·08	46·71	......	......	......	......	47·84	·00	−·17	47·67	51·26	·00	−·26	51·00	58·50	70·9
July 9	46·74	−·01	−·06	46·67	......	......	......	......	49·50	·00	−·12	49·38	52·38	·00	−·17	52·21	56·60	65·2
16	46·74	−·01	−·04	46·69	......	......	......	......	49·96	·00	−·08	49·68	54·42	·00	−·09	54·33	57·20	60·0
23	46·76	−·01	−·08	46·67	......	......	......	......	50·84	·00	−·17	50·67	55·10	·00	−·23	54·87	58·20	69·8
30	46·74	−·01	−·02	46·71	......	......	......	......	51·45	·00	−·02	51·43	54·36	·00	+·01	54·37	49·60	52·8
Aug. 6	46·76	−·02	−·01	46·73	......	......	......	......	51·26	·00	·00	51·26	53·09	·00	+·03	53·12	49·60	51·0
13	46·82	−·02	−·05	46·75	......	......	......	......	51·12	·00	−·09	51·03	52·50	·00	−·12	52·38	53·00	60·8
20	46·89	−·02	−·06	46·81	......	......	......	......	51·02	·00	−·12	50·90	52·25	·00	−·16	52·09	54·40	61·0
27	46·95	−·02	−·06	46·87	......	......	......	......	51·09	·00	−·13	50·96	53·29	·00	−·17	53·12	55·50	64·8
Sept. 3	46·98	−·02	−·04	46·92	......	......	......	......	51·25	·00	−·06	51·19	52·73	·00	−·07	52·66	49·10	57·7
10	47·14	−·02	−·06	47·06	......	......	......	......	51·13	·00	−·12	51·01	52·16	·00	−·16	52·00	53·20	64·0
17	47·12	−·02	−·03	47·07	......	......	......	......	50·98	·00	−·04	50·94	51·60	·00	−·05	51·55	47·60	56·0
24	47·20	−·02	−·04	47·14	......	......	......	......	50·66	·00	−·06	50·60	50·47	·00	−·10	50·37	46·70	57·6

Date.	t_1 or 24 French Foot deep Therm.				t_2 or 12 French Foot deep Therm.				t_3 or 6 French Foot deep Therm.				t_4 or 3 French Foot deep Therm.				t_5, or Surface Therm.	T, or Air Therm.
	t_1, Uncorrected.	Correction for Column.	Correction for Air.	t_1, Corrected.	t_2, Uncorrected.	Correction for Column.	Correction for Air.	t_2, Corrected.	t_3, Uncorrected.	Correction for Column.	Correction for Air.	t_3, Corrected.	t_4, Uncorrected.	Correction for Column.	Correction for Air.	t_4, Corrected.		
1866.																		
Oct. 1	47·26	−·01	−·03	47·22	......	......	......	......	50·20	·00	−·05	50·15	50·30	·00	−·07	50·23	49·40	55·5
8	47·34	−·01	−·02	47·31	......	......	......	......	50·19	·00	−·02	50·17	50·80	·00	−·01	50·79	49·50	52·2
15	47·37	−·01	−·01	47·35	......	......	......	......	50·10	·00	·00	50·10	49·71	·00	·00	49·71	43·50	50·1
22	47·45	−·01	−·03	47·42	......	......	......	......	49·58	·00	−·05	50·53	49·29	·00	−·06	49·23	50·50	56·0
29	47·50	−·01	·00	47·49	......	......	......	......	49·37	·00	·00	49·37	48·48	·00	−·01	48·47	43·50	49·0
Nov. 5	47·57	·00	−·02	47·55	......	......	......	......	48·98	·00	−·03	49·95	47·78	·00	−·07	47·71	45·70	54·2
12	47·62	·00	·00	47·62	......	......	......	......	48·74	·00	·00	48·74	46·48	·00	−·03	46·45	41·90	48·9
19	47·63	·00	+·05	47·68	......	......	......	......	47·68	·00	+·09	47·77	44·51	·00	−·09	44·42	31·50	35·0
26	47·70	·00	+·02	47·72	......	......	......	......	46·70	·00	+·03	46·73	43·27	·00	·00	43·27	37·60	43·0
Dec. 3	47·75	+·01	−·02	47·74	......	......	......	......	46·17	·00	+·04	46·21	43·08	·00	−·08	43·00	40·20	53·1
10	47·76	+·01	+·02	47·79	......	......	......	......	45·62	·00	+·05	45·67	42·52	·00	−·09	42·43	38·40	44·0
17	47·81	+·01	−·02	47·80	......	......	......	......	45·16	·00	+·04	45·20	42·20	·00	−·08	42·12	40·20	51·9
24	47·82	+·01	·00	47·83	......	......	......	......	45·00	·00	+·02	45·02	43·29	·00	−·04	43·25	42·20	48·0
31	47·77	+·01	+·05	47·83	......	......	......	......	44·93	·00	+·06	44·99	43·20	·00	−·08	43·12	33·60	33·8
1867.																		
Jan. 7	47·77	+·01	+·03	47·81	......	......	......	......	44·50	·00	+·03	44·53	40·40	·00	+·01	40·41	30·60	39·0
14	47·50	+·01	+·07	47·58	......	......	......	......	42·58	·00	+·06	42·64	39·32	·00	+·06	39·38	28·30	30·3
21	47·74	+·01	+·05	47·80	......	......	......	......	42·73	·00	+·03	42·76	38·10	·00	+·01	38·11	29·90	36·0
28	47·76	+·01	·00	47·77	......	......	......	......	42·20	·00	−·03	42·17	38·20	·00	−·06	38·14	41·30	49·0
Feb. 4	47·71	+·02	+·02	47·75	......	......	......	......	42·30	·00	·00	42·30	39·90	·00	−·01	39·89	39·10	42·0
11	47·66	+·02	+·03	47·71	......	......	......	......	42·12	·00	+·01	42·13	39·90	·00	+·01	39·91	34·60	38·9
18	47·65	+·02	−·01	47·66	......	......	......	......	42·31	·00	−·03	42·28	41·13	·00	−·07	41·06	40·40	50·4
25	47·57	+·02	·00	47·59	......	......	......	......	42·67	·00	−·02	42·65	42·30	·00	−·04	42·26	39·70	46·6
Mar. 4	47·50	+·03	+·02	47·55	......	......	......	......	42·82	·00	·00	42·82	40·51	·00	−·01	40·50	37·40	42·9
11	47·40	+·03	+·04	47·47	......	......	......	......	42·41	·00	+·03	42·44	39·79	·00	+·04	39·83	31·40	34·2
18	47·31	+·03	+·03	47·40	......	......	......	......	41·92	·00	+·02	41·94	38·44	·00	·00	38·44	30·50	35·2
25	47·30	+·03	−·02	47·31	......	......	......	......	41·38	·00	−·04	41·34	38·10	·00	−·08	38·02	39·00	51·9
April 1	47·25	+·02	−·02	47·25	......	......	......	......	41·35	·00	−·04	41·31	39·58	·00	−·09	39·49	41·40	53·4
8	47·17	+·02	·00	47·19	......	......	......	......	41·73	·00	−·02	41·71	41·61	·00	−·05	41·56	42·30	48·3
15	47·09	+·02	−·01	47·10	......	......	......	......	42·32	·00	−·03	42·29	42·10	·00	−·05	42·05	40·80	49·5
22	47·04	+·02	−·02	47·04	......	......	......	......	42·70	·00	−·04	42·66	43·23	·00	−·08	43·15	43·50	53·0
29	46·96	+·02	−·01	46·97	......	......	......	......	42·23	·00	−·03	42·20	43·35	·00	−·06	43·29	42·80	50·1
May 6	46·92	+·01	−·04	46·89	......	......	......	......	43·60	·00	−·08	43·52	44·45	·00	−·14	44·31	48·60	60·5
13	46·79	+·01	+·01	46·81	......	......	......	......	44·23	·00	−·01	44·22	45·59	·00	+·01	45·60	39·40	45·1
20	46·75	+·01	−·01	46·75	......	......	......	......	44·44	·00	−·03	44·41	44·70	·00	−·04	44·66	44·70	49·3
27	46·70	+·01	−·02	46·69	......	......	......	......	44·59	·00	−·04	44·55	44·80	·00	−·07	44·73	44·20	52·5
June 3	46·67	·00	−·04	46·63	......	......	......	......	44·96	·00	−·08	44·88	47·20	·00	−·14	47·06	52·50	60·3
10	46·62	·00	−·06	46·56	......	......	......	......	45·98	·00	−·12	45·86	48·26	·00	−·19	48·07	52·60	65·2
17	46·59	·00	−·05	46·54	......	......	......	......	46·70	·00	−·11	46·59	49·24	·00	−·16	49·08	52·00	63·0
24	46·57	·00	−·06	46·51	......	......	......	......	47·37	·00	−·11	47·26	50·31	·00	−·17	50·14	53·20	64·2
July 1	46·54	−·01	−·04	46·49	......	......	......	......	48·04	·00	−·07	47·97	52·03	·00	−·08	51·95	52·50	57·9
8	46·55	−·01	−·07	46·47	......	......	......	......	48·86	·00	−·14	48·72	51·96	·00	−·20	51·76	53·60	66·8
15	46·54	−·01	−·07	46·46	......	......	......	......	49·54	·00	−·14	49·40	54·00	·00	−·19	53·81	56·50	67·2
22	46·53	−·01	−·02	46·50	......	......	......	......	51·10	·00	−·01	51·09	53·20	·00	+·01	53·21	51·20	52·0
29	46·54	−·01	−·06	46·47	......	......	......	......	50·23	·00	−·12	50·11	51·62	·00	−·17	51·45	50·08	65·1
Aug. 5	46·57	−·02	−·06	46·49	......	......	......	......	50·14	·00	−·12	50·02	52·69	·00	−·15	52·54	55·75	64·1

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Date.	t_1 or 24 French Feet deep Therm.				t_2 or 12 French Feet deep Therm.				t_3 or 6 French Feet deep Therm.				t_4 or 3 French Feet deep Therm.				t_5, or Surface Therm.	T., or Air Therm.
	t_1, Uncorrected.	Correction for Column.	Correction for Air.	t_1, Corrected.	t_2, Uncorrected.	Correction for Column.	Correction for Air.	t_2, Corrected.	t_3, Uncorrected.	Correction for Column.	Correction for Air.	t_3, Corrected.	t_4, Uncorrected.	Correction for Column.	Correction for Air.	t_4, Corrected.		
1867.	°			°	°			°	°			°				°	°	°
Aug. 12	46·64	−·02	−·09	46·53	......	......	......	......	50·55	·00	−·20	50·35	53·15	·00	−·28	52·87	57·80	73·0
19	46·66	−·02	·00	46·64	......	......	......	......	50·89	·00	+·04	50·93	53·83	·00	+·12	53·95	52·80	46·5
26	46·70	−·02	−·06	46·62	......	......	......	......	51·21	·00	−·12	51·09	53·90	·00	−·14	53·76	55·80	64·2
Sept. 2	46·75	−·02	−·03	46·70	......	......	......	......	51·32	·00	−·04	51·28	53·51	·00	−·01	53·50	51·10	54·8
9	46·85	−·02	−·06	46·77	......	......	......	......	51·44	·00	−·12	51·32	53·18	·00	−·15	53·03	53·90	64·1
16	46·89	−·02	−·02	46·85	......	......	......	......	51·33	·00	−·03	51·30	52·90	·00	−·01	52·89	48·60	54·2
23	46·96	−·02	−·03	46·91	......	......	......	......	51·13	·00	−·05	51·08	51·77	·00	−·07	51·70	51·00	57·0
30	47·05	−·02	−·03	47·00	......	......	......	......	50·80	·00	−·04	50·76	51·30	·00	−·05	51·25	50·40	54·8
Oct. 7	47·07	−·01	·00	47·06	......	......	......	......	50·42	·00	+·02	50·44	49·18	·00	+·01	49·19	43·20	47·8
14	47·16	−·01	−·01	47·14	......	......	......	......	49·60	·00	+·01	49·61	48·48	·00	−·01	48·47	46·20	49·0
21	47·25	−·01	−·03	47·21	......	......	......	......	49·33	·00	−·06	49·27	48·80	·00	−·09	48·71	48·80	56·8
28	47·29	−·01	+·01	47·29	......	......	......	......	49·15	·00	+·04	49·19	48·86	·00	+·06	48·92	40·04	44·2
Nov. 4	47·37	·00	−·02	47·35	......	......	......	......	48·83	·00	−·03	48·80	47·12	·00	−·06	47·06	45·60	53·3
11	47·41	·00	+·01	47·42	......	......	......	......	48·13	·00	+·03	48·16	46·33	·00	+·02	46·35	41·50	43·8
18	47·47	·00	+·01	47·48	......	......	......	......	47·67	·00	+·02	47·69	45·62	·00	+·01	45·63	37·90	44·8
25	47·53	·00	+·01	47·54	......	......	......	......	47·20	·00	+·01	47·21	44·20	·00	−·02	44·18	40·40	46·4
Dec. 2	47·50	+·01	+·08	47·59	......	......	......	......	46·30	·00	+·11	46·41	43·93	·00	+·14	44·07	31·00	27·6
9	47·58	+·01	+·02	47·61	......	......	......	......	45·76	·00	+·02	45·78	41·83	·00	·00	41·83	36·40	41·5
16	47·64	+·01	−·02	47·63	......	......	......	......	45·26	·00	−·04	45·22	42·94	·00	−·08	42·86	45·40	53·2
23	47·63	+·01	+·02	47·66	......	......	......	......	45·05	·00	+·02	45·07	42·05	·00	·00	42·05	37·00	42·3
30	47·63	+·01	+·03	47·67	......	......	......	......	44·69	·00	+·03	44·72	42·66	·00	+·03	42·69	36·80	39·4
1868.																		
Jan. 6	47·63	+·01	+·03	47·67	......	......	......	......	44·35	·00	+·03	44·38	40·90	·00	+·01	40·91	35·00	39·0
13	47·62	+·01	+·03	47·66	......	......	......	......	43·76	·00	+·02	43·78	42·60	·00	+·02	42·62	36·40	39·7
20	47·62	+·01	+·05	47·68	......	......	......	......	43·40	·00	+·04	43·44	41·39	·00	+·04	41·43	32·80	35·2
27	47·61	+·01	·00	47·62	......	......	......	......	43·22	·00	−·03	43·19	39·92	·00	+·06	39·98	39·00	48·2
Feb. 3	47·54	+·02	+·05	47·61	......	......	......	......	42·90	·00	+·03	42·93	41·10	·00	+·04	41·14	34·40	36·1
10	47·55	+·02	−·01	47·56	......	......	......	......	42·90	·00	−·03	42·87	40·50	·00	−·07	40·43	41·90	49·6
17	47·50	+·02	+·01	47·53	......	......	......	......	42·68	·00	−·01	42·67	41·32	·00	−·04	41·28	39·20	45·8
24	47·47	+·02	−·02	47·47	......	......	......	......	42·96	·00	−·04	42·92	41·24	·00	−·09	41·15	43·60	52·8
Mar. 2	47·40	+·03	·00	47·43	......	......	......	......	43·18	·00	−·01	43·17	42·53	·00	−·02	42·51	38·10	45·6
9	47·34	+·03	+·01	47·38	......	......	......	......	43·37	·00	·00	43·37	41·94	·00	−·02	41·92	36·90	44·3
16	47·32	+·03	−·03	47·32	......	......	......	......	43·29	·00	−·06	43·23	42·53	·00	−·11	42·42	45·40	56·0
23	47·22	+·03	+·03	47·28	......	......	......	......	42·41	·00	+·02	42·43	43·00	·00	+·04	43·04	35·50	37·9
30	47·20	+·03	−·02	47·21	......	......	......	......	42·49	·00	−·04	42·45	42·70	·00	−·08	42·62	44·40	53·0
April 6	47·14	+·02	−·02	47·14	......	......	......	......	43·79	·00	−·04	43·75	44·23	·00	−·07	44·16	43·60	51·6
13	47·08	+·02	−·02	47·08	......	......	......	......	44·10	·00	−·05	44·05	43·21	·00	−·08	43·13	42·50	52·8
20	47·02	+·02	·00	47·04	......	......	......	......	44·18	·00	−·01	44·17	44·60	·00	−·01	44·59	43·20	46·0
27	46·97	+·02	−·01	46·98	......	......	......	......	44·56	·00	−·03	44·53	45·25	·00	−·05	45·20	45·10	49·8
May 4	46·95	+·01	−·04	46·92	......	......	......	......	44·93	·00	−·07	44·86	45·72	·00	−·12	45·60	44·00	58·0
11	46·91	+·01	−·04	46·88	......	......	......	......	45·28	·00	−·08	45·20	46·49	·00	−·13	46·36	49·50	59·2
18	46·87	+·01	−·02	46·86	......	......	......	......	45·83	·00	−·05	45·78	47·50	·00	−·07	47·43	50·60	54·0
25	46·86	+·01	−·06	46·81	......	......	......	......	46·50	·00	−·12	46·38	48·46	·00	−·19	48·27	51·60	65·3
June 1	46·83	·00	−·06	46·77	......	......	......	......	47·01	·00	−·11	46·90	49·49	·00	−·18	49·31	52·51	63·7
8	Omitted to be observed.			......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
15	Omitted to be observed.			......	......	......	......	......	......	......	......	......	......	......	......	......	......	......

Date.	t_1 or 24 French Feet deep Therm.				t_2 or 12 French Feet deep Therm.				t_3 or 6 French Feet deep Therm.				t_4 or 3 French Feet deep Therm.				t_5, or Surface Therm.	T, or Air Therm.
	t_1, Uncorrected.	Correction for Column.	Correction for Air.	t_1, Corrected.	t_2, Uncorrected.	Correction for Column.	Correction for Air.	t_2, Corrected.	t_3, Uncorrected.	Correction for Column.	Correction for Air.	t_3, Corrected.	t_4, Uncorrected.	Correction for Column.	Correction for Air.	t_4, Corrected.		
1868.	°			°	°			°	°			°	°			°	°	°
June 22	46·80	·00	−·06	46·74	......	......	......	......	48·70	·00	−·12	48·58	52·22	·00	−·16	52·06	55·40	63·7
29	46·80	·00	−·08	46·72	......	......	......	......	49·48	·00	−·16	49·32	52·70	·00	−·24	52·46	56·20	70·5
July 6	46·80	−·01	−·06	46·73	......	......	......	......	50·16	·00	−·12	50·04	54·60	·00	−·15	54·45	56·00	65·2
13	46·82	−·01	−·06	46·75	......	......	......	......	50·86	·00	−·13	50·73	54·84	·00	−·17	54·67	57·60	65·9
20	46·84	−·01	−·06	46·77	......	......	......	......	51·50	·00	−·13	51·37	55·68	·00	−·16	55·52	59·00	66·3
27	46·90	−·01	−·10	46·79	......	......	......	......	52·12	·00	−·23	51·89	56·05	·00	−·31	55·74	60·00	75·2
Aug. 3	46·93	−·02	−·09	46·82	......	......	......	......	52·59	·00	−·20	52·39	56·71	·00	−·26	56·45	63·20	73·1
10	46·97	−·02	−·08	46·87	......	......	......	......	53·17	·00	−·17	53·00	57·18	·00	−·21	56·97	58·60	70·0
(a) 17	47·49	−·02	−·09	47·38	......	......	......	......	54·00	·00	−·21	53·79	56·29	·00	−·28	56·01	58·00	73·7
(b) 24	47·06	−·02	......	......	......	......	......	......	53·30	·00	−·21	53·09	55·47	·00	−·28	55·19	51·20	......
31	47·14	−·02	−·05	47·07	......	......	......	......	52·96	·00	−·08	52·88	54·10	·00	−·10	54·00	53·00	60·9
Sept. 7	47·25	−·02	−·09	47·14	......	......	......	......	52·80	·00	−·20	52·60	54·91	·00	−·27	54·64	62·00	73·3
14	47·27	−·02	−·02	47·23	......	......	......	......	52·72	·00	+·01	52·73	53·94	·00	+·03	53·97	47·00	51·6
21	47·38	−·02	−·04	47·32	......	......	......	......	52·37	·00	−·07	52·30	52·69	·00	−·08	52·61	53·30	55·9
28	47·47	−·02	−·04	47·41	......	......	......	......	52·10	·00	−·06	52·04	52·37	·00	−·08	52·29	50·10	58·5
Oct. 5	47·56	−·01	−·02	47·53	......	......	......	......	51·68	·00	−·02	51·66	50·91	·00	−·04	50·87	45·56	54·3
12	47·65	−·01	−·04	47·60	......	......	......	......	51·06	·00	−·06	51·00	50·20	·00	−·10	50·10	48·70	57·5
19	47·68	−·01	+·02	47·69	......	......	......	......	50·50	·00	+·07	50·57	48·79	·00	+·08	48·87	38·88	42·2
26	47·78	−·01	·00	47·77	......	......	......	......	49·62	·00	+·02	49·64	46·71	·00	−·01	46·70	40·50	47·9
Nov. 2	47·85	·00	·00	47·85	......	......	......	......	48·70	·00	+·01	48·71	46·54	·00	−·01	46·53	43·70	48·4
9	47·90	·00	+·02	47·92	......	......	......	......	48·20	·00	+·04	48·24	44·71	·00	+·03	44·74	36·20	41·9
16	47·95	·00	+·03	47·98	......	......	......	......	47·29	·00	+·05	47·34	43·94	·00	+·04	43·98	36·00	39·7
23	48·00	·00	+·02	48·02	......	......	......	......	46·68	·00	+·03	46·71	43·37	·00	+·01	43·38	39·40	41·6
30	48·04	·00	+·03	48·07	......	......	......	......	46·18	·00	+·04	46·22	43·12	·00	+·02	43·14	36·60	39·9
Dec. 7	48·10	−·01	−·01	48·10	......	......	......	......	45·86	·00	−·02	45·84	43·98	·00	−·05	43·93	43·40	50·5
14	48·13	+·01	·00	48·14	......	......	......	......	45·88	·00	−·01	45·87	43·55	·00	−·04	43·51	40·60	47·7
21	48·12	+·01	+·03	48·16	......	......	......	......	45·57	·00	+·04	45·61	43·40	·00	+·03	43·43	37·60	39·1
28	48·11	+·01	+·04	48·16	......	......	......	......	45·30	·00	+·04	45·34	42·69	·00	+·05	42·74	35·30	37·3
1869.																		
Jan. 4	48·10	+·01	+·03	48·14	......	......	......	......	44·71	·00	+·02	44·73	41·00	·00	·00	41·00	35·20	41·2
11	48·09	+·01	+·03	48·13	......	......	......	......	44·20	·00	+·02	44·22	42·10	·00	+·01	42·11	38·20	40·8
18	48·08	+·01	+·02	48·11	......	......	......	......	44·21	·00	+·01	44·22	42·37	·00	·00	42·37	37·80	41·4
25	48·08	+·01	+·02	48·11	......	......	......	......	44·25	·00	+·01	44·26	42·18	·00	·00	42·18	35·80	41·5
Feb. 1	48·02	+·02	·00	48·04	......	......	......	......	43·90	·00	−·02	43·88	41·75	·00	−·04	41·71	41·60	47·0
8	47·97	+·02	·00	47·99	......	......	......	......	43·88	·00	−·02	43·86	42·98	·00	−·03	42·95	42·60	47·0
15	47·95	+·02	+·02	47·99	......	......	......	......	44·13	·00	·00	44·13	42·59	·00	−·01	42·58	39·80	43·7
22	47·88	+·02	+·02	47·92	......	......	......	......	44·05	·00	+·01	44·06	42·69	·00	·00	42·69	38·60	43·3
Mar. 1	47·80	+·03	+·05	47·88	......	......	......	......	43·90	·00	+·04	43·94	41·91	·00	+·05	41·96	32·00	36·2
8	47·77	+·03	+·02	47·82	......	......	......	......	43·50	·00	·00	43·50	40·68	·00	−·02	40·66	36·70	43·9
15	47·70	+·03	·00	47·73	......	......	......	......	43·08	·00	−·02	43·06	39·86	·00	−·05	39·81	33·40	47·7
22	47·68	+·03	+·01	47·72	......	......	......	......	42·65	·00	−·01	42·64	39·98	·00	−·04	39·94	37·30	45·9
29	47·61	+·03	+·02	47·66	......	......	......	......	42·62	·00	·00	42·62	40·72	·00	−·02	40·70	37·00	44·3
April 5	47·56	+·02	·00	47·58	......	......	......	......	42·66	·00	−·03	42·63	40·97	·00	−·06	40·91	41·20	49·0
12	47·56	+·02	−·06	47·52	......	......	......	......	42·93	·00	−·10	42·83	42·20	·00	−·19	42·01	50·00	66·3
19	47·46	+·02	−·02	47·46	......	......	......	......	42·60	·00	−·04	42·56	44·49	·00	−·08	44·41	42·60	53·1
26	47·44	+·02	−·07	47·39	......	......	......	......	44·29	·00	−·12	44·17	45·40	·00	−·21	45·19	50·50	67·4

(a) Faulty observations for t_1.

(b) Faulty observations for T, affecting the air corrections of all the thermometers.

Date.	t_1 or 24 French Feet deep Therm.				t_2 or 12 French Feet deep Therm.				t_3 or 6 French Feet deep Therm.				t_4 or 3 French Feet deep Therm.				t_5, or Surface Therm.	T, or Air Therm.
	t_1, Uncorrected.	Correction for Column.	Correction for Air.	t_1, Corrected.	t_2, Uncorrected.	Correction for Column.	Correction for Air.	t_2, Corrected.	t_3, Uncorrected.	Correction for Column.	Correction for Air.	t_3, Corrected.	t_4, Uncorrected.	Correction for Column.	Correction for Air.	t_4, Corrected.		
1869.																		
May 3	47°·33	+·01	·00	47°·34	°	......	......	°	44°·40	·00	−·02	44°·38	46°·18	·00	−·01	46°·17	42°·90	46°·7
10	47·26	+·01	+·01	47·28	......	......	......	......	45·19	·00	+·01	45·20	45·20	·00	+·01	45·21	40·70	44·2
17	47·23	+·01	−·01	47·23	......	......	......	......	45·19	·00	−·03	45·16	45·47	·00	−·05	45·47	43·70	50·3
24	47·18	+·01	−·02	47·17	......	......	......	......	45·46	·00	−·05	45·41	46·38	·00	−·08	46·30	46·00	54·3
31	47·16	+·01	−·03	47·14	......	......	......	......	45·80	·00	−·06	45·74	46·42	·00	−·10	46·32	44·30	56·5
June 7	47·14	·00	−·06	47·08	......	......	......	......	46·20	·00	−·12	46·08	47·92	·00	−·20	47·72	53·90	65·6
14	47·07	·00	−·04	47·03	......	......	......	......	46·86	·00	−·08	46·78	49·25	·00	−·12	49·1[illegible]	47·60	58·7
21	47·07	·00	−·05	47·02	......	......	......	......	47·31	·00	−·11	47·20	49·29	·00	−·16	49·13	52·00	62·8
28	47·06	·00	−·05	47·01	......	......	......	......	48·30	·00	−·11	48·19	52·06	·00	−·15	51·91	54·60	62·8
July 5	47·06	−·01	−·06	46·99	......	......	......	......	49·16	·00	−·13	49·03	53·73	·00	−·17	53·56	58·40	66·0
12	47·05	−·01	−·06	46·98	......	......	......	......	50·06	·00	−·12	49·94	53·99	·00	−·14	53·85	58·00	64·5
19	47·05	−·01	−·05	46·99	......	......	......	......	50·62	·00	−·10	50·52	54·92	·00	−·11	54·81	57·20	62·5
26	47·06	−·01	−·05	47·00	......	......	......	......	51·36	·00	−·11	51·25	57·10	·00	−·10	57·00	58·20	63·2
Aug. 2	47·07	−·02	−·06	46·99	......	......	......	......	51·79	·00	−·11	51·68	54·80	·00	−·14	54·66	53·80	64·1
9	47·10	−·02	−·06	47·02	......	......	......	......	51·76	·00	−·11	51·65	54·02	·00	−·14	53·88	53·00	63·8
16	47·16	−·02	−·06	47·08	......	......	......	......	51·68	·00	−·13	51·45	53·62	·00	−·17	53·45	54·30	66·5
23	47·19	−·02	−·06	47·11	......	......	......	......	51·76	·00	−·12	51·64	54·35	·00	−·16	54·19	......	65·0
30	47·23	−·02	−·04	47·17	......	......	......	......	52·08	·00	−·07	52·01	55·21	·00	−·06	55·15	......	59·2
Sept. 6	47·30	−·02	−·06	47·22	......	......	......	......	52·21	·00	−·11	52·10	54·16	·00	−·14	54·02	56·40	63·5
13	47·33	−·02	−·01	47·30	......	......	......	......	52·15	·00	+·01	52·16	53·78	·00	+·04	53·82	48·90	50·6
20	47·41	−·02	−·02	47·37	......	......	......	......	51·90	·00	−·02	51·88	52·63	·00	−·01	52·62	49·20	54·2
27	47·48	−·02	−·02	47·44	......	......	......	......	51·49	·00	−·02	51·47	52·28	·00	−·01	52·27	50·00	53·2
Oct. 4	47·56	−·01	−·03	47·52	......	......	......	......	51·38	·00	−·04	51·34	52·08	·00	−·05	52·03	51·25	56·0
11	47·65	−·01	−·05	47·59	......	......	......	......	51·16	·00	−·10	51·06	52·37	·00	−·13	52·24	56·40	62·0
18	47·66	−·01	+·01	47·66	......	......	......	......	51·16	·00	+·05	51·21	50·59	·00	+·08	50·67	42·60	44·8
25	47·74	−·01	+·01	47·74	......	......	......	......	52·80	·00	+·07	52·87	48·54	·00	+·04	48·58	42·80	46·2
Nov. 1	47·82	·00	+·02	47·84	......	......	......	......	49·40	·00	−·03	49·37	46·47	·00	−·07	46·40	44·90	53·0
8	47·86	·00	+·01	47·87	......	......	......	......	48·69	·00	+·02	48·71	45·95	·00	·00	45·95	40·40	46·1
15	47·90	·00	+·01	47·91	......	......	......	......	47·79	·00	+·01	47·80	44·80	·00	−·01	44·79	42·90	46·3
22	47·95	·00	+·03	47·98	......	......	......	......	47·39	·00	+·05	47·44	45·43	·00	+·05	45·48	40·50	40·0
29	47·97	·00	+·06	48·03	......	......	......	......	46·89	·00	+·09	46·98	43·66	·00	+·10	43·76	33·00	33·1
Dec. 6	48·01	+·01	+·05	48·07	......	......	......	......	45·98	·00	+·07	46·05	41·34	·00	+·05	41·39	32·60	33·7
13	48·07	+·01	−·01	48·07	......	......	......	......	45·12	·00	−·03	45·09	41·49	·00	−·07	41·42	40·60	49·9
20	48·06	+·01	+·03	48·10	......	......	......	......	44·68	·00	+·03	44·71	41·49	·00	+·01	41·50	37·10	40·0
27	48·04	+·01	+·07	48·12	......	......	......	......	44·20	·00	+·08	44·28	40·33	·00	+·07	40·40	31·40	29·3

Monthly Means of Deep-soil Thermometers at the Royal Observatory, Edinburgh, 1860–69.

Date.	t_1 or 24 French Feet deep Therm. Monthly Means.	Quarterly Means.	Yearly Mean.	t_2 or 12 French Feet deep Therm. Monthly Means.	Quarterly Means.	Yearly Mean.	t_3 or 6 French Feet deep Therm. Monthly Means.	Quarterly Means.	Yearly Mean.	t_4 or 3 French Feet deep Therm. Monthly Means.	Quarterly Means.	Yearly Mean.
1860.												
January	48·35			46·76			42·64			39·47		
February	48·12	48·08		45·52	45·63		41·05	41·46		37·62	38·51	
March	47·78			44·61			40·70			38·44		
April	47·38			44·12			41·49			40·61		
May	47·22	47·09		44·29	44·51		43·95	43·93		45·96	45·02	
June	46·70		47·36	45·12		46·43	46·36		45·62	48·49		45·14
July	46·61			46·33			49·23			52·70		
August	46·72	46·76		47·70	47·50		50·78	50·24		52·95	52·46	
September	46·95			48·48			50·71			51·74		
October	47·25			48·70			49·04			47·99		
November	47·54	47·49		48·26	48·08		47·04	46·87		44·44	44·56	
December	47·67			(47·28)			44·53			41·26		
1861.												
January	47·64			......	......	......	41·92			38·66		
February	47·47	47·45		......	......	......	42·36	42·16		40·72	40·03	
March	47·23			......	......	......	42·19			40·72		
April	46·92			......	......	......	42·87			42·71		
May	46·68	46·70		......	......	......	44·60	44·92		45·78	46·35	
June	46·52		47·12	......	......	......	47·28		46·50	50·56		46·34
July	46·50			......	......	......	50·19			53·14		
August	46·66	46·71		......	......	......	51·32	50·98		53·82	53·17	
September	46·98			......	......	......	51·44			52·54		
October	47·34			......	......	......	50·46			50·22		
November	47·63	47·60		......	......	......	48·09	47·94		44·80	45·79	
December	47·83			......	......	......	45·28			42·36		
1862.												
January	47·83			......	......	......	43·31			40·12		
February	47·72	47·66		......	......	......	42·78	42·87		41·02	40·61	
March	47·44			......	......	......	42·52			40·69		
April	47·14			......	......	......	42·74			42·29		
May	46·87	46·89		......	......	......	44·87	44·94		46·59	46·06	
June	46·67		47·20	......	......	......	47·22		46·30	49·32		45·96
July	46·64			......	......	......	48·84			50·98		
August	46·72	46·77		......	......	......	50·09	49·96		52·49	51·91	
September	46·95			......	......	......	50·96			52·27		
October	47·24			......	......	......	50·12			49·60		
November	47·50	47·47		......	......	......	47·31	47·42		44·19	45·27	
December	47·68			......	......	......	44·83			42·03		

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Date.	t_1 or 24 French Feet deep Therm. Monthly Means.	Quarterly Means.	Yearly Mean.	t_2 or 12 French Feet deep Therm. Monthly Means.	Quarterly Means.	Yearly Mean.	t_3 or 6 French Feet deep Therm. Monthly Means.	Quarterly Means.	Yearly Mean.	t_4 or 3 French Feet deep Therm. Monthly Means.	Quarterly Means.	Yearly Mean.
1863.												
January	47·67			......	......	......	43·56			40·91		
February	47·52	47·49		......	......	......	42·89	43·20		41·05	41 45	
March	47·29			......	......	......	43·15			42·39		
April	47·03			......	......	......	43·96			43·84		
May	46·82	46·85		......	......	......	44·94	45·38		45·76	46·42	
June	46·69			......	......	......	47·24			49·67		
July	46·67		47·20	......	......	......	49·96		46·74	53·25		46·67
August	46·81	46·86		......	......	......	51·48	50·73		53·92	52·67	
September	47·11			......	......	......	50·76			50·85		
October	47·38			......	......	......	49·32			48·67		
November	47·65	47·60		......	......	......	47·61	47·67		45·66	46·13	
December	47·78			......	......	......	46·07			44·06		
1864.												
January	47·77			......	......	......	43·94			40·26		
February	47·66	47·62		......	......	......	42·48	42·55		39·34	39·47	
March	47·42			......	......	......	41·22			38·80		
April	47·12			......	......	......	42·08			42·20		
May	46·78	46·82		......	......	......	44·98	44·79		46·86	46·21	
June	46·56			......	......	......	47·30			49·56		
July	46·[illegible]		47·16	......	......	......	49·16		46·25	52·11		45·84
August	46·66	46·71		......	......	......	50·74	50·24		52·60	52·17	
September	46·94			......	......	......	50·83			51·79		
October	47·25			......	......	......	49·47			48·61		
November	47·52	47·48		......	......	......	47·13	47·41		44·72	45·50	
December	47·68			......	......	......	45·63			43·18		
1865.												
January	47·67			......	......	......	43·44			40·10		
February	47·52	47·50		......	......	......	41·44	41·80		38·03	38·88	
March	47·30			......	......	......	40·52			38·50		
April	46·99			......	......	......	41·74			41·84		
May	46·64	46·68		......	......	......	44·11	44·40		45·54	46·12	
June	46·40			......	......	......	47·36			50·99		
July	46·41		47·08	......	......	......	50·56		46·50	54·26		46·41
August	46·53	46·59		......	......	......	51·68	51·46		54·05	54·26	
September	46·84			......	......	......	52·15			54·47		
October	47·25			......	......	......	51·27			50·03		
November	47·62	47·57		......	......	......	47·63	48·34		44·93	46·39	
December	47·83			......	......	......	46·13			44·21		

Means of Deep-soil Thermometers at the Royal Observatory, Edinburgh, 1860–69.

Date.	t_1 or 24 French Feet deep Therm. Monthly Means.	Quarterly Means.	Yearly Mean.	t_2 or 12 French Feet deep Therm. Monthly Means.	Quarterly Means.	Yearly Mean.	t_3 or 6 French Feet deep Therm. Monthly Means.	Quarterly Means.	Yearly Mean.	t_4 or 3 French Feet deep Therm. Monthly Means.	Quarterly Means.	Yearly Mean.
1866.												
January	°47·86	°	°	°	°	°	°44·76	°	°	°42·27	°	°
February	47·78	47·75		......	......	......	43·60	43·37		40·66	40·53	
March	47·60			......	......	......	41·76			38·66		
April	47·31			......	......	......	42·56			42·33		
May	46·98	47·02		......	......	......	44·32	44·55		45·30	45·64	
June	46·76		47·30	......	......	......	46·76			49·30		
July	46·68			......	......	......	50·34		46·65	53·94		46·22
August	46·79	46·84		......	......	......	51·04	50·77		52·68	52·75	
September	47·05			......	......	......	50·94			51·64		
October	47·36			......	......	......	50·06			49·69		
November	47·64	47·60		......	......	......	48·30	47·93		45·46	45·98	
December	47·80			......	......	......	45·42			42·78		
1867.												
January	47·74			......	......	......	43·02			39·01		
February	47·68	47·68		......	......	......	42·34	42·50		40·78	39·66	
March	47·43			......	......	......	42·14			39·20		
April	47·11			......	......	......	42·03			41·91		
May	46·78	46·82		......	......	......	44·18	44·12		44·82	45·11	
June	46·56		47·14	......	......	......	46·15			48·59		
July	46·48			......	......	......	49·46		46·18	52·44		45·82
August	46·57	46·63		......	......	......	50·60	50·40		53·28	52·73	
September	46·85			......	......	......	51·15			52·47		
October	47·18			......	......	......	49·63			48·82		
November	47·45	47·42		......	......	......	47·96	47·68		45·80	45·77	
December	47·63			......	......	......	45·44			42·70		
1868.												
January	47·66			......	......	......	43·70			41·24		
February	47·54	47·51		......	......	......	42·90	43·18		41·00	41·58	
March	47·32			......	......	......	42·93			42·50		
April	47·06			......	......	......	44·12			44·27		
May	46·87	46·89		......	......	......	45·55	45·98		46·92	47·49	
June	46·74		47·34	......	......	......	48·27			51·28		
July	46·76			......	......	......	51·01		47·31	55·10		47·37
August	47·04	47·03		......	......	......	53·02	52·15		55·86	54·78	
September	47·28			......	......	......	52·42			53·38		
October	47·65			......	......	......	50·72			49·14		
November	47·97	47·92		......	......	......	47·44	47·94		44·35	45·63	
December	48·14			......	......	......	45·66			43·40		

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Date.	t_1 or 24 French Feet deep Therm. Monthly Means.	Quarterly Means.	Yearly Mean.	t_2 or 12 French Feet deep Therm. Monthly Means.	Quarterly Means.	Yearly Mean.	t_3 or 6 French Feet deep Therm. Monthly Means.	Quarterly Means.	Yearly Mean.	t_4 or 3 French Feet deep Therm. Monthly Means.	Quarterly Means.	Yearly Mean.
1869.												
January	48·12			......	......	......	44·36			41·92		
February	47·98	47·95		......	......	......	43·98	43·83		42·48	41·67	
March	47·76			......	......	......	43·15			40·61		
April	44·49			......	......	......	43·05			43·13		
May	47·23	47·25		......	......	......	45·18	45·10		45·89	46·16	
June	47·04		47·55	......	......	......	47·06		47·11	49·47		46·92
July	46·99			......	......	......	50·18			54·80		
August	47·07	47·13		......	......	......	51·71	51·26		54·27	54·08	
September	47·33			......	......	......	51·90			53·18		
October	47·63			......	......	......	51·62			50·88		
November	47·93	47·88		......	......	......	48·06	48·21		45·28	45·78	
December	48·09			......	......	......	45·03			41·18		

SPECIAL SET FOR THE YEAR 1837, TO REPLACE THE PARTIAL SET OF MEANS GIVEN IN VOL. XI.

Date.	t_1 or 24 French Feet deep Therm.			t_2 or 12 French Feet deep Therm.			t_3 or 6 French Feet deep Therm.			t_4 or 3 French Feet deep Therm.		
	Monthly Means.	Quarterly Means.	Yearly Mean.	Monthly Means.	Quarterly Means.	Yearly Mean.	Monthly Means.	Quarterly Means.	Yearly Mean.	Monthly Means.	Quarterly Means.	Yearly Mean.
1837.												
January	(48·14)			(46·81)			(45·04)			(44·00)		
February	48·00	47·92		45·55	45·74		42·07	42·83		39·85	40·80	
March	47·62			44·86			41·37			38·56		
April	47·29			44·17			40·50			38·38		
May	46·90	46·92		43·92	44·27		42·71	43·14		43·91	44·03	
June	46·57			44·71			46·22			49·78		
July	46·42		47·26	46·35		46·65	50·45		46·26	(55·00)		46·08
August	46·54	46·61		48·14	47·85		52·01	51·33		54·51	53·86	
September	46·86			49·06			51·52			52·06		
October	47·27			49·31			50·60			50·20		
November	47·63	47·57		49·00	48·75		47·59	47·75		44·43	45·63	
December	47·82			47·94			45·07			42·25		

The numbers in parenthesis have been supplied, by adding to the corresponding months in 1838, the difference of the next nearest month observed in the two years 1837 and 1838.

The months February and March did not appear in vol. xi.; March was however completely observed and calculated: February also was completely observed and the last week completely calculated: the three earlier weeks had not been calculated at all, because there was no *air* thermometer then established. But as the amount of correction for that element is only in the hundredth's place, while the annual status is in the degree's place, I have supplied the small corrections required by estimation, and have been able thereby to introduce into the columns of Monthly Means an expression for the mean of all February very nearly exact.

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TABLE II.

ANNUAL MEANS OF THE EDINBURGH EARTH-THERMOMETERS; AND OTHERS.

Date.	t_1 or 24 French feet deep Therm.	t_2 or 12 French feet deep Therm.	t_3 or 6 French feet deep Therm.	t_4 or 3 French feet deep Therm.	Air, Mean Temp. in Edin. by Alex. Adie.	Air, Mean Temp. over Scotland by Sc. Met. Soc.	Schwabe's New Groups of Sun Spots. Kew Obs.	Wolff's Sun Spots, Dates of. Max.	Wolff's Sun Spots, Dates of. Min.	Rainfall in Edinburgh, by Alex. Adie.	Rainfall at the Liverpool Observatory, by John Hartnup, Astronomer.	Rainfall over Scotland by Sc. Met. Soc.
	° F.	° F.	° F.	° F.	° F.	° F.		Year.	Year.	Inches.	Inches.	Inches.
1826	......	......	......	......	48·7	These numbers are only comparable *inter se.*	118	......	......	15·27	......	......
1827	......	......	......	......	47·1		161	......	......	32·59	......	......
1828	......	......	......	......	48·5		225	......	......	25·23	......	......
1829	......	......	......	......	45·2		199	1829·5	......	29·96	......	......
1830	......	......	......	......	46·0		190	......	......	33·25	......	......
1831	......	......	......	......	47·5		149	......	......	24·53	......	......
1832	......	......	......	......	47·7		84	......	......	23·23	......	......
1833	......	......	......	......	47·2		33	......	1833·8	20·88	......	......
1834	......	......	......	......	48·7		51	......	......	21·04	......	......
1835	......	......	......	......	46·8		173	......	......	25·22	......	......
1836	......	......	......	......	45·7		272	......	......	33·03	......	......
1837	47·26	46·65	46·26	46·08	45·7		333	1837·2	......	26·77	......	......
1838	46·94	46·16	45·39	44·81	44·7		282	......	......	31·04	......	......
1839	46·69	46·15	45·67	45·33	46·4		162	......	......	23·45	......	......
1840	46·77	46·44	46·02	45·68	46·7		152	......	......	25·50	......	......
1841	46·78	46·48	46·06	45·70	46·6		102	......	......	26·22	......	......
1842	46·88	46·81	46·78	46·85	48·0		68	......	......	16·87	......	......
1843	47·14	46·92	46·49	46·18	47·6		34	......	......	23·80	......	......
1844	47·21	47·11	46·83	46·44	46·7		52	......	1844·0	20·94	......	......
1845	47·06	46·56	45·97	45·57	46·3		114	......	......	26·62	......	......
1846	47·29	47·60	47·76	47·78	49·6		157	......	......	31·54	27·190	......
1847	47·59	47·33	46·88	46·60	47·4		257	......	......	22·77	30·406	......
1848	47·38	46·97	46·42	46·02	47·0		330	1848·6	......	30·60	30·728	......
1849	47·25	46·86	46·61	46·52	46·5		238	......	......	22·21	29·485	......
1850	47·24	47·00	46·69	46·49	47·0		186	......	......	......	21·460	......
1851	47·40	47·26	47·02	46·80	These numbers are only comparable *inter se.*		151	......	......	......	26·260	......
1852	47·55	47·48	47·28	47·05			125	......	......	......	32·202	......
1853	47·48	47·03	46·50	46·10			91	......	......	......	22·672	......
1854	47·41	47·18	46·92	46·75			67	......	......	......	22·780	......
1855	47·30	46·79	46·22	45·78			79	......	......	......	22·297	......
1856	47·14	46·67	46·34	46·11		45·7	34	......	1856·2	......	24·726	33·00
1857	47·30	47·34	47·42	47·54		48·0	98	......	......	......	25·309	30·56
1858	47·86	47·73	47·71	47·34		46·6	188	......	......	......	21·426	33·91
1859	47·85	47·64	47·26	46·90		46·8	205	......	......	......	24·231	37·17
1860	47·36	46·43	45·62	45·14		44·5	211	1860·5	......	......	24·531	37·88
1861	47·12	......	46·50	46·34		46·9	204	......	......	......	23·153	44·98
1862	47·20	......	46·30	45·96		46·1	160	......	......	......	27·662	45·29
1863	47·20	......	46·85	46·67		46·8	124	......	......	......	30·192	42·11
1864	47·16	......	46·25	45·84		45·5	115	......	......	......	23·631	38·58
1865	47·08	......	46·50	46·41		46·9	93	......	......	......	21·818	33·91
1866	47·30	......	46·65	46·22		46·3	45	......	......	......	28·375	41·41
1867	47·14	......	46·18	45·82		45·7	17	......	1867·0	......	25·089	38·52
1868	47·34	......	47·31	47·37		47·6	115	......	......	......	25·038	43·03
1869	47·55	......	47·11	46·92		46·4	224	......	......	......	......	36·54

TABLE III.

ANNUAL MEAN TEMPERATURES, FOR FOUR SEVERAL SUB-ANNUAL EPOCHS.

Date.	t_1 or 24 French Feet deep Therm.	t_2 or 12 French Feet deep Therm.	t_3 or 6 French Feet deep Therm.	t_4 or 3 French Feet deep Therm.
	°F.	°F.	°F.	°F.
1837·00	......	......	......	......
·25	......	......	......	......
·50	47·26	46·65	46·26	46·08
·75	47·18	46·62	45·94	45·40
1838·00	47·12	46·56	45·94	45·40
·25	47·04	46·36	45·58	44·99
·50	46·94	46·16	45·39	44·81
·75	46·82	46·07	45·43	45·02
1839·00	46·75	46·08	45·52	45·17
·25	46·72	46·13	45·60	45·21
·50	46·69	46·15	45·67	45·33
·75	46·68	46·21	45·81	45·58
1840·00	46·70	46·39	46·14	45·94
·25	46·75	46·45	46·09	45·82
·50	46·77	46·44	46·02	45·68
·75	46·77	46·38	45·88	45·54
1841·00	46·76	46·41	46·00	45·67
·25	46·76	46·44	46·03	45·73
·50	46·78	46·48	46·06	45·70
·75	46·79	46·48	46·12	45·79
1842·00	46·80	46·48	46·16	45·99
·25	46·82	46·62	46·52	46·49
·50	46·88	46·81	46·78	46·85
·75	46·99	47·08	47·06	46·93
1843·00	47·10	47·12	46·79	46·41
·25	47·15	46·99	46·53	46·27
·50	47·14	46·92	46·49	46·18
·75	47·13	46·92	46·52	46·20
1844·00	47·13	46·97	46·82	46·74
·25	47·17	47·10	46·85	46·54
·50	47·21	47·11	46·83	46·44
·75	47·23	46·97	46·52	46·13
1845·00	47·20	46·83	46·25	45·74
·25	47·13	46·68	46·04	45·52
·50	47·06	46·56	45·97	45·57
·75	47·01	46·64	46·37	46·32
1846·00	47·03	46·85	46·71	46·69
·25	47·12	47·19	47·32	47·49
·50	47·29	47·60	47·76	47·78
·75	47·48	47·74	47·54	47·24
1847·00	47·60	47·70	47·37	46·92
·25	47·64	47·56	47·08	46·57
·50	47·59	47·33	46·66	46·60
·75	47·52	47·21	46·62	46·58

Date.	t_1 or 24 French Feet deep Therm.	t_2 or 12 French Feet deep Therm.	t_3 or 6 French Feet deep Therm.	t_4 or 3 French Feet deep Therm.
	°F.	°F.	°F.	°F.
1848·00	47·46	47·16	46·84	46·68
·25	47·42	47·09	46·66	46·40
·50	47·38	46·97	46·42	46·02
·75	47·31	46·93	46·59	46·47
1849·00	47·28	46·95	46·56	46·33
·25	47·27	46·88	46·53	46·34
·50	47·25	46·86	46·61	46·52
·75	47·24	46·82	46·47	46·26
1850·00	47·23	46·83	46·52	46·33
·25	47·22	46·91	46·66	46·49
·50	47·24	47·00	46·69	46·49
·75	47·28	47·15	46·99	46·82
1851·00	47·34	47·22	46·97	46·75
·25	47·38	47·21	46·91	46·66
·50	47·40	47·26	47·02	46·80
·75	47·44	47·28	46·98	46·69
1852·00	47·46	47·32	47·09	46·82
·25	47·49	47·42	47·32	47·20
·50	47·55	47·48	47·28	47·05
·75	47·59	47·43	47·02	46·60
1853·00	47·59	47·25	46·79	46·47
·25	47·54	47·14	46·56	46·10
·50	47·48	47·03	46·50	46·10
·75	47·41	46·92	46·47	46·28
1854·00	47·38	47·06	46·74	46·56
·25	47·39	47·10	46·84	46·74
·50	47·41	47·18	46·92	46·75
·75	47·45	47·25	46·85	46·42
1855·00	47·44	47·01	46·38	45·85
·25	47·37	46·89	46·35	45·95
·50	47·30	46·79	46·22	45·78
·75	47·23	46·68	46·25	46·07
1856·00	47·19	46·78	46·44	46·22
·25	47·18	46·72	46·26	45·79
·50	47·14	46·67	46·34	46·11
·75	47·13	46·79	46·55	46·30
1857·00	47·15	46·85	46·64	46·48
·25	47·20	47·05	46·96	46·98
·50	47·30	47·34	47·42	47·54
·75	47·43	47·67	47·74	47·73
1858·00	47·59	47·88	48·05	48·14
·25	47·75	48·05	48·10	48·06
·50	47·86	47·73	47·71	47·34
·75	47·88	47·77	47·56	47·44

Date.	t_1 or 24 French Feet deep Therm.	t_2 or 12 French Feet deep Therm.	t_3 or 6 French Feet deep Therm.	t_4 or 3 French Feet deep Therm.
	°F.	°F.	°F.	°F.
1859·00	47·87	47·76	47·49	47·21
·25	47·86	47·70	47·42	47·19
·50	47·85	47·64	47·26	46·90
·75	47·[illegible]	47·38	46·64	46·00
1860·00	47·71	47·02	46·18	45·58
·25	47·54	46·71	45·81	45·20
·50	47·36	46·43	45·62	45·14
·75	47·20	......	45·60	45·52
1861·00	47·10	......	46·05	45·85
·25	47·09	......	46·23	46·03
·50	47·12	......	46·50	46·34
·75	47·17	......	46·68	46·48
1862·00	47·22	......	46·68	46·41
·25	47·23	......	46·43	46·09
·50	47·20	......	46·30	45·96
·75	47·16	......	46·38	46·17
1863·00	47·14	......	46·60	46·26
·25	47·17	......	46·79	46·45
·50	47·20	......	46·85	46·67
·75	47·23	......	46·69	46·17
1864·00	47·22	......	46·44	46·12
·25	47·19	......	46·31	46·00
·50	47·16	......	46·25	45·81
·75	47·13	......	46·06	45·69
1865·00	47·09	......	45·96	45·67
·25	47·06	......	46·27	46·19
·50	47·08	......	46·50	46·41
·75	47·15	......	46·89	46·62
1866·00	47·23	......	46·93	46·70
·25	47·30	......	46·76	46·33
·50	47·30	......	46·65	46·22
·75	47·28	......	46·41	46·01
1867·00	47·24	......	46·33	45·88
·25	47·13	......	46·24	45·87
·50	47·14	......	46·18	45·82
·75	47·10	......	46·34	46·30
1868·00	47·11	......	46·81	46·89
·25	47·21	......	47·25	47·40
·50	47·34	......	47·31	47·37
·75	47·45	......	47·48	47·39
1869·00	47·54	......	47·26	47·06
·25	47·56	......	47·03	46·88
·50	47·55	......	47·11	46·92
·75	......	......	......	......

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TABLE IV.

ELEVEN-YEAR MEANS FOR EVERY SUCCESSIVE YEAR FROM 1842 TO 1864, OF THE EDINBURGH EARTH-THERMOMETERS AND SCHWABE'S SUN-SPOTS, SUPPLEMENTED BY KEW OBSERVATIONS.

Years included.	Middle Year.	t_1 24 Fr. feet deep Therm.	t_2 12 Fr. feet deep Therm.	t_3 6 Fr. feet deep Therm.	t_4 3 Fr. feet deep Therm.	Schwabe's Sun-Spots.
		°F.	°F.	°F.	°F.	
1837 to 1847	1842	47·06	46·75	46·37	46·09	156
1838 — 1848	1843	47·07	46·78	46·39	46·09	155
1839 — 1849	1844	47·09	46·84	46·50	46·24	151
1840 — 1850	1845	47·14	46·92	46·59	46·35	154
1841 — 1851	1846	47·20	46·99	46·68	46·45	154
1842 — 1852	1847	47·27	47·08	46·79	46·57	156
1843 — 1853	1848	47·33	47·10	46·77	46·50	158
1844 — 1854	1849	47·35	47·13	46·81	46·56	161
1845 — 1855	1850	47·36	47·10	46·75	46·50	163
1846 — 1856	1851	47·37	47·11	46·79	46·55	156
1847 — 1857	1852	47·37	47·08	46·75	46·52	151
1848 — 1858	1853	47·39	47·12	46·83	46·59	144
1849 — 1859	1854	47·43	47·18	46·91	46·67	133
1850 — 1860	1855	47·44	47·14	46·82	46·55	130
1851 — 1861	1856	47·43	......	46·80	46·53	132
1852 — 1862	1857	47·42	......	46·73	46·46	133
1853 — 1863	1858	47·38	......	46·69	46·42	133
1854 — 1864	1859	47·35	......	46·67	46·40	136
1855 — 1865	1860	47·33	......	46·63	46·37	139
1856 — 1866	1861	47·33	......	46·67	46·41	136
1857 — 1867	1862	47·33	......	46·66	46·38	135
1858 — 1868	1863	47·33	......	46·65	46·36	136
1859 — 1869	1864	47·30	......	46·59	46·30	140

Means for 33 years, from 1837 to 1869. $t_1 = 47°·25$; $t_2 = (46°·99)$; $t_3 = 46°·60$; and $t_4 = 46°·34$.

CORRECTIONS TO REDUCE A QUARTER OF A YEAR TO THE MEAN OF 33 YEARS. *See* TABLE VI.

t_1				t_2				t_3				t_4			
1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.
°F. −·42	°F. +·35	°F. +·45	°F. −·37	°F. +·76	°F. +1·95	°F. −0·95	°F. −1·74	°F. +3·83	°F. +1·76	°F. −4·34	°F. −1·25	°F. +6·03	°F. +0·33	°F. −6·89	°F. +0·52

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TABLE V.

QUARTERLY OBSERVATIONS OF TEMPERATURE, CORRECTED FOR THE ANNUAL CYCLE, BY REFERENCE TO 33 YEARS' OBSERVATIONS.

Date.	t_1 or 24 French Ft. deep Therm.	t_2 or 12 French Ft. deep Therm.	t_3 or 6 French Ft. deep Therm.	t_4 or 3 French Ft. deep Therm.	Date.	t_1 or 24 French Ft. deep Therm.	t_2 or 12 French Ft. deep Therm.	t_3 or 6 French Ft. deep Therm.	t_4 or 3 French Ft. deep Therm.	Date.	t_1 or 24 French Ft. deep Therm.	t_2 or 12 French Ft. deep Therm.	t_3 or 6 French Ft. deep Therm.	t_4 or 3 French Ft. deep Therm.
	°F.	°F.	°F.	°F.		°F.	°F.	°F.	°F.		°F.	°F.	°F.	°F.
1837·125	47·50	46·50	46·66	46·83	1848·125	47·47	46·86	46·35	45·88	1859·125	47·80	47·42	47·77	48·13
·375	47·27	46·22	44·90	44·36	·375	47·37	47·12	46·64	46·68	·375	47·88	47·92	47·54	47·06
·625	47·06	46·90	46·99	46·97	·625	47·36	47·13	46·34	45·72	·625	47·88	47·80	47·36	47·09
·875	47·20	47·01	46·50	46·15	·875	47·31	46·80	46·17	45·79	·875	47·86	47·45	46·36	45·32
1838·125	47·22	46·37	45·39	44·13	1849·125	47·21	46·70	47·02	47·67	1860·125	47·66	46·39	45·29	44·54
·375	46·99	45·96	44·89	44·36	·375	47·27	47·20	46·73	46·14	·375	47·44	46·46	45·69	45·35
·625	46·78	46·11	45·54	45·32	·625	47·31	46·85	46·19	45·76	·625	47·21	46·55	45·90	45·57
·875	46·76	46·22	45·75	45·44	·875	47·22	46·69	46·49	46·49	·875	47·12	46·34	45·62	45·08
1839·125	46·77	46·01	45·55	44·95	1850·125	47·18	46·54	46·48	46·63	1861·125	47·13	......	45·99	46·06
·375	46·71	46·01	45·24	44·94	·375	47·21	47·25	46·91	46·42	·375	47·05	......	46·68	46·68
·625	46·64	46·29	45·85	45·49	·625	47·21	47·19	46·75	46·41	·625	47·16	......	46·64	46·28
·875	46·68	46·33	46·03	45·95	·875	47·39	47·04	46·62	46·48	·875	47·23	......	46·69	46·31
1840·125	46·72	46·22	46·11	45·91	1851·125	47·31	47·16	47·69	47·95	1862·125	47·24	......	46·70	46·64
·375	46·77	46·73	46·55	46·41	·375	47·45	47·50	46·83	46·15	·375	47·24	......	46·70	46·39
·625	46·84	46·52	45·68	45·01	·625	47·45	47·15	46·51	46·03	·625	47·22	......	45·62	45·02
·875	46·77	46·30	45·74	45·37	·875	47·41	47·24	47·05	47·07	·875	47·10	......	46·17	45·79
1841·125	46·72	46·97	45·56	45·37	1852·125	47·45	47·25	47·54	47·49	1863·125	47·07	......	47·03	47·48
·375	46·72	46·86	47·04	46·90	·375	47·53	47·66	47·25	46·66	·375	47·20	......	47·56	46·76
·625	46·86	46·66	45·79	45·25	·625	47·58	47·57	47·45	47·59	·625	47·31	......	46·39	45·78
·875	46·83	46·46	45·87	45·28	·875	47·65	47·48	46·87	46·46	·875	47·23	......	46·42	46·65
1842·125	46·75	45·95	45·76	45·71	1853·125	47·62	47·02	46·51	45·67	1864·125	47·20	......	46·38	45·50
·375	46·76	46·85	47·21	47·72	·375	47·51	46·96	46·33	46·16	·375	47·27	......	46·55	46·54
·625	46·93	47·24	47·25	47·23	·625	47·40	47·10	46·53	46·09	·625	47·16	......	45·90	45·28
·875	47·11	47·21	46·91	46·71	·875	47·40	47·07	46·62	46·49	·875	47·11	......	46·16	46·02
1843·125	47·17	47·04	46·87	46·25	1854·125	47·35	46·59	46·41	46·36	1865·125	47·08	......	45·63	44·91
·375	47·22	47·01	46·12	45·44	·375	47·37	47·48	47·39	47·28	·375	47·03	......	46·16	46·45
·625	47·10	46·73	46·41	46·68	·625	47·46	47·30	46·92	46·83	·625	47·04	......	47·12	47·37
·875	47·08	46·93	46·54	46·33	·875	47·48	47·37	46·97	46·50	·875	47·20	......	47·09	46·91
1844·125	47·14	47·04	47·03	46·33	1855·125	47·49	46·87	46·11	45·04	1866·125	47·33	......	47·20	46·56
·375	47·20	47·20	47·28	47·62	·375	47·34	46·51	45·51	45·01	·375	47·37	......	46·31	45·97
·625	47·28	47·24	46·55	45·89	·625	47·17	46·82	46·82	47·24	·625	47·29	......	46·43	45·86
·875	47·25	46·99	46·44	45·91	·875	47·22	46·97	46·44	45·81	·875	47·23	......	46·68	46·50
1845·125	47·19	46·48	45·83	45·09	1856·125	47·21	46·42	46·22	46·21	1867·125	47·26	......	46·33	45·63
·375	47·08	46·63	46·19	46·08	·375	47·27	46·93	46·28	45·59	·375	47·17	......	45·88	45·44
·625	47·02	46·62	45·72	45·01	·625	47·13	46·56	46·12	45·55	·625	47·08	......	46·06	45·84
·875	46·96	46·54	46·16	46·09	·875	47·07	46·78	46·75	47·08	·875	47·05	......	46·43	46·29
1846·125	46·98	46·77	47·50	48·08	1857·125	47·17	46·93	47·05	46·96	1868·125	47·09	......	47·01	47·61
·375	47·16	47·49	47·45	47·56	·375	47·25	47·15	46·62	46·33	·375	47·24	......	47·74	47·82
·625	47·37	47·99	48·16	48·23	·625	47·30	47·36	47·42	47·52	·625	47·48	......	47·81	47·89
·875	47·65	48·16	47·94	47·22	·875	47·44	47·94	48·58	49·32	·875	47·55	......	46·69	46·15
1847·125	47·76	47·34	46·59	45·96	1858·125	47·74	48·25	48·36	47·73	1869·125	47·53	......	47·66	47·70
·375	47·61	47·34	46·78	46·27	·375	47·90	47·99	47·84	47·99	·375	47·60	......	46·86	46·49
·625	47·53	47·40	47·03	46·82	·625	47·92	48·04	47·62	47·17	·625	47·58	......	46·92	47·19
·875	47·49	47·27	47·12	47·32	·875	47·89	47·66	47·03	46·47	·875	47·51	......	46·99	46·30

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TABLE VI.

MEANS AND CORRECTIONS FOR QUARTERS, AND YEARS IN THREE SUCCESSIVE ELEVEN-YEAR PERIODS.

Year.	t_1 or 24 French Feet deep Therm.				t_2 or 12 French Feet deep Therm.				t_3 or 6 French Feet deep Therm.				t_4 or 3 French Feet deep Therm.			
	1st Quarter.	2d Quarter.	3d Quarter.	4th Quarter.	1st Quarter.	2d Quarter.	3d Quarter.	4th Quarter.	1st Quarter.	2d Quarter.	3d Quarter.	4th Quarter.	1st Quarter.	2d Quarter.	3d Quarter.	4th Quarter.
	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.
1837	47·92	46·92	46·61	47·57	45·74	44·27	47·85	48·75	42·83	43·14	51·33	47·75	40·80	44·03	53·86	45·63
1838	47·64	46·64	46·33	47·13	45·61	44·01	47·06	47·96	41·56	43·13	49·88	47·00	38·10	44·03	52·21	44·92
1839	47·19	46·36	46·19	47·05	45·25	44·06	47·24	48·07	41·72	43·48	50·19	47·28	38·92	44·61	52·38	45·43
1840	47·14	46·42	46·39	47·14	45·46	44·78	47·47	48·04	42·28	44·79	50·02	46·99	39·86	46·08	51·90	44·85
1841	47·14	46·37	46·41	47·20	45·21	44·91	47·61	48·20	41·73	45·28	50·13	47·12	39·34	46·57	52·14	44·76
1842	47·17	46·41	46·48	47·48	45·19	44·90	48·19	48·95	41·93	45·45	51·59	48·16	39·68	47·39	54·12	46·19
1843	47·59	46·87	46·65	47·45	46·28	45·06	47·68	48·67	43·04	44·36	50·75	47·79	40·22	45·11	53·57	45·81
1844	47·56	46·85	46·83	47·62	46·28	45·25	48·19	48·73	43·20	45·52	50·89	47·69	40·30	47·29	52·78	45·39
1845	47·61	46·73	46·57	47·33	45·72	44·68	47·57	48·28	42·00	44·43	50·06	47·41	39·06	45·75	51·90	45·57
1846	47·40	46·81	46·92	48·02	46·01	45·54	48·94	49·90	43·67	45·69	52·50	49·19	42·05	47·23	55·12	46·70
1847	48·18	47·26	47·08	47·86	46·58	45·39	48·35	49·01	42·76	45·02	51·37	48·37	39·93	45·94	53·71	46·80
1848	47·89	47·02	46·91	47·68	46·10	45·17	48·08	48·54	42·52	45·08	50·68	47·42	39·85	46·35	52·61	45·27
1849	47·63	46·92	46·86	47·59	45·94	45·25	47·80	48·43	43·19	44·97	50·53	47·74	41·64	45·81	52·65	45·97
1850	47·60	46·86	46·84	47·68	45·78	45·30	48·14	48·78	42·65	45·15	51·09	47·87	40·60	46·09	53·30	45·96
1851	47·73	47·10	47·00	47·78	46·40	45·55	48·10	48·98	43·86	45·07	50·85	48·30	41·92	45·82	52·92	46·55
1852	47·87	47·18	47·13	48·02	46·49	45·71	48·52	49·22	43·71	45·49	51·79	48·12	41·46	46·33	54·48	45·94
1853	48·04	47·16	46·95	47·77	46·26	45·01	48·05	48·81	42·68	44·57	50·87	47·87	39·64	45·83	52·98	45·97
1854	47·77	47·02	47·01	47·85	45·63	45·53	48·25	49·11	42·58	45·63	51·26	48·22	40·33	46·95	53·72	45·98
1855	47·91	46·99	46·72	47·59	46·11	44·56	47·77	48·71	42·28	43·75	51·16	47·69	39·01	44·68	54·13	45·29
1856	47·63	46·82	46·68	47·44	45·66	44·98	47·51	48·52	42·39	44·52	50·16	48·00	40·18	45·26	52·44	46·36
1857	47·59	46·90	46·85	47·81	46·17	45·20	48·31	49·68	43·22	44·86	51·76	49·83	40·93	46·00	54·41	48·80
1858	48·16	47·55	47·47	48·26	47·49	46·04	48·99	49·10	44·53	46·08	51·96	48·28	41·70	47·66	54·06	45·95
1859	48·22	47·53	47·43	48·23	46·66	45·97	48·75	49·19	43·94	45·78	51·70	47·61	42·10	46·73	53·28	44·80
1860	48·08	47·09	46·76	47·49	45·63	44·51	47·50	48·08	41·46	43·93	50·24	46·87	38·51	45·02	52·46	44·56
1861	47·45	46·70	46·71	46·60	......	......	......	......	42·16	44·92	50·98	47·94	40·03	46·35	53·17	45·79
1862	47·66	46·89	46·77	47·47	......	......	......	......	42·87	44·94	49·96	47·42	40·61	46·06	51·91	45·27
1863	47·19	46·85	46·86	47·60	......	......	......	......	43·20	45·80	50·73	47·67	41·45	46·42	52·67	46·13
1864	47·62	46·82	46·71	47·18	......	......	......	......	42·55	44·79	50·24	47·41	39·47	46·21	52·17	45·50
1865	47·50	46·68	46·59	47·57	......	......	......	......	41·60	44·40	51·46	48·34	38·88	46·12	54·26	46·39
1866	47·75	47·02	46·84	47·60	......	......	......	......	43·37	44·55	50·77	47·93	40·53	45·64	52·75	45·98
1867	47·68	46·82	46·63	47·42	......	......	......	......	42·50	44·12	50·40	47·68	39·66	45·11	52·73	45·77
1868	47·51	46·89	47·03	47·92	......	......	......	......	43·18	45·98	52·15	47·94	41·58	47·49	54·78	45·63
1869	47·95	47·25	47·13	47·88	......	......	......	......	43·83	45·10	51·26	48·24	41·67	46·16	54·08	45·78
Means. 1837–1847	47·50	46·69	46·59	47·44	45·76	44·80	47·83	48·60	42·43	44·57	50·79	47·70	39·84	45·82	53·06	45·64
1842–1858	47·80	47·05	46·95	47·77	46·20	45·30	48·14	48·93	43·06	45·02	51·13	48·12	40·66	46·07	53·43	46·20
1859–1869	47·72	46·96	46·86	47·66	(46·44)	(45·12)	(47·96)	(48·75)	42·81	44·94	50·90	47·73	40·41	46·12	53·18	45·60
Corrections to Quarters for each period.	−·44	+·37	+·47	−·38	+1·01	+1·95	−1·08	−1·85	+3·93	+1·80	−4·42	−1·33	+6·25	+0·27	−6·97	+0·45
	−·41	+·34	+·44	−·38	+0·63	+1·95	−0·89	−1·68	+3·77	+1·81	−4·30	−1·29	+5·93	+0·52	−6·84	+0·39
	−·42	+·34	+·44	−·36	(+0·63)	(+1·95)	(−0·89)	(−1·68)	+3·79	+1·66	−4·30	−1·13	+5·92	+0·21	−6·85	+0·73
Mean Corrections to Qrs.	−·42	+·35	+·45	−·37	+0·76	+1·95	−0·95	−1·74	+3·83	+1·76	−4·34	−1·25	+6·03	+0·33	−6·89	+0·52

(F—II)

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MEAN TEMPERATURES FOR THREE SUCCESSIVE ELEVEN-YEAR PERIODS.

Period.	t_1	t_2	t_3	t_4
	°F.	°F.	°F.	°F.
1837–1847	47·06	46·75	46·37	46·09
1848–1858	47·39	47·14	46·83	46·59
1859–1869	47·30	(47·07)	46·60	46·33
Mean for 1837–1869	47·25	46·99	46·60	46·34

MEAN ELEVATION OF TEMPERATURE IN LOWER, ABOVE THE SURFACE, OR t_4, THERMOMETER.

Period.	t_1	t_2	t_3	t_4
	°F.	°F.	°F.	°F.
1837–1847	+0·97	+0·66	+0·28	0
1848–1858	+0·80	+0·55	+0·24	0
1859–1869	+0·97	+0·74	+0·27	0
Mean for 1837–1869	+0·91	+0·65	+0·26	0

TABLE VII.

QUARTERLY MEANS OF THE EARTH-THERMOMETERS FROM 1837 TO 1869, AS OBSERVED AND THEREFORE EXHIBITING BOTH THE ANNUAL CYCLE AND THE SECULAR VARIATIONS OR SUPRA-ANNUAL CYCLES.

Date.	t_1	t_2	t_3	t_4	Date.	t_1	t_2	t_3	t_4	Date.	t_1	t_2	t_3	t_4
	°F.	°F.	°F.	°F.		°F.	°F.	°F.	°F.		°F.	°F.	°F.	°F.
1837·125	47·92	45·74	42·83	40·80	1848·125	47·69	46·10	42·52	39·85	1859·125	48·22	46·66	43·94	42·10
·375	46·92	44·27	43·14	44·03	·375	47·02	45·17	45·08	46·35	·375	47·53	45·97	45·78	46·73
·625	46·61	47·85	51·33	53·86	·625	46·91	48·08	50·68	52·61	·625	47·43	48·75	51·70	53·98
·875	47·57	48·75	47·75	45·63	·875	47·68	48·54	47·42	45·27	·875	48·23	49·12	47·61	44·80
1838·125	47·64	45·61	41·56	38·10	1849·125	47·63	45·94	43·19	41·64	1860·125	48·08	45·63	41·46	38·51
·375	46·64	44·01	43·13	44·03	·375	46·92	45·25	44·97	45·81	·375	47·09	44·51	43·93	45·02
·625	46·33	47·06	49·88	52·21	·625	46·86	47·60	50·53	52·65	·625	46·76	47·50	50·24	52·46
·875	47·13	47·96	47·00	44·92	·875	47·59	48·43	47·74	45·97	·875	47·49	48·08	46·87	44·56
1839·125	47·19	45·25	41·72	38·92	1850·125	47·60	45·78	42·65	40·60	1861·125	47·45	......	42·16	40·03
·375	46·36	44·06	43·48	44·61	·375	46·86	45·30	45·15	46·09	·375	46·70	......	44·92	46·35
·625	46·19	47·21	50·19	52·38	·625	46·84	48·14	51·09	53·30	·625	46·71	......	50·96	53·17
·875	47·05	48·07	47·28	45·43	·875	47·68	48·78	47·87	45·96	·875	47·60	......	47·94	45·79
1840·125	47·14	45·46	42·28	39·88	1851·125	47·73	46·40	43·86	41·92	1862·125	47·66	......	42·67	40·61
·375	46·42	44·78	44·79	46·08	·375	47·10	45·55	45·07	45·82	·375	46·89	......	44·94	46·06
·625	46·39	47·47	50·02	51·90	·625	47·00	48·10	50·85	52·92	·625	46·77	......	49·96	51·91
·875	47·14	48·04	46·99	44·85	·875	47·78	48·98	48·30	46·55	·875	47·47	......	47·42	45·27
1841·125	47·14	45·21	41·73	39·34	1852·125	47·87	46·49	43·71	41·46	1863·125	47·49	......	43·20	41·45
·375	46·37	44·91	45·28	46·57	·375	47·18	45·71	45·49	46·33	·375	46·85	......	45·38	46·42
·625	46·41	47·61	50·13	52·14	·625	47·13	48·52	51·79	54·48	·625	46·86	......	50·73	52·67
·875	47·20	48·20	47·12	44·76	·875	48·02	49·22	48·12	45·94	·875	47·60	......	47·67	46·13
1842·125	47·17	45·19	41·93	39·68	1853·125	48·04	46·26	42·68	39·64	1864·125	47·62	......	42·55	39·47
·375	46·41	44·90	45·45	47·39	·375	47·16	45·01	44·57	45·83	·375	46·82	......	44·79	46·21
·625	46·48	48·19	51·59	54·12	·625	46·95	48·05	50·87	52·98	·625	46·71	......	50·24	52·17
·875	47·48	48·95	48·16	46·19	·875	47·77	48·81	47·87	45·97	·875	47·48	......	47·41	45·50
1843·125	47·59	46·28	43·04	40·22	1854·125	47·77	45·83	42·58	40·33	1865·125	47·50	......	41·80	38·88
·375	46·87	45·06	44·36	45·11	·375	47·02	45·53	45·63	46·95	·375	46·68	......	44·40	46·12
·625	46·65	47·68	50·75	53·57	·625	47·01	48·25	51·26	53·72	·625	46·59	......	51·46	54·26
·875	47·45	48·67	47·79	45·81	·875	47·85	49·11	48·22	45·98	·875	47·57	......	48·34	46·39
1844·125	47·56	46·28	43·20	40·30	1855·125	47·91	46·11	42·28	39·01	1866·125	47·75	......	43·37	40·53
·375	46·85	45·25	45·52	47·29	·375	46·99	44·56	43·75	44·68	·375	47·02	......	44·55	45·64
·625	46·83	48·19	50·89	52·78	·625	46·72	47·77	51·16	54·13	·625	46·84	......	50·77	52·75
·875	47·62	48·73	47·69	45·39	·875	47·59	48·71	47·69	45·29	·875	47·60	......	47·93	45·98
1845·125	47·61	45·72	42·00	39·06	1856·125	47·63	45·66	42·39	40·18	1867·125	47·68	......	42·50	39·66
·375	46·73	44·68	44·43	45·76	·375	46·82	44·98	44·52	45·26	·375	46·82	......	44·12	45·11
·625	46·57	47·57	50·06	51·90	·625	46·68	47·51	50·46	52·44	·625	46·63	......	50·40	52·73
·875	47·33	48·28	47·41	45·57	·875	47·44	48·52	48·00	46·56	·875	47·42	......	47·68	45·77
1846·125	47·40	46·01	43·67	42·05	1857·125	47·59	46·17	43·22	40·93	1868·125	47·51	......	43·18	41·58
·375	46·81	45·54	45·69	47·23	·375	46·90	45·20	44·86	46·00	·375	46·89	......	45·98	47·49
·625	46·92	48·94	52·50	55·12	·625	46·85	48·31	51·76	54·41	·625	47·03	......	52·15	54·78
·875	48·02	49·90	49·19	46·70	·875	47·81	49·68	49·83	48·80	·875	47·92	......	47·94	45·63
1847·125	48·18	46·58	42·76	39·93	1858·125	48·16	47·49	44·53	41·70	1869·125	47·95	......	43·83	41·67
·375	47·26	45·39	45·02	45·94	·375	47·55	46·04	46·08	47·66	·375	47·25	......	45·10	46·16
·625	47·08	48·35	51·37	53·71	·625	47·47	48·99	51·96	54·06	·625	47·13	......	51·26	54·08
·875	47·86	49·01	46·37	46·80	·875	48·26	49·40	48·28	45·95	·875	47·88	......	48·24	45·78

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SCOTTISH METEOROLOGY,

FROM 1856 TO 1871.

BEING A CONTINUED MONTHLY AND ANNUAL REPRESENTATION
OF THE MORE IMPORTANT MEAN RESULTS FOR THE WHOLE COUNTRY,
DEDUCED AT THE ROYAL OBSERVATORY, EDINBURGH,
FROM THE SCHEDULES OF OBSERVATION BY THE OBSERVERS
OF THE SCOTTISH METEOROLOGICAL SOCIETY,
FOR THE PURPOSES OF
THE REGISTRAR GENERAL
OF BIRTHS, DEATHS, AND MARRIAGES IN SCOTLAND.

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SCOTTISH METEOROLOGY.

1856–1871.

INTRODUCTION.

In the month of September 1858, Her Majesty's Government, unsought, applied to me as Astronomer-Royal for Scotland to perform in this Observatory for the Registrar-General of Births, Deaths, and Marriages in Scotland, an important work similar to that which is, and had been long, performed for the Registrar-General of England, in the Royal Observatory, Greenwich.

This application was, to deduce from the observations taken twice a-day, under the auspices of the Scottish Meteorological Society, by about fifty observers more or less all over the country,—hard-working, conscientious, self-sacrificing men, to whom the whole community is eminently indebted,—certain monthly and general results for each and all of the stations, results supposed to be important for medical climatology and its influence on population and national welfare.

The system had already been arranged, commenced and most satisfactorily carried on since 1856 by Dr James Stark, Statist in the Registrar-General for Scotland's office, and at that time also Secretary to the Scottish Meteorological Society. To Dr Stark, therefore, is due any merit which the plan may possess for its intended purposes; and to his union in himself (1.) of a knowledge of what was required in a certain Government department, (2.) an ability to get these desiderata furnished by the numerous and widely scattered correspondents of an independent, voluntary and then only just started scientific Society, and (3.) a genius for medical statistics together with a taste for hard work that never knew what it was to be weary, to all these several qualities uniting in him, it is largely owing that Scottish Meteorology has had the advantage of an abundant and methodical exposition every month since the beginning of 1856 which it never enjoyed before.

Hence I had merely to devise in 1858 how, with most advantage to Government and least interference with the astronomical work of the Edinburgh Observatory, the heavy arithmetic of nearly 41,250 observations every month could, when it fell from Dr Stark's original and practised hand, be best continued; and such—assisted most ably, and in fact the chief work performed, by the first and second assistants in this Observatory and with the aid of a small grant,—has been my part ever since; *i.e.*, on the

seventh day after the conclusion of each month to furnish, from the Society's schedules of observation and for immediate printing by the Registrar-General, the meteorological elements for six of the towns of Scotland; and on the thirty-first day after the conclusion of each quarter to send in similarly the meteorological elements for both towns and country to the extent of fifty-five separate stations, and to exhibit the results both singly and collectively in six Atlas-sized MS. sheets.

To this I have also been in the habit of adding a short digest of the mean weather of certain of the towns taken as one, and also of the whole of the stations taken as one, for each month; and comparing it with the respective means of the same month in former years, beginning with 1856. For such purpose we had to open a running account of the mean Meteorologic items in two separate books, one for the towns alone, and the other for the towns and country stations combined; and they now, after thirteen years, present so trusty a body of numerical information (derived from no less than seven million and twenty-five thousand observations) whereby to judge for the current time of normal or abnormal seasons, that it may be useful to publish them beyond the walls of our own computing room. Hence the following Tables,—prefixed only, that their relations to exact meteorology may be approximately judged of, by—

(1.) A list of the stations and observers in December 1858;
(2.) A list of the stations and observers in September 1871; and
(3.) An explanatory letter on certain points from the present excellent Secretary of the Scottish Meteorological Society, Alex. Buchan, Esq.

In addition to which I have only to state, that the means of both months and years have been gone over both separately and independently before printing by Mr Alexander Cowper, a young man who has given himself to this work with remarkable enthusiasm, and from whose conscientiousness and ability combined I have the highest hopes of his ultimate success in scientific computations, though nature has not been hitherto kind to him in his physical constitution, and has debarred him from almost all other occupations.

C. P. S.

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DOCUMENT I.

ACCEPTED STATIONS OF THE SCOTTISH METEOROLOGICAL SOCIETY FOR THE QUARTER ENDING DECEMBER 1858.

Station.	County.	Observer.	Height above Sea-level.	North Latitude.		West Longitude.	
			Feet.	°	′	°	′
East Yell	Shetland	Mr Aw. D. Mathewson, Schoolmaster, &c.	176	60	33	1	3
Bressay	Shetland	Rev. Z. M. Hamilton, Minister of Bressay	25	60	10	1	10
Sandwick	Orkney	Rev. Charles Clouston, Minister of Sandwick	100	59	2	3	18
House of Tongue	Sutherland	Robert Horsburgh, Esq., Factor to the Duke of Sutherland	40	58	30	4	25
Scourie	Sutherland	John Simpson, Esq., Accountant to the Duke of Sutherland	26	58	21	5	8
Harris	Inverness	F. W. J. Thomas, Lieut. Com. H.M.C. Woodlark	0	57	54	6	50
Stornoway	Ross, Isl. of Lewis	James Kerr, Inspector of Works to Sir J. Matheson, Bart., M.P., F.R.S., &c.	70	58	12	6	23
Culloden	Inverness	Arthur Forbes, Esq. of Culloden	104	57	31	4	5
Elgin	Elgin	William Geddes, M.D., H.E.I.C.S.	28	57	30	3	21
Castle Newe	Strathdon, Aberdeen	Mr Alexander Walker, Gardener to Sir C. Forbes, Bart.	868	57	12	3	4
Braemar	Aberdeen	James Cameron, Esq., M.D., and Thomas Pearce, Esq.	1110	57	0	3	24
Aberdeen	Aberdeen	Thomas David Gray, Esq., and Alexander Cruickshank, Esq., A.M.	115	57	9	2	6
Banchory	Kincardine	Mr Alexander Grant, Gardener to Alexander Thomson, Esq. of Banchory	85	57	8	2	7
Fettercairn	Kincardine	Mr Archibald C. Cameron, A.M., Schoolmaster, &c.	270	56	53	2	34
Montrose	Forfar	Mr James Campbell, Curator, Montrose Museum	8	56	43	2	26
Arbroath	Forfar	Alexander Brown, Esq.	75	56	34	2	35
Barry	Forfar	Mr James Proctor, Schoolmaster	20	56	31	2	44
Kettins	Forfar	Mr James Gibb, Schoolmaster, &c.	240	56	32	3	16
Perth	Perth	Lieut.-Gen. Lindsay, H.E.I.C.S.	66	56	23	3	26
Trinity Gask	Perth	Mr R. Wylie, Schoolmaster, &c.	150	56	21	3	42
Taymouth	Perth	Mr Peter Murray, Gardener to Marquis of Breadalbane	372	56	41	3	58
Tyndrum	Perth	C. H. Gustavus Thost, Esq., Manager of the Mines	792	56	25	4	43
Pittenweem	Fife	Mr David Tennant, Schoolmaster	75	56	13	2	43

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Station.	County.	Observer.	Height above Sea-level.	North Latitude.		West Longitude.	
			Feet.	°	′	°	′
Nookton (Leven)	Fife	W. M'G. Millar, Esq.	80	56	11	3	3
Balfour	Fife	Mr James Dewar, Gardener to Admiral Bethune	130	56	11	3	5
Stirling	Stirling	Corporals Grehan and Dunster, for Lieut. F. E. Pratt, R.E., Ord. Survey Office	233	56	6	3	55
Millfield	Stirling	Mr George Scott, Gardener to J. Miller, Esq. of Leithen	169	56	0	3	44
Otter House	(Loch Fine) Argyll	William Rankine, Esq., M.D.	130	56	1	5	19
Callton Mor	(Lochgilphead) Argyll	H. Martin, Esq., Factor to John Malcolm, Esq. of Poltalloch	65	56	7	5	28
Easdale	Argyll	Mr John White, Overseer, Easdale Slate Works	25	56	18	5	39
Oban	Argyll	J. Bedford, Esq., Admiralty Survey	48	56	25	5	30
Moile House	Argyll	Thomas Bell, Esq., Civil Engineer	320	55	24	5	43
Gadgirth	Ayr	John Joseph Burnett, Esq. of Gadgirth	159	55	28	4	31
Greenock	Renfrew	Mr James Gardner, Chronometer and Watch-maker	40	55	57	4	45
Paisley	Renfrew	Mr James Stewart, Clerk of Works to Thomas Coates, Esq. of Ferguslie	88	55	50	4	27
Glasgow	Lanark	Mr J. Rollo, Assistant to J. P. Nichol, Esq., LL.D., Professor of Practical Astronomy	200	55	53	4	18
Baillieston	Lanark	Mr P. Jarvie, Schoolmaster, &c.	227	55	52	4	6
Newliston	Linlithgow	Mr Alexander Gibson, Gardener to James Hogg, Esq. of Newliston	162	55	58	3	25
Edinburgh	Edinburgh	Lieut. Wm. Bailey, R.E., and Major Cooke, R.E., Ordnance Survey Office	307	55	57	3	11
Dalkeith	Edinburgh	Mr William Thomson, Gardener to the Duke of Buccleuch	183	55	53	3	4
Smeaton	Haddington	Mr John Black, Gardener to Sir Thomas B. Hepburn, Bart.	100	56	0	2	40
East Linton	Haddington	Mr John Storie, Merchant	90	55	59	2	39
Thurston	Haddington	Mr Robert Mossman, Gardener to James W. Hunter, Esq.	320	55	58	2	28
Yester	Haddington	Mr Alexander Shearer, Gardener to Marquis of Tweeddale	420	55	54	2	44
Thirlestane	Berwick	Mr James Whitton, Gardener to Hon. Sir A. Maitland	558	55	43	2	45
Mungo's Walls	Berwick	Mr James Thomson, Farmer	270	55	46	2	18
Milne-Graden	Berwick	Mr William Renwick, Gardener to David Milne Home, Esq.	100	55	41	2	12
Stobo	Peebles	Mr James Anderson, Gardener to Sir G. Montgomery, Bart, M.P.	600	55	36	3	21
Bowhill	Selkirk	Mr John Mathieson, Gardener to the Duke of Buccleuch.	653	55	32	2	56
Makerstoun	Roxburgh	General Sir T. M. Brisbane, Bart., President Royal Society Edinburgh, &c.	213	55	35	2	31
Drumlanrig	Dumfries	Mr James M'Intosh, Gardener to the Duke of Buccleuch	186	55	16	3	49
Wanlockhead	Dumfries	Mr G. Dawson, Schoolmaster, &c.	1334	55	24	3	48
Kirkpatrick-Juxta	Dumfries	Mr William Tait, Schoolmaster, &c.	338	55	18	3	28

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DOCUMENT II.

ACCEPTED STATIONS OF THE SCOTTISH METEOROLOGICAL SOCIETY, FOR THE QUARTER ENDING JUNE 1871.

Station.	County.	Observer.	Height above Sea-level.	North Latitude.		West Longitude.	
			Feet.	°	′	°	′
Bressay	Shetland	Rev. Z. M. Hamilton, D.D., Minister of Bressay	25	60	10	1	10
Sandwick	Orkney	Rev. Charles Clouston, LL.D., Minister of Sandwick	94	59	2	3	18
Kirkwall	Orkney	Mr J. G. Iverack	10	58	58	2	58
House of Tongue	Sutherland	Mr William Ingram, Gardener, House of Tongue	40	58	30	4	25
Scourie	Sutherland	John Simpson, Esq., Accountant to the Duke of Sutherland	26	58	22	5	8
Lairg	Sutherland	Mr James Alexander, Ground Officer, Lairg	458	58	14	4	23
Dunrobin	Sutherland	Mr James Mitchell, Gardener, Dunrobin Castle	9	57	58	3	59
Stornoway	Ross (Is. of Lewis)	Mr John Smith, for Sir J. Matheson, Bart., M.P., F.R.S., &c.	70	58	12	6	21
Culloden	Inverness	Arthur Forbes, Esq. of Culloden	104	57	30	4	7
Dunvegan	Inverness	Mr H. Mackintosh	16	57	26	6	36
Elgin	Elgin	J. Martin, Esq., Elgin Institution	50	57	38	3	19
Braemar	Aberdeen	Mr James Aitken	1114	57	0	3	24
New Pitsligo	Aberdeen	Mr David Sturrock, Schoolmaster	501	57	35	2	9
Aberdeen	Aberdeen	Rev. Alex. Beverly, and Alex. Cruickshank, Esq., A.M.	102	57	8	2	7
Fettercairn	Kincardine	Mr Arch. C. Cameron, A.M., Schoolmaster, &c.	247	56	53	2	34
Montrose	Forfar	Mr James Campbell, Curator, Montrose Museum	14	56	43	2	26
Arbroath	Forfar	Alexander Brown, Esq., LL.D.	71	56	34	2	35
Kettins	Forfar	Mr James Gibb, Schoolmaster, &c.	228	56	32	3	16
Barry	Forfar	Mr James Proctor, A.M., Schoolmaster, &c.	38	56	31	2	45
Dundee	Forfar	Mr William Ross M'Kelvie, Curator of Cemeteries	164	56	29	2	57
Perth	Perth	Mr James M'Glashan, Gardener to Gen. Sir A. Lindsay, K.C.B., R.A.	66	56	23	3	26
Trinity Gask	Perth	Mr R. Wylie, Schoolmaster, &c.	133	56	20	3	42
Nookton (Leven)	Fife	W. M'G. Millar, Esq.	80	56	11	3	3
Balfour	Fife	Mr James Dewar, Gardener to Admiral Bethune	130	56	11	3	5
Dollar	Clackmannan	John M. Strachan, Esq., M.D., and Mr John Westwood	174	56	10	3	39

Station.	County.	Observer.	Height above Sea-level.	North Latitude.		West Longitude.	
			Feet.	°	′	°	′
Cardross	Dumbarton	Mr John Fleming, Gardener to J. W. Burns, Esq. of Kilmahew	100	55	58	4	38
Balloch Castle	Dumbarton	Mr David Hill, Gardener to A. S. Dennistoun Brown, Esq.	94	56	1	4	35
Cairndow	Argyll	Mr John Brodie, Schoolmaster	25	56	16	4	56
Callton-Mor	(Lochgilphead) Argyll	Mr J. Russell, Gardener to John Malcolm, Esq. of Poltalloch	65	56	8	5	30
Eallabus (Islay)	Argyll	Robert Ballingall, Esq.	71	55	47	6	15
Greenock	Renfrew	Mr James Anderson, Chronometer and Watchmaker	64	55	57	4	45
Paisley	Renfrew	Mr James Stewart, Clerk of Works to T. Coates, Esq. of Ferguslie	88	55	50	4	27
Auchendrane	Ayr	E. Cathcart, Esq., and Mr Kennedy Henry, Forester	97	55	27	4	37
Girvan	Ayr	Thomas Anderson, Esq.	33	55	15	4	50
Glasgow	Lanark	Professor Grant, Observatory	180	55	53	4	18
Baillieston	Lanark	Mr P. Jarvie, Schoolmaster	242	55	52	4	6
Douglas Castle	Lanark	James Russell, Esq.	783	55	35	3	52
Edinburgh	Edinburgh	Mr G. Hastie, Gardener to William Nelson, Esq., Salisbury Green	260	55	56	3	10
Leith	Edinburgh	Mr Andrew Gibb, Gardener to D. A. Paterson, Esq., Restalrig Park	80	55	58	3	8
Dalkeith	Edinburgh	Mr William Thomson, Gardener to the Duke of Buccleuch	190	55	54	3	4
Smeaton	Haddington	Mr John Black, Gardener to Sir Thomas Hepburn, Bart.	100	56	0	2	40
East Linton	Haddington	Mr John Storie, Merchant	90	55	59	2	39
Thurston	Haddington	Mr Robert Fender, Gardener to James W. Hunter, Esq.	320	55	57	2	28
Yester	Haddington	Mr Alexander Shearer, Gardener to Marquis of Tweeddale	420	55	54	2	44
Thirlestane Castle	Berwick	Mr James Whitton, Gardener to Earl of Lauderdale	558	55	43	2	47
Milne-Graden	Berwick	Mr William Renwick, Gardener to David Milne Home, Esq.	100	55	41	2	12
North Esk Reservoir	Peebles	Mr John Garnock	1150	55	48	3	21
Stobo Castle	Peebles	Mr James Fraser, Gardener to Sir G. Montgomery, Bart.	600	55	37	3	20
Bowhill	Selkirk	Mr John Mathieson, Gardener to the Duke of Buccleuch	597	55	32	2	56
Mowbaugh	Roxburgh	Mr James Telfer	616	55	29	2	17
Drumlanrig	Dumfries	Mr David Thomson, Gardener to the Duke of Buccleuch	191	55	17	3	48
Wanlockhead	Dumfries	Mr Gilbert Dawson, Schoolmaster	1334	55	24	3	48
Kirkpatrick-Juxta	Dumfries	Mr George Burgess, Farmer, Broomlands	350	55	18	3	27
Cargen	Kirkcudbright	P. Dudgeon, Esq., and Mr Alexander Peacock, Gardener	85	55	0	3	37
South Cairn	Wigtown	Mr James Kennedy, Farmer	212	55	0	5	8

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DOCUMENT III.

SCOTTISH METEOROLOGICAL SOCIETY,
GENERAL POST-OFFICE BUILDINGS,
EDINBURGH, 2d *October* 1871.

DEAR SIR,—With reference to your letter of the 21st ult., I send the following answers to the queries in their order.

1. The observers are instructed to make the hours of observation Greenwich Time, and I believe this is adhered to at all the 55 stations, in so far as each observer has the means of doing it.

2. The mean of 24 observations (one each hour) would give a better daily mean than the mean of the maximum and minimum of each day. We cannot adopt the former, because we have not the observations.

3. The mean of all the months gives a better yearly mean than the mean of the two extreme months. Having the observations we adopt the former.

The daily mean temp. might be deduced from the 9 A.M. and P.M. observations, by applying the correction for hourly range for each station. But such corrections we do not possess. From a comparison of the 9 A.M. and P.M. means of the Society's stations, it seems evident that the correction for hourly range differs widely at different stations. These corrections have not yet been ascertained; and they will not be supplied by the observations made at the two Scottish observatories of the Meteorological Committee of the Royal Society of London, the thermometers at these places being respectively at heights of 7 and 41 feet above the ground.

From a comparison of the means of the 24 hourly observations with the means of the maximum and minimum observations, the latter show a remarkably close and steady agreement with the former. On this account it is *expedient*, in the meantime, to adopt the mean of the maximum and minimum temperatures as the approximate mean, and as at all events closely agreeing with the true mean.

4. The minimum spirit thermometer does doubtless not give the minimum of the night, except in those cases when that minimum continues long enough to allow the spirit to cool down to its temperature. The mean derived from maximum and minimum thermometers is generally about half a degree *higher* than that of the 24 hourly observations. The peculiarity of a spirit thermometer pointed out in your letter will account for a considerable part of the excess.

The Society has no standard size of bulb for spirit thermometers, though practically in selecting thermometers for the stations I have by rough estimation endeavoured to secure uniformity of size. It is a point that may well be submitted to the Council of the Society. The Society has no observations tending to show the amount of error arising from the use of spirit thermometers.

5. The question of the wind has occupied a good deal of the attention of the Council;

but the subject is a very difficult one, and the more so the more it is practically gone into. How far the observations represent the local winds of the place, and how far they represent the general movements of the air of which the local currents are a part, are points which it would be difficult to determine; but in so far as concerns the faithful representation of local winds, the records of such stations as Sandwick, Eallabus, Auchendrane, Aberdeen, East Linton, and many others, are very exact. On the other hand, Balloch Castle, the observer's house being low situated and enclosed by trees, and Cairndow, being in a deep narrow valley, and a few other places, report winds which are local in a sense so restricted as to possess but little value. I believe that, as regards *direction*, the winds as reported at the stations may safely be accepted as correct for the eight points of the compass N., N.E., E., &c. The *force* of the wind is less exactly estimated, some of the results being probably too large and others too small; but from correspondence with the observers (part of it being on suggestions made by yourself) and partly from their personal communication with myself and with some of the members of Council, I have reason to believe that a highly creditable uniformity has been brought about.

Unfortunately the Hemispherical Cup Anemometer has not hitherto been productive of the accurate results which were anticipated from it. The method of discussing its results, and keeping the instrument in good order, seem to require careful revision.—I am, yours faithfully,

ALEXANDER BUCHAN.

Professor C. PIAZZI SMYTH.

P.S.—I append herewith some notes of the objects and constitution of our Society, as well as a list of our additional stations, over and above those whose observations are reduced at the Royal Observatory Edinburgh under your superintendence.

A. B.

SCOTTISH METEOROLOGICAL SOCIETY.

Objects of the Society.—The principal points aimed at since the commencement of the Society's operations in 1855 are:—To investigate Scottish Meteorology, in order to ascertain the character of the climate of different districts, the causes of the summer and winter peculiarities, and the differences between the climate of Scotland and that of other countries; to point out the influence of seasons on public health, and on the prevalence of diseases affecting crops and live stock; and to investigate the origin and progress of storms, and the general laws affecting atmospheric changes, the discovery of which might lead to a knowledge of the coming weather.

To collect data for the prosecution of these important objects, ninety-three stations have been established in different parts of Scotland, where twice a-day observations are made, copies of which are transmitted monthly to the Society's office. The schedules

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containing these observations are carefully examined for the correction of errors, in case such should exist. Fifty-five of these are thereafter reduced, under the superintendence of the Astronomer-Royal for Scotland. The remaining thirty-eight stations, together with other fifteen situated in Iceland, Faroe, England, and the continent of Europe, are reduced by the Secretary of the Society. The results are published in the Society's Quarterly Journal, showing for each quarter as it passes, the state of the atmosphere in respect of pressure, temperature, moisture, rain, cloud, winds, and ozone.*

Funds.—The Funds arise from the Contributions of the Members, either Annual or Life. The Annual Subscriptions run from 10s. to £5, 5s. The Life Subscriptions vary, the minimum being £10, 10s.

LIST OF THE OFFICE-BEARERS.

President—THE MOST HONOURABLE THE MARQUIS OF TWEEDDALE.

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DAVID MILNE HOME, of Wedderburn, LL.D., *V.P.*R.S.E., *Chairman.*
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HENRY STEPHENS, F.R.S.E.
Professor ARCHIBALD GEIKIE, F.R.SS.L. & E., Director of the Geological Survey for Scotland.
ROBERT HUTCHISON, F.R.S.E.

Honorary Secretary—

Honorary Treasurer and Convener of Finance Committee—JAMES SANDERSON, F.R.S.E., Deputy Inspector-General of Hospitals, H.M. Madras Army.

Chairman of the Medico-Climatological Committee—ARTHUR MITCHELL, M.D., F.R.S.E., Commissioner in Lunacy.

Meteorological Secretary—ALEXANDER BUCHAN, M.A., F.R.S.E.

OFFICE OF THE SOCIETY,
GENERAL POST OFFICE BUILDINGS,
EDINBURGH, 20*th Nov.* 1871.

* The List of the 55 Stations will be found on p. T 39 and T 40; the Additional Stations on p. T 44.

List of Additional Stations of Scottish Meteorological Society in 1871, being Supplemental to the 55 sent by the Society to the Astronomer-Royal for Scotland.

Stations.	Counties.	Observers.	Height above Sea-level.	North Latitude.	West Longitude.
			Feet.	° ′	° ′
Stykkisholm	Iceland	A. O. Thorlacius, Esq.	37	65 4	22 43
Reykjavik	Iceland	Dr Hjaltelin	10	64 40	22 0
Thorshavn	Faroe	Dr Hoegh Guldberg	12	62 2	6 43
North Unst	Shetland	Mr Robert Burnett, Lighthouse	230	60 51	0 53
St Kilda	Hebrides	Rev. Mr Mackay	...	57 49	...
Monach	Hebrides	Mr William M'Lellan, Lighthouse	150	57 32	7 41
South Uist	Hebrides	Rev. Rod. M'Donald, Manse	?	57 18	7 25
Corrimony	Inverness	Mr W. M'Gregor, Gardener to T. Ogilvy, Esq.	545	57 20	4 30
Fort-William	Inverness	G. Wright Hutchison, Esq., M.B., Belford Hospital	80	56 50	5 4
Rothiemay	Banff	Charles Pirrie, Esq., Milltown	272	57 31	2 45
Cluny	Aberdeen	Mr A. M'Donald, Gardener to John Gordon, Esq.	280	57 12	2 32
Bogside	Aberdeen	William Bruce, Esq.	894	57 11	2 45
Tillypronie	Aberdeen	Mr R. Littlejohn, Gardener to Sir J. F. Clark, Bart.	1120	57 10	2 56
Logie-Coldstone	Aberdeen	Rev. George Davidson	694	57 8	2 56
Tarland	Aberdeen	Joseph C. Firth, Esq.	483	57 8	2 52
Ballater	Aberdeen	James W. Paterson, Esq.	660	57 4	3 3
Montrose R. Asyl.	Forfar	James C. Howden, Esq., M.D., and Mr R. Reid, Gardener	200	56 45	2 29
Dundee	Forfar	Charles Clark, Esq.	50	56 28	3 0
Muthill	Perth	Rev. Albert J. T. Morris, B.A.	245	56 20	3 50
Stronvar	Perth	Rev. Alexander M. M'Gregor	470	56 21	4 20
Deanston House	Perth	Mr D. Henderson, Gardener to John Finlay, Esq.	130	56 13	4 4
St Andrews	Fife	Thomas Purdie, Esq.	65	56 20	2 48
Feddinch Mains	Fife	Robert Muirhead, Esq.	337	56 19	2 50
Cupar	Fife	J. Batty Tuke, Esq., M.D., and W. F. Morrison, Esq., M.D.	210	56 18	3 6
Burntisland	Fife	Rev. G. H. Forbes, The Parsonage	?	56 4	3 13
Aberdour	Fife	John Thomson	?	56 3	3 18
Arnott Hill	Falkirk	Rev. Louis Hay Irving	135	56 0	3 43
Airds	Argyll	Robert Macfie, Esq.	25	56 33	5 23
Carnwath	Lanark	Mr W. Currie, Clerk to H. P. M'Lean, Esq.	695	55 42	3 37
Ridge Park	Lanark	Charles Lindsay, Esq., and Mr H. Syme, Gardener	634	55 41	3 47
Inveresk	Edinburgh	Mr W. M'Auslane, Gardener to Sir A. Milne, K.C.B.	90	55 56	3 3
Galashiels	Selkirk	Robert Somerville, Esq., M.D.	416	55 37	2 50
Marchmont Ho.	Berwick	Mr P. Loney, Gardener to Sir Hugh P. H. Campbell, Bt.	500	55 44	2 25
Eyemouth	Berwick	Mr John Donaldson, Barony Office	16	55 52	2 5
Swinton	Berwick	Rev. Robert Home	200	55 43	2 15
The Glen	Peebles	Mr J. M'Kay, Gardener to Ch. Tennant, Esq.	765	55 35	3 9
Wolflee	Roxburgh	Sir Walter Elliot, K.I.S.	601	55 23	2 39
Dumfries	Dumfries	James Gilchrist, Esq., M.D., and Mr A. Bruce	159	55 3	3 36
Cally	Kirkcudbright	Mr J. Wood, Gardener to H. G. M. Stuart, Esq.	90	54 52	4 10
Slogarie	Kirkcudbright	Miss Isabella Bruce	300	54 59	4 8
Calf of Man	Isle of Man	Mr William Innes, Lighthouse	260	54 3	4 49
Silloth	Cumberland	Rev. Francis Redford, F.R.S.E., The Parsonage	28	54 52	3 23
Llandudno	Carnarvon	James Nicol, Esq., M.D., and T. Dalton, Esq., M.D.	100	52 20	3 50
Bournemouth	Hants	J. Roberts Thomson, Esq., M.D.	45	50 44	1 55
Sidmouth	Devon	J. Inglehy Mackenzie, Esq., M.D.	30	50 41	3 13
Millbrook	Jersey	Philip Langlois, Esq., M.R.C.S.	50	49 12	2 7
Guernsey	Guernsey	Dr Hoskins, F.R.S., etc.	204	49 28	2 32
Pau	France	E. Oliphant, Esq., and Rev. G. Graham	712	43 19	0 20
Janina	Greece	Major R. Stuart, H.M.B. Consul	1570	39 47	21 1 E
Larnaka	Cyprus	Thomas B. Sandwith, Esq., H.M. Vice-Consul	25	34 30	32 50 E
Jerusalem	Syria	Dr Chaplin	2500	31 47	35 13 E
Beyrout	Syria	S. Jackson Eldridge, Consul-General for Syria	160	33 54	35 29 E
Karak	Cœlo-Syria	John Scott Rattray, Esq.	?	33 50	35 59 E

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SCOTTISH TOWNS, METEOROLOGY OF.

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TABLE I.

SCOTTISH TOWNS,

BAROMETRIC PRESSURE (REDUCED

Year.	January.		February.		March.		April.		May.		June.	
	Observed.	Means.	Observed.	Means.	Observed.	Means.	Observed.	Means.	Observed.	Means.	Observed.	Means.
1856	29·840		29·893		30·195		29·744		29·836		29·910	
1857	29·742		29·923		29·839		29·797		29·984		30·031	
		29·791		29·908		30·017		29·770		29·910		29·970
1858	30·134		30·034		29·876		29·942		29·883		30·054	
		29·905		29·950		29·970		29·828		29·901		29·998
1859	29·784		29·759		29·744		29·768		30·060		29·957	
		29·875		29·902		29·914		29·813		29·941		29·988
1860	29·558		29·972		29·674		30·018		29·859		29·668	
		29·812		29·916		29·866		29·854		29·924		29·924
1861	30·059		29·703		29·560		30·201		30·101		29·975	
		29·853		29·881		29·815		29·912		29·954		29·932
1862	29·712		30·077		29·716		29·919		29·838		29·755	
		29·833		29·909		29·801		29·913		29·937		29·907
1863	29·510		30·043		29·760		29·826		29·948		29·779	
		29·792		29·926		29·796		29·902		29·939		29·891
1864	30·030		29·890		29·636		30·028		29·967		29·811	
		29·819		29·922		29·778		29·916		29·942		29·882
1865	29·430		29·803		29·900		30·124		29·835		30·194	
		29·780		29·910		29·790		29·937		29·931		29·913
1866	29·568		29·538		29·689		29·943		29·987		29·897	
		29·761		29·876		29·781		29·937		29·936		29·912
1867	29·645		29·850		29·894		29·610		29·952		30·056	
		29·751		29·874		29·790		29·910		29·938		29·924
1868	29·763		29·841		29·780		29·872		29·897		30·060	
		29·752		29·871		29·790		29·907		29·935		29·934
1869	29·813		29·713		29·913		29·937		29·897		30·040	
		29·756		29·860		29·798		29·909		29·932		29·942
1870	29·894		29·925		30·089		30·027		29·923		30·039	
		29·765		29·864		29·818		29·917		29·931		29·948
1871	29·753		29·865		29·926		29·800		30·082		29·981	
		29·765		29·864		29·824		29·910		29·940		29·950
1872												
1873												
1874												
1875												
1876												
1877												
1878												
1879												
1880												

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METEOROLOGY OF.

TO 32° AND TO THE SEA-LEVEL.)

July.		August.		September.		October.		November.		December.		Means of Observations.	Means of the Means.
Observed.	Means.	Observed.	Means.	Observed.	Means.	Observed.	Means.	Observed.	Means.	Observed.	Means.		
29·862		29·888		29·789		30·091		29·991		29·642		29·891	
29·846		30·041		29·891		29·817		30·143		30·024		29·923	
	29·854		29·964		29·840		29·954		30·067		29·833		29·906
29·909		29·959		29·902		29·921		29·981		29·757		29·946	
	29·872		29·963		29·861		29·943		30·038		29·808		29·920
30·072		29·870		29·731		29·689		29·879		29·670		29·831	
	29·922		29·940		29·828		29·877		29·998		29·773		29·898
29·994		29·585		29·890		29·804		29·942		29·712		29·806	
	29·937		29·869		29·841		29·863		29·987		29·761		29·879
29·637		29·798		29·735		29·959		29·550		30·042		29·860	
	29·887		29·857		29·823		29·879		29·914		29·808		29·876
29·761		29·902		29·992		29·610		29·914		29·780		29·831	
	29·869		29·863		29·847		29·840		29·914		29·804		29·870
30·086		29·776		29·614		29·639		29·834		29·853		29·906	
	29·896		29·852		29·818		29·815		29·904		29·810		29·862
29·937		30·032		29·743		29·911		29·699		29·930		29·884	
	29·900		29·872		29·810		29·826		29·881		29·823		29·864
29·848		29·817		30·131		29·631		29·793		30·037		29·879	
	29·895		29·867		29·842		29·806		29·872		29·845		29·866
29·930		29·708		29·565		30·089		29·788		29·698		29·783	
	29·898		29·852		29·817		29·831		29·865		29·831		29·858
29·850		29·862		29·943		29·777		30·241		29·947		29·886	
	29·894		29·853		29·827		29·827		29·896		29·841		29·860
30·062		29·827		29·926		29·805		29·963		29·343		29·847	
	29·907		29·851		29·835		29·825		29·905		29·803		29·859
29·963		30·036		29·590		29·984		29·755		29·738		29·870	
	29·911		29·869		29·817		29·836		29·892		29·798		29·860
29·954		30·014		29·954		29·630		29·740		29·976		29·931	
	29·914		29·878		29·826		29·823		29·882		29·810		29·865

TABLE II.

SCOTTISH TOWN STATIONS, METEOROLOGY OF.

BAROMETRIC RANGE.

Year.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Means of Observations.	Means of the Means.
	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.		
1856	1·976		1·410		0·781		1·202		1·151		0·739		0·850		0·857		1·290		1·125		1·010		1·670		1·172	
1857	1·527		1·010		1·874		1·260		0·845		1·057		0·864		0·668		1·112		1·251		1·777		1·347		1·216	
		1·752		1·210		1·328		1·231		0·998		0·898		0·857		0·762		1·201		1·188		1·394		1·508		1·194
1858	1·159		1·471		1·549		1·492		1·209		0·665		0·873		1·0[illegible]		0·996		1·781		1·830		1·332		1·280	
		1·554		1·297		1·401		1·318		1·068		0·820		0·862		0·843		1·132		1·386		1·539		1·450		1·223
1859	1·838		1·461		1·265		1·287		0·535		0·638		1·076		1·215		1·047		1·244		2·232		1·865		1·308	
		1·625		1·336		1·367		1·310		0·935		0·775		0·916		0·936		1·111		1·350		1·712		1·554		1·244
1860	1·867		2·164		1·996		1·830		1·245		1·179		0·786		1·094		1·184		1·205		1·632		1·449		1·460	
		1·673		1·501		1·493		1·414		0·997		0·856		0·890		0·967		1·126		1·321		1·696		1·533		1·289
1861	0·978		1·635		1·406		0·763		0·932		0·687		0·812		0·795		1·161		1·201		1·277		1·491		1·095	
		1·558		1·524		1·478		1·306		0·986		0·828		0·877		0·939		1·132		1·301		1·626		1·526		1·257
1862	1·432		1·438		1·356		1·205		0·849		1·082		0·762		0·973		1·006		1·888		1·516		1·210		1·226	
		1·540		1·511		1·461		1·291		0·967		0·864		0·860		0·944		1·114		1·385		1·611		1·481		1·252
1863	1·913		1·371		1·247		1·084		1·143		0·812		0·919		0·796		1·184		1·608		1·420		1·453		1·271	
		1·586		1·494		1·434		1·265		0·989		0·857		0·868		0·925		1·160		1·413		1·587		1·477		1·255
1864	1·318		1·540		1·130		1·038		0·664		0·698		0·941		1·053		1·058		1·765		2·096		1·296		1·216	
		1·556		1·499		1·400		1·240		0·953		0·840		0·876		0·939		1·149		1·452		1·643		1·457		1·250
1865	1·766		1·723		1·103		0·669		0·867		0·862		0·894		0·818		0·903		1·558		1·780		1·057		1·242	
		1·577		1·521		1·371		1·183		0·944		0·842		0·878		0·927		1·124		1·463		1·657		1·507		1·250
1866	1·820		1·308		1·665		1·213		1·169		0·886		1·149		1·022		1·059		1·099		0·914		1·630		1·244	
		1·600		1·502		1·397		1·185		0·964		0·846		0·902		0·936		1·118		1·430		1·590		1·518		1·249
1867	1·549		2·007		1·984		1·360		0·819		1·217		1·092		0·621		1·074		1·328		1·387		1·373		1·318	
		1·595		1·544		1·446		1·200		0·952		0·877		0·918		0·910		1·114		1·421		1·573		1·506		1·255
1868	1·954		1·906		1·799		1·583		1·092		0·849		1·037		0·973		1·503		0·971		1·782		1·754		1·434	
		1·623		1·572		1·473		1·230		0·963		0·875		0·927		0·914		1·144		1·386		1·589		1·525		1·263
1869	1·710		1·470		1·464		1·507		1·154		0·924		0·788		0·968		1·581		1·268		1·151		2·263		1·354	
		1·629		1·565		1·473		1·250		0·977		0·878		0·917		0·918		1·176		1·378		1·557		1·578		1·275
1870	2·104		1·548		1·406		1·224		1·433		1·109		0·809		0·866		1·672		2·176		1·649		1·812		1·484	
		1·661		1·564		1·468		1·248		1·007		0·894		0·910		0·915		1·209		1·431		1·564		1·593		1·289
1871	1·962		1·127		1·427		1·076		0·975		0·910															
		1·680		1·536		1·466		1·237		1·005		0·895														
1872																										
1873																										
1874																										
1875																										
1876																										
1877																										
1878																										
1879																										
1880																										

TABLE III.

SCOTTISH TOWN STATIONS, METEOROLOGY OF.

MEAN TEMPERATURES.

Year.	January. Obsd.	January. Mn.	February. Obsd.	February. Mn.	March. Obsd.	March. Mn.	April. Obsd.	April. Mn.	May. Obsd.	May. Mn.	June. Obsd.	June. Mn.	July. Obsd.	July. Mn.	August. Obsd.	August. Mn.	September. Obsd.	September. Mn.	October. Obsd.	October. Mn.	November. Obsd.	November. Mn.	December. Obsd.	December. Mn.	Means of Observed Quantities.	Means of the Means.
	°F.	°F.	°F.	°F.	F.	°F.	°F.	°F.	°F.	°F.	F.	°F.	°F.	F.	°F.	°F.	°F.	F.	F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.
1856	35·6		40·7		40·2		44·8		47·0		54·6		58·4		57·3		52·0		49·8		41·3		38·8		46·7	
1857	37·6		40·4		40·4		43·4		50·6		59·9		60·3		61·5		57·2		51·0		45·1		46·4		49·5	
		36·6		40·6		40·3		44·1		48·8		57·2		59·4		59·4		54·6		50·4		43·2		42·6		48·1
1858	40·7		36·5		40·7		45·1		50·9		60·5		57·9		59·5		56·0		45·7		40·2		41·5		47·9	
		38·0		39·2		40·4		44·4		49·5		58·3		58·9		59·4		55·1		48·8		42·2		42·2		48·0
1859	41·0		41·5		44·2		43·1		52·4		58·4		59·9		56·4		53·6		46·0		40·0		34·9		47·8	
		38·7		39·8		41·4		44·1		50·2		58·4		59·1		59·2		54·7		48·1		41·6		40·4		48·0
1860	35·9		34·9		39·1		42·1		50·7		54·4		59·3		55·4		50·7		47·4		39·3		34·4		45·3	
		38·2		38·8		40·9		43·7		50·3		57·6		59·2		58·4		53·9		48·0		41·2		39·2		47·4
1861	37·3		40·2		42·3		45·9		49·8		58·0		57·8		58·5		54·5		49·8		38·9		38·0		47·6	
		38·0		39·0		41·2		44·1		50·2		57·6		58·9		58·4		54·0		48·3		40·8		39·0		47·5
1862	38·8		40·6		38·6		45·2		51·3		53·2		55·3		56·9		54·0		47·3		35·6		43·0		46·6	
		38·1		39·2		40·8		44·2		50·4		57·0		58·4		58·2		54·0		48·1		40·0		39·6		47·3
1863	39·0		41·6		43·7		45·0		49·8		55·2		57·4		56·5		50·4		47·4		44·3		41·7		47·7	
		38·2		39·6		41·2		44·3		50·3		56·8		58·3		58·0		53·6		48·0		40·6		39·8		47·4
1864	36·8		33·8		37·9		47·1		51·4		54·2		57·5		55·4		52·9		46·2		41·4		40·2		46·2	
		38·1		38·9		40·8		44·6		50·4		56·5		58·2		57·7		53·5		47·8		40·7		39·9		47·3
1865	35·5		34·5		38·1		47·0		51·8		58·4		59·3		56·6		58·5		46·7		41·7		43·6		47·6	
		37·8		38·5		40·5		44·9		50·6		56·7		58·3		57·6		54·0		47·7		40·8		40·2		47·3
1866	40·2		37·5		38·6		44·3		48·5		56·4		58·0		55·6		52·3		49·1		42·3		41·6		47·0	
		38·0		38·4		40·4		44·8		50·4		56·6		58·3		57·4		53·8		47·8		40·9		40·4		47·3
1867	32·9		42·1		36·8		46·0		47·4		55·8		55·6		56·6		53·9		47·0		42·2		39·7		46·5	
		37·6		38·7		40·0		44·9		50·1		56·6		58·1		57·5		53·8		47·8		41·0		40·3		47·2
1868	38·9		42·9		44·2		46·8		52·6		56·8		61·0		59·8		54·1		45·6		39·6		41·1		48·6	
		37·7		39·0		40·4		45·0		50·3		56·6		58·3		57·7		53·8		47·6		40·9		40·4		47·3
1869	40·9		42·8		38·5		47·5		45·8		54·4		60·0		56·9		54·6		48·2		40·8		35·8		47·2	
		37·9		39·3		40·2		45·2		50·0		56·4		58·4		57·6		53·9		47·7		40·9		40·0		47·3
1870	36·5		35·7		39·9		48·0		51·3		56·7		60·2		58·6		54·2		46·9		40·2		34·4		46·9	
		37·8		39·0		40·2		45·4		50·1		56·5		58·5		57·7		53·9		47·6		40·9		39·7		47·3
1871	34·2		41·7		43·5		42·9		50·8		54·0															
		37·6		39·2		40·4		45·3		50·1		56·3														
1872																										
1873																										
1874																										
1875																										
1876																										
1877																										
1878																										
1879																										
1880																										

TABLE IV.

SCOTTISH TOWN STATIONS, METEOROLOGY OF.

MEAN DAILY RANGE OF TEMPERATURE.

Year.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Means of Observed Quanta.	Means of the Means.
	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.		
	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.
1856	7·3		8·8		13·2		13·3		14·2		14·4		16·7		14·6		13·2		10·9		10·0		9·3		12·2	
1857	8·2		10·0		9·5		12·0		14·4		17·2		14·1		14·1		12·8		11·4		9·1		8·5		11·8	
		7·8		9·4		11·4		12·6		14·3		15·8		15·4		14·4		13·0		11·2		9·6		8·9		12·0
1858	9·4		10·7		11·9		15·3		14·8		16·4		14·7		16·0		14·6		12·4		9·7		8·3		12·8	
		8·3		9·8		11·5		13·5		14·5		16·0		15·2		14·9		13·5		11·6		9·6		8·7		12·3
1859	9·6		9·8		10·9		14·4		19·7		16·4		14·6		16·0		13·3		12·2		10·3		9·3		13·0	
		8·6		9·8		11·4		13·8		15·8		16·1		15·0		15·2		13·5		11·7		9·8		8·8		12·4
1860	9·0		12·0		12·2		16·0		15·6		15·0		15·6		13·8		16·2		14·0		9·6		9·8		13·2	
		8·7		10·3		11·5		14·2		15·7		15·9		15·1		14·9		14·0		12·2		9·7		9·0		12·6
1861	8·6		9·4		11·1		13·7		17·5		13·0		13·3		11·2		10·7		10·4		10·7		9·0		11·6	
		8·7		10·1		11·5		14·1		16·0		15·4		14·8		14·3		13·5		11·9		9·9		9·0		12·4
1862	7·0		7·8		8·2		12·3		12·3		11·9		10·2		13·1		13·5		11·9		10·8		9·9		10·7	
		8·4		9·8		11·0		13·9		15·5		14·9		14·2		14·1		13·5		11·9		10·0		9·2		12·2
1863	8·4		10·2		10·6		12·6		13·4		13·3		16·7		13·1		11·8		10·2		9·5		10·0		11·6	
		8·4		9·8		11·0		13·7		15·2		14·7		14·5		14·0		13·3		11·7		10·0		9·3		12·1
1864	9·3		10·0		10·4		14·3		16·5		13·9		14·4		16·5		13·6		11·0		10·7		8·5		12·4	
		8·5		9·9		10·9		13·8		15·4		14·6		14·5		14·3		13·3		11·6		10·0		9·2		12·1
1865	9·3		9·2		10·0		15·1		13·1		17·5		15·7		11·8		15·1		11·2		10·2		8·3		12·2	
		8·6		9·8		10·8		13·9		15·2		14·9		14·6		14·0		13·5		11·6		10·1		9·1		12·2
1866	8·6		9·0		10·4		12·0		16·6		15·1		13·8		11·7		12·6		9·8		9·7		9·6		11·6	
		8·6		9·7		10·8		13·7		15·3		14·9		14·5		13·8		13·4		11·4		10·0		9·1		12·1
1867	8·5		8·9		10·1		11·0		11·3		14·6		12·7		12·4		10·8		10·8		9·3		8·8		10·8	
		8·6		9·6		10·7		13·5		15·0		14·9		14·4		13·7		13·2		11·4		10·0		9·1		12·0
1868	9·5		9·2		11·7		12·4		14·7		15·8		17·2		13·2		12·6		12·0		9·0		8·5		12·2	
		8·7		9·6		10·8		13·4		14·9		15·0		14·6		13·6		13·1		11·4		9·9		9·1		12·0
1869	7·9		9·9		11·9		14·8		13·8		15·8		15·8		15·5		11·8		10·0		10·0		9·7		12·2	
		8·6		9·6		10·9		13·5		14·8		15·0		14·7		13·8		13·0		11·3		9·9		9·1		12·0
1870	7·3		8·7		12·1		14·9		12·9		14·3		14·2		15·9		14·2		11·1		8·4		8·9		11·9	
		8·5		9·6		10·9		13·6		14·7		15·0		14·6		13·9		13·1		11·3		9·8		9·1		12·0
1871	7·4		7·4		11·8		11·6		16·3		14·3															
		8·4		9·4		11·0		13·5		14·8		14·9														
1872																										
1873																										
1874																										
1875																										
1876																										
1877																										
1878																										
1879																										
1880																										

TABLE V. SCOTTISH TOWN STATIONS, METEOROLOGY OF.

HUMIDITY.

Year	January. Obsd.	January. Mn.	February. Obsd.	February. Mn.	March. Obsd.	March. Mn.	April. Obsd.	April. Mn.	May. Obsd.	May. Mn.	June. Obsd.	June. Mn.	July. Obsd.	July. Mn.	August. Obsd.	August. Mn.	September. Obsd.	September. Mn.	October. Obsd.	October. Mn.	November. Obsd.	November. Mn.	December. Obsd.	December. Mn.	Means of Observed Quanta.	Means of the Means.
	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.
1856	83		85		80		77		75		74		71		81		82		88		86		87		81	
1857	86		84		77		78		75		75		71		78		82		84		83		83		80	
		84		84		78		78		75		71		71		80		82		86		84		85		80
1858	80		79		78		73		72		70		75		74		78		78		83		84		77	
		83		83		78		76		74		73		72		78		81		83		84		85		79
1859	82		82		81		77		68		71		78		75		78		81		86		85		79	
		83		82		79		76		77		73		74		77		80		83		84		85		79
1860	87		84		80		74		71		69		80		81		81		84		87		88		82	
		84		83		79		76		73		71		75		78		80		83		85		85		80
1861	88		83		80		78		74		72		80		80		82		87		86		90		82	
		84		83		79		76		73		76		76		78		80		84		85		86		80
1862	88		88		87		81		82		73		79		85		85		87		89		86		85	
		85		84		80		77		74		76		76		79		81		84		86		86		81
1863	89		86		83		81		79		80		76		81		83		83		89		86		84	
		85		84		81		77		73		77		76		79		81		85		86		86		81
1864	90		87		88		81		81		81		84		81		88		83		90		89		86	
		85		84		82		78		76		77		77		80		82		85		87		86		82
1865	87		89		85		84		82		80		81		82		87		88		87		86		85	
		85		85		82		79		76		78		77		80		83		86		87		86		82
1866	83		86		88		84		78		81		82		81		85		91		86		88		87	
		[illegible]		85		82		79		76		77		78		81		83		86		86		86		82
1867	88		[illegible]		80		87		84		81		81		[illegible]		86		[illegible]		86		87		86	
		86		85		83		80		77		78		78		81		83		86		86		87		83
1868	88		[illegible]		82		80		78		77		78		80		84		85		86		89		82	
		86		85		83		80		77		78		78		81		83		86		86		87		83
1869	89		87		[illegible]		[illegible]		76		77		80		80		84		88		85		88		83	
		87		85		83		80		77		78		78		81		83		86		86		87		83
1870	90		88		86		80		82		81		81		82		87		87		88		88		85	
		87		85		83		80		77		78		79		81		83		86		86		87		83
1871	87		90		85		86		79		80															
		87		86		83		[illegible]		77		78														
1872																										
1873																										
1874																										
1875																										
1876																										
1877																										
1878																										
1879																										
1880																										

TABLE VI. SCOTTISH TOWN STATIONS, METEOROLOGY OF.

NUMBER OF DAYS ON WHICH RAIN FELL.

Year	January. Obsd.	January. Mn.	February. Obsd.	February. Mn.	March. Obsd.	March. Mn.	April. Obsd.	April. Mn.	May. Obsd.	May. Mn.	June. Obsd.	June. Mn.	July. Obsd.	July. Mn.	August. Obsd.	August. Mn.	September. Obsd.	September. Mn.	October. Obsd.	October. Mn.	November. Obsd.	November. Mn.	December. Obsd.	December. Mn.	Means of Observed Quants.	Means of the Means.
	F.	F.	F.	°F.	°F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	°F.	°F.
1856	16		13		3		15		15		20		15		15		17		12		12		16		14	
1857	14		12		16		19		11		10		11		9		16		15		12		13		14	
		15		12		10		17		14		15		14		12		16		14		12		14		14
1858	15		5		10		7		15		13		1		15		13		17		9		19		13	
		15		10		10		11		15		14		15		13		15		15		11		16		14
1859	17		20		19		17		[illegible]		12		11		16		17		15		11		14		15	
		16		12		12		14		[illegible]		13		14		14		[illegible]		15		12		16		14
1860	18		12		18		9		14		17		12		20		12		20		17		16		15	
		16		12		13		13		12		12		14		15		15		16		13		16		14
1861	16		15		24		9		11		13		19		21		20		13		18		13		16	
		16		13		15		12		12		13		15		16		[illegible]		11		13		13		14
1862	20		12		16		12		17		14		22		16		13		19		12		21		17	
		17		13		15		14		15		15		16		15		15		16		[illegible]		16		15
1863	22		15		20		18		18		18		6		17		21		21		20		22		18	
		17		13		15		13		14		15		15		16		16		16		14		17		15
1864	16		15		18		14		11		21		11		14		21		14		17		19		16	
		17		13		16		13		15		16		14		16		17		16		15		17		15
1865	19		14		12		8		16		7		14		20		8		12		16		11		13	
		17		13		15		13		14		15		13		15		16		16		[illegible]		17		15
1866	19		19		15		12		10		11		11		18		20		13		15		20		16	
		17		14		16		13		13		15		14		15		16		16		15		17		15
1867	15		16		14		20		16		12		16		16		19		23		9		23		16	
		17		14		15		13		13		14		14		15		17		16		14		17		15
1868	18		21		18		17		15		11		8		16		15		16		14		19		16	
		17		15		16		13		14		14		14		15		17		16		14		17		15
1869	19		19		11		12		13		15		13		8		21		15		20		17		15	
		17		15		15		13		14		13		14		16		17		16		15		17		15
1870	17		16		10		11		14		12		12		11		12		15		11		14		13	
		17		15		15		13		14		14		12		16		16		16		14		17		15
1871	13		18		14		17		10		12															
		17		15		15		13		13		14														
1872																										
1873																										
1874																										
1875																										
1876																										
1877																										
1878																										
1879																										
1880																										

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TABLE VII. SCOTTISH TOWN STATIONS, METEOROLOGY OF.

DEPTH OF RAIN IN INCHES.

Year	January. Obsd.	January. Mn.	February. Obsd.	February. Mn.	March. Obsd.	March. Mn.	April. Obsd.	April. Mn.	May. Obsd.	May. Mn.	June. Obsd.	June. Mn.	July. Obsd.	July. Mn.	August. Obsd.	August. Mn.	September. Obsd.	September. Mn.	October. Obsd.	October. Mn.	November. Obsd.	November. Mn.	December. Obsd.	December. Mn.	Means of Observed Quants.	Means of the Means.
1856	2·68		4·10		[illegible]		[illegible]		[illegible]		[illegible]		2·00		[illegible]		1·16		1·66		2·01		5·26		3·04	
1857	2·96		2·16		2·27		2·30		[illegible]		[illegible]		1·58		2·0		1·11		2·25		2·94		3·65		2·79	
		2·82		3·23		[illegible]		3·02		2·41		1·74		1·00		[illegible]		4·12		1·96		2·48		4·46		2·92
1858	3·17		1·36		2·00		2·22		[illegible]		2·72		[illegible]		2·70		1·00		5·77		2·15		5·22		3·25	
		2·94		2·81		[illegible]		2·76		2·57		3·46		3·22		[illegible]		3·77		3·23		2·37		4·71		3·03
1859	4·77		1·53		1·77		1·07		[illegible]		1·79		2·50		2·02		[illegible]		4·43		3·51		3·59		3·39	
		3·40		3·24		2·62		[illegible]		2·12		[illegible]		[illegible]		[illegible]		3·76		3·53		2·66		4·43		3·12
1860	4·68		1·31		3·64		1·13		[illegible]		[illegible]		[illegible]		[illegible]		1·57		4·19		3·00		3·52		3·20	
		4·05		3·45		2·62		2·67		[illegible]		3·34		2·6		3·01		3·32		3·66		2·73		4·25		3·13
1861	4·52		2·58		[illegible]		[illegible]		[illegible]		2·52		4·05		7·17		[illegible]		[illegible]		6·21		2·82		3·81	
		3·82		3·37		[illegible]		[illegible]		[illegible]		3·25		[illegible]		[illegible]		3·62		3·62		3·31		4·01		3·25
1862	[illegible]		[illegible]		3·17		[illegible]		1·77		[illegible]		1·11		[illegible]		2·17		[illegible]		[illegible]		6·53		4·37	
		4·02		3·12		[illegible]		2·59		2·32		3·31		3·05		3·79		3·44		1·37		3·25		4·37		3·44
1863	7·30		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		0·71		[illegible]		1·58		[illegible]		[illegible]		5·34		3·67	
		4·11		3·14		3·32		2·63		2·33		3·51		2·76		[illegible]		3·58		4·29		3·22		4·47		3·44
1864	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		1·52		[illegible]		3·17		3·08		3·42		3·24	
		4·28		3·33		[illegible]		2·50		[illegible]		[illegible]		2·74		[illegible]		3·60		4·28		3·30		4·35		3·42
1865	3·20		2·11		1·82		[illegible]		[illegible]		1·07		[illegible]		[illegible]		1·10		1·73		1·37		[illegible]		2·72	
		4·18		3·21		[illegible]		2·50		2·33		[illegible]		[illegible]		3·61		3·45		1·37		3·31		4·26		3·35
1866	5·61		[illegible]		[illegible]		[illegible]		1·11		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		5·70		3·11	
		4·31		3·41		[illegible]		2·36		[illegible]		[illegible]		2·84		3·65		3·50		[illegible]		3·27		4·39		3·35
1867	4·74		[illegible]		2·16		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		1·00		[illegible]		3·22	
		[illegible]		3·38		3·13		[illegible]		2·33		[illegible]		3·02		3·63		3·51		4·10		3·08		4·25		3·34
1868	[illegible]		[illegible]		[illegible]		[illegible]		2·27		[illegible]		0·74		[illegible]		[illegible]		3·57		2·80		6·59		3·65	
		4·55		[illegible]		[illegible]		[illegible]		2·33		2·67		2·83		3·76		3·49		[illegible]		3·06		4·43		3·37
1869	5·20		[illegible]		1·17		[illegible]		[illegible]		[illegible]		1·67		[illegible]		[illegible]		3·07		[illegible]		5·47		3·08	
		4·57		3·55		3·65		[illegible]		[illegible]		[illegible]		2·74		[illegible]		3·71		[illegible]		3·05		4·51		3·35
1870	[illegible]		1·14		[illegible]		[illegible]		2·72		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		2·14	
		[illegible]		3·59		[illegible]		[illegible]		[illegible]		[illegible]		2·71		3·41		3·64		[illegible]		2·97		4·42		3·28
1871	2·45		[illegible]		2·20		[illegible]		[illegible]		2·21		3·23		[illegible]											
		[illegible]		3·65		[illegible]		[illegible]		2·19		[illegible]		2·74		3·58										
1872																										
1873																										
1874																										
1875																										
1876																										
1877																										
1878																										
1879																										
1880																										

TABLE VIII. SCOTTISH TOWN STATIONS, METEOROLOGY OF.

MEAN PRESSURE OF WIND IN POUNDS AV. ON A SQUARE FOOT.

Year.	January.		February.		March.		April.		May.		June	
	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.
1856	1·21		2·53		1·86		2·16		1·30		2·24	
1857	2·67		2·55		2·47		1·64		1·22		1·06	
		1·94		2·54		2·16		1·93		1·26		1·65
1858	3·70		2·77		2·55		1·48		1·50		2·29	
		2·53		2·62		2·29		1·76		1·47		1·86
1859	4·04		2·72		3·06		2·76		0·85		1·82	
		2·92		2·64		2·18		2·01		1·52		1·85
1860	1·98		2·59		2·65		1·73		1·86		1·38	
		2·72		2·63		2·40		1·95		1·42		1·76
1861	1·55		1·77		2·77		1·12		1·28		1·05	
		2·52		2·49		2·46		1·82		1·42		1·64
1862	1·78		1·42		1·33		1·58		1·49		1·62	
		2·42		2·34		2·30		1·77		1·41		1·64
1863	1·73		1·63		1·48		2·37		1·59		1·21	
		2·33		2·25		2·20		1·85		1·44		1·58
1864	1·25		1·29		1·57		1·14		1·16		1·32	
		2·22		2·14		2·13		1·77		1·40		1·55
1865	1·92		1·33		2·13		1·24		1·55		1·04	
		2·19		2·06		2·13		1·72		1·42		1·50
1866	2·00		2·17		1·43		1·65		1·37		1·07	
		2·17		2·07		2·06		1·71		1·42		1·46
1867	1·79		2·57		1·96		2·28		1·47		0·87	
		2·14		2·11		2·06		1·75		1·42		1·41
1868	2·65		3·57		2·00		1·84		1·41		1·50	
		2·13		2·22		2·05		1·76		1·42		1·42
1869	1·84		2·72		1·47		1·85		1·76		1·30	
		2·11		2·26		2·01		1·77		1·44		1·41
1870	1·01		1·93		1·53		2·23		2·16		1·22	
		2·04		2·24		1·98		1·80		1·49		1·40
1871	1·55		2·87		2·01		1·58		1·31		1·36	
		2·01		2·28		1·98		1·78		1·48		1·40
1872												
1873												
1874												
1875												
1876												
1877												
1878												
1879												
1880												

Year.	July.		August.		September.		October.		November.		December.		Means of Observed Quants.	Means of the Means.
	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.		
1856	1·34		1·38		1·96		0·81		1·31		1·81		1·66	
1857	2·25		1·55		1·84		1·65		1·15		3·28		1·94	
		1·86		1·46		1·90		1·23		1·23		2·54		1·82
1858	1·99		1·41		2·30		2·82		1·67		2·63		2·31	
		1·86		1·45		2·03		1·76		1·44		2·57		1·97
1859	1·52		1·68		1·74		1·56		1·20		1·72		2·06	
		1·78		1·50		1·96		1·71		1·41		2·36		1·99
1860	0·97		1·35		1·12		2·20		1·11		1·06		1·61	
		1·61		1·47		1·70		1·81		1·35		2·09		1·92
1861	1·61		2·28		1·30		1·31		2·69		1·35		1·67	
		1·61		1·61		1·71		1·72		1·56		1·97		1·88
1862	1·51		0·91		0·89		2·32		0·77		2·20		1·48	
		1·60		1·51		1·59		1·81		1·44		2·00		1·82
1863	1·20		1·28		1·74		1·56		1·28		2·05		1·64	
		1·55		1·48		1·61		1·78		1·42		2·08		1·80
1864	1·22		1·06		1·21		1·47		1·29		1·49		1·30	
		1·51		1·43		1·57		1·74		1·41		2·01		1·74
1865	0·86		2·12		1·03		1·45		1·22		2·49		1·45	
		1·45		1·42		1·52		1·72		1·39		2·06		1·71
1866	1·24		1·61		1·42		1·21		1·83		2·22		1·60	
		1·43		1·42		1·51		1·67		1·43		2·08		1·70
1867	1·13		0·90		1·52		1·16		1·40		1·74		1·56	
		1·40		1·38		1·51		1·63		1·43		2·05		1·69
1868	0·84		1·42		1·48		1·60		1·40		1·57		1·75	
		1·36		1·38		1·51		1·62		1·42		2·03		1·70
1869	1·53		1·50		2·03		1·81		2·42		2·17		1·90	
		1·40		1·39		1·55		1·64		1·50		2·04		1·71
1870	1·27		1·22		1·04		1·67		1·25		2·13		1·55	
		1·39		1·38		1·51		1·64		1·48		2·05		1·70
1871	1·29		1·47											
		1·39		1·36										
1872														
1873														
1874														
1875														
1876														
1877														
1878														
1879														
1880														

TABLE IX. SCOTTISH TOWN STATIONS, METEOROLOGY OF.

WINDS, NORTHERN QUARTER, ½ N.W., N., AND ½ N.E.

Year	January. Obsd	January. Mn	February. Obsd.	February. Mn.	March. Obsd.	March. Mn.	April. Obsd	April. Mn.	May. Obsd.	May. Mn.	June. Obsd	June. Mn.	July. Obsd.	July. Mn.	August. Obsd.	August. Mn.	September. Obsd.	September. Mn.	October. Obsd	October. Mn.	November Obsd.	November Mn.	December. Obsd.	December. Mn.	Means of Observed Quants.	Means of the Means.
1856	5		3		4		5		6		4		5		5		6		2		4		6		5	
1857	7		1		5		4		3		4		3		4		4		2		5		2		4	
		6		2		4		4		4		4		4		4		5		2		4		4		4
1858	4		4		5		5		6		3		5		3		3		5		4		1		4	
		5		3		5		5		5		4		4		4		4		3		4		3		4
1859	3		3		3		6		2		4		2		3		2		5		2		5		3	
		5		3		4		5		4		4		4		4		4		4		4		4		4
1860	5		6		4		7		3		3		4		3		4		3		2		4		4	
		5		3		4		5		4		4		4		4		4		3		3		4		4
1861	1		2		3		4		6		5		2		2		4		0		6		3		3	
		4		3		4		5		4		4		4		3		4		3		4		4		4
1862	2		4		6		4		5		6		1		4		2		2		2		2		4	
		4		3		4		5		4		4		4		5		3		3		4		3		4
1863	4		2		5		4		4		2		6		6		5		4		2		7		4	
		4		3		4		5		4		4		4		4		4		3		3		4		4
1864	3		4		6		3		6		3		4		5		1		4		3		2		4	
		4		3		5		5		5		4		4		4		3		3		3		4		4
1865	5		4		6		3		3		2		3		4		1		5		4		1		3	
		4		3		5		5		4		4		4		4		3		3		3		3		4
1866	1		5		6		4		4		4		4		3		2		3		4		4		4	
		4		3		5		4		4		4		4		4		3		3		4		3		4
1867	6		2		6		4		4		4		7		2		2		2		7		6		4	
		4		3		5		4		4		4		4		4		3		3		4		4		4
1868	5		2		4		4		2		2		4		3		6		2		6		4		4	
		4		3		5		4		4		4		4		4		3		3		4		4		4
1869	3		2		10		4		6		7		3		4		2		6		6		8		5	
		4		3		5		4		4		4		4		4		3		3		4		4		4
1870	5		6		7		3		5		6		4		7		4		6		6		7		6	
		4		3		5		4		1		4		4		4		3		3		4		4		4
1871	3		2		4		5		6		6		4		2											
		4		3		5		4		4		4		4		4										
1872																										
1873																										
1874																										
1875																										
1876																										
1877																										
1878																										
1879																										
1880																										

TABLE X.

SCOTTISH TOWN STATIONS, METEOROLOGY OF.

WINDS, EASTERN QUARTER, ½ N.E., E., AND ½ S.E.

Year.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Means of Observed Quants.	Means of the Means.
	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.		
1856	9		5		10		12		16		2		0		9		5		6		5		4		7	
1857	4		2		11		10		14		10		1		8		6		7		7		1		7	
		6		4		10		11		15		6		0		8		5		6		6		2		7
1858	8		10		3		7		4		4		4		4		3		4		6		4		5	
		5		6		8		10		11		5		2		7		5		6		6		3		6
1859	2		2		1		8		11		8		8		2		4		8		6		4		5	
		4		5		6		9		11		6		3		6		4		6		6		3		6
1860	7		2		2		10		10		10		6		4		2		3		12		8		6	
		5		4		5		9		11		7		4		5		4		6		7		4		6
1861	4		5		2		10		5		12		6		2		4		4		2		2		5	
		5		4		5		10		10		8		4		5		4		5		6		4		6
1862	5		8		14		6		6		3		4		4		6		3		4		2		5	
		5		5		6		9		9		7		4		5		4		5		6		4		6
1863	4		2		6		3		4		6		4		4		2		6		3		0		4	
		5		4		6		8		9		7		4		5		4		5		6		3		6
1864	4		6		8		6		8		3		4		4		2		12		7		7		6	
		5		5		6		8		9		6		4		5		4		6		6		4		6
1865	4		6		6		8		6		6		6		8		2		11		4		4		6	
		5		5		6		8		8		6		4		5		4		6		6		4		6
1866	2		4		8		12		9		8		8		6		4		5		0		2		6	
		4		5		6		8		8		7		5		5		4		6		5		4		6
1867	8		3		14		5		17		4		10		4		4		3		2		2		6	
		5		5		7		8		9		6		5		5		4		6		5		3		6
1868	6		0		0		6		4		4		8		6		11		2		8		6		5	
		5		4		6		8		9		6		5		5		4		6		5		4		6
1869	4		2		8		7		16		6		4		4		4		4		0		5		5	
		5		4		7		8		9		6		5		5		4		6		5		4		6
1870	6		10		8		2		6		4		6		9		4		6		4		8		6	
		5		4		7		7		9		6		5		5		4		6		5		4		6
1871	6		6		4		13		7		12		2		4											
		5		5		7		8		9		6		5		5										
1872																										
1873																										
1874																										
1875																										
1876																										
1877																										
1878																										
1879																										
1880																										

TABLE XI. SCOTTISH TOWN STATIONS, METEOROLOGY OF.

WINDS, SOUTHERN QUARTER. ½ S.E., S., AND ½ S.W.

Year	January Obs.	January Mn.	February Obs.	February Mn.	March Obs.	March Mn.	April Obs.	April Mn.	May Obs.	May Mn.	June Obs.	June Mn.	July Obs.	July Mn.	August Obs.	August Mn.	September Obs.	September Mn.	October Obs.	October Mn.	November Obs.	November Mn.	December Obs.	December Mn.	Means of observed Quantities.	Means of the Means.
[illegible]	6		[illegible]																				6		6	
[illegible]	6		11																				12		7	
		6																						9		6
[illegible]																							11		7	
																								[illegible]		7
[illegible]	8		8																				[illegible]		7	
																								9		7
[illegible]	7																						6		5	
																								[illegible]		6
[illegible]																							[illegible]		7	
																								[illegible]		6
[illegible]	[illegible]																						[illegible]		7	
																								[illegible]		7
[illegible]	7																						[illegible]		7	
																								8		7
[illegible]																							8		6	
																								8		7
[illegible]																							10		6	
																								8		6
[illegible]																							7		6	
																								8		6
[illegible]																							[illegible]		[illegible]	
																								8		6
[illegible]																							10		7	
																								8		6
[illegible]																							[illegible]		7	
																								[illegible]		6
[illegible]	7																						[illegible]			
																								[illegible]		6
[illegible]	7																									
[illegible]																										
[illegible]																										
[illegible]																										
[illegible]																										
1876																										
1877																										
1878																										
1879																										
1880																										

TABLE XII. SCOTTISH TOWN STATIONS, METEOROLOGY OF.

WINDS, WESTERN QUARTER, ½ S.W., W., AND ½ N.W.

Year.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Means of Observed Quants.	Means of the Means.
	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.		
1856	10		11		6		6		2		14		16		8		10		7		12		12		10	
1857	13		12		11		7		6		6		17		8		8		9		6		14		10	
		12		12		8		6		4		10		16		8		9		8		9		13		10
1858	13		4		14		8		8		10		12		10		14		13		8		12		10	
		12		9		10		7		5		10		15		9		11		10		9		13		10
1859	18		14		18		10		4		11		14		16		14		8		11		10		12	
		14		10		12		8		5		10		15		10		12		9		9		12		10
1860	9		14		16		7		12		7		10		12		13		15		4		5		10	
		13		11		13		8		6		10		14		11		12		10		8		11		10
1861	10		8		15		7		11		6		12		18		10		8		11		8		10	
		12		10		13		8		7		9		14		12		12		10		9		10		10
1862	8		6		4		10		8		12		15		10		10		14		6		16		10	
		12		10		12		8		7		9		14		12		11		11		8		11		10
1863	12		14		10		14		13		8		8		12		13		11		12		17		12	
		12		10		12		9		8		9		13		12		12		11		9		12		10
1864	8		8		10		9		10		14		13		12		14		6		8		8		10	
		11		10		12		9		8		10		13		12		12		10		9		11		10
1865	12		7		10		8		7		10		10		8		12		6		10		15		10	
		11		10		11		9		8		10		13		11		12		10		9		12		10
1866	17		12		10		6		8		9		9		12		12		10		8		16		12	
		12		10		11		8		8		10		12		11		12		10		10		12		10
1867	8		15		4		14		3		12		8		14		12		14		16		16		11	
		12		10		11		9		8		10		12		12		12		10		10		12		11
1868	11		18		18		13		12		16		12		12		6		18		8		9		13	
		12		11		11		9		8		10		12		12		11		11		10		12		11
1869	10		14		8		10		6		11		13		16		13		14		19		10		12	
		11		11		11		9		8		10		12		12		12		11		11		12		11
1870	10		5		10		14		10		14		12		9		10		10		12		10		10	
		11		11		11		10		8		11		12		12		11		11		11		12		11
1871	10		13		14		6		11		6															
		11		11		11		9		8		10														
1872																										
1873																										
1874																										
1875																										
1876																										
1877																										
1878																										
1879																										
1880																										

SCOTTISH COUNTRY AND TOWN STATIONS,

(COMBINED TO THE NUMBER OF 55,)

METEOROLOGY OF;

AS COMPUTED AND CONDENSED AT THE ROYAL OBSERVATORY, EDINBURGH.

TABLE 1.

SCOTTISH COUNTRY AND TOWN

BAROMETRIC PRESSURE (REDUCED

Year.	January.		February.		March.		April.		May.		June.	
	Observed.	Means.	Observed.	Means.	Observed.	Means.	Observed.	Means.	Observed.	Means.	Observed.	Means.
1856	29·538		29·891		30·195		29·785		29·862		29·900	
1857	29·698		29·840		29·804		29·767		29·959		30·020	
		29·618		29·866		30·000		29·776		29·910		29·960
1858	30·065		29·998		29·852		29·942		29·823		30·032	
		29·767		29·910		29·950		29·831		29·881		29·984
1859	29·864		29·709		29·707		29·751		30·046		29·934	
		29·791		29·8[illegible]		29·890		29·811		29·922		29·972
1860	29·529		29·932		29·689		29·978		29·831		29·674	
		29·739		29·874		29·839		29·845		29·904		29·912
1861	30·038		29·681		29·507		30·177		30·070		29·961	
		29·789		29·842		29·784		29·900		29·932		29·920
1862	29·686		30·052		29·698		29·881		29·810		29·733	
		29·774		29·872		29·772		29·897		29·914		29·893
1863	29·492		30·013		29·758		29·819		29·945		29·778	
		29·739		29·890		29·770		29·888		29·918		29·879
1864	30·013		29·886		29·634		30·022		29·995		29·802	
		29·769		29·889		29·755		29·902		29·927		29·870
1865	29·414		29·801		29·886		30·112		29·836		30·188	
		29·734		29·880		29·768		29·923		29·918		29·902
1866	29·534		29·514		29·673		29·935		29·975		29·881	
		29·716		29·847		29·759		29·924		29·923		29·900
1867	29·632		29·816		29·875		29·591		29·938		30·050	
		29·709		29·844		29·769		29·897		29·924		29·913
1868	29·740		29·799		29·749		29·852		29·882		30·034	
		29·711		298·41		29·768		29·893		29·921		29·922
1869	29·766		29·677		29·890		29·992		29·899		30·039	
		29·715		29·829		29·776		29·900		29·919		29·930
1870	29·842		29·856		30·052		29·993		29·906		30·031	
		29·723		29·831		29·795		29·906		29·918		29·937
1871	29·706		29·811		29·878		29·781		30·063		29·968	
		29·722		29·830		29·800		29·899		29·928		29·939
1872												
1873												
1874												
1875												
1876												
1877												
1878												
1879												
1880												

Digitized by

STATIONS, METEOROLOGY OF.

TO 32° AND TO THE SEA-LEVEL.)

July.		August.		September.		October.		November.		December.		YEAR of Observations.	Means of the YEARS.
Observed.	Means.	Observed.	Means.	Observed.	Means.	Observed.	Means.	Observed.	Means.	Observed.	Means.		
29·893		29·888		29·766		30·084		30·002		29·628		29·869	
29·832		30·014		29·882		29·803		30·115		29·989		29·894	
	29·862		29·951		29·824		29·944		30·058		29·808		29·882
29·867		29·943		29·898		29·892		29·956		29·703		29·916	
	29·871		29·945		29·849		29·926		30·024		29·773		29·893
30·050		29·850		29·722		29·667		29·855		29·651		29·817	
	29·916		29·924		29·817		29·862		29·982		29·743		29·874
29·988		29·575		29·868		29·784		29·919		29·709		29·786	
	29·930		29·854		29·827		29·846		29·969		29·736		29·856
29·619		29·774		29·723		29·936		29·544		30·020		29·838	
	29·878		29·841		29·810		29·861		29·898		29·783		29·853
29·735		29·885		29·979		29·620		29·897		29·767		29·812	
	29·858		29·847		29·834		29·827		29·898		29·781		29·847
30·076		29·779		29·613		29·657		29·825		29·840		29·800	
	29·885		29·838		29·806		29·805		29·889		29·788		29·842
29·934		30·018		29·731		29·914		29·681		29·921		29·879	
	29·890		29·858		29·798		29·817		29·866		29·803		29·846
29·849		29·796		30·131		29·641		29·787		30·015		29·871	
	29·886		29·852		29·830		29·800		29·858		29·824		29·848
29·911		29·687		29·555		30·047		29·753		29·672		29·761	
	29·888		29·837		29·806		29·822		29·848		29·810		29·840
29·861		29·856		29·931		29·765		30·230		29·919		29·872	
	29·886		29·839		29·817		29·818		29·880		29·820		29·843
30·058		29·808		29·903		29·772		29·955		29·312		29·822	
	29·900		29·836		29·823		29·814		29·886		29·780		29·841
29·962		30·015		29·590		29·969		29·730		29·693		29·852	
	29·904		29·849		29·807		29·825		29·875		29·774		29·842
29·945		30·014		29·937		29·614		29·725		29·937		29·904	
	29·907		29·860		29·815		29·811		29·865		29·785		29·846

TABLE 2.

SCOTTISH COUNTRY AND TOWN STATIONS, METEOROLOGY OF.

MEAN BAROMETETRIC RANGE.

Year.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Year of Observations.	Mean of the Years.
	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.		
1856	1·897		1·512		0·803		1·185		1·061		0·737		0·878		0·812		1·204		1·070		1·033		1·686		1·152	
1857	1·534		1·289		2·021		1·142		0·890		1·039		0·850		0·661		1·101		1·246		1·719		1·338		1·236	
		1·716		1·400		1·412		1·164		0·976		0·888		0·864		0·736		1·152		1·158		1·376		1·487		1·194
1858	1·241		1·427		1·587		1·434		1·339		0·702		0·945		1·003		0·997		1·687		1·872		1·297		1·294	
		1·557		1·409		1·470		1·254		1·097		0·826		0·891		0·825		1·101		1·334		1·541		1·424		1·227
1859	1·855		1·375		1·270		1·289		0·498		0·653		1·083		1·167		1·063		1·236		2·129		1·853		1·289	
		1·632		1·401		1·420		1·262		0·947		0·783		0·939		0·911		1·091		1·310		1·688		1·531		1·243
1860	1·810		2·079		1·931		1·860		1·228		1·102		0·745		1·080		1·165		1·261		1·641		1·426		1·444	
		1·667		1·536		1·522		1·382		1·003		0·847		0·900		0·945		1·106		1·300		1·679		1·510		1·283
1861	1·026		1·670		1·430		0·734		0·937		0·694		0·777		0·797		1·172		1·201		1·296		1·459		1·099	
		1·560		1·559		1·507		1·274		0·992		0·821		0·880		0·920		1·117		1·284		1·615		1·502		1·252
1862	1·451		1·402		1·322		1·204		0·845		1·074		0·790		0·944		0·993		1·872		1·513		1·204		1·218	
		1·545		1·536		1·481		1·264		0·971		0·856		0·867		0·923		1·099		1·368		1·600		1·459		1·247
1863	1·882		1·385		1·227		1·090		1·108		0·809		0·865		0·816		1·442		1·660		1·347		1·421		1·254	
		1·587		1·517		1·449		1·242		0·988		0·851		0·867		0·910		1·142		1·404		1·569		1·454		1·248
1864	1·298		1·479		1·123		1·032		0·669		0·731		0·924		1·037		1·094		1·776		2·056		1·264		1·207	
		1·555		1·513		1·413		1·219		0·953		0·838		0·873		0·924		1·137		1·445		1·623		1·433		1·244
1865	1·710		1·715		1·175		0·679		0·884		0·850		0·873		0·811		0·887		1·571		1·789		2·013		1·246	
		1·570		1·533		1·389		1·165		0·946		0·839		0·873		0·913		1·112		1·458		1·639		1·491		1·244
1866	1·771		1·343		1·601		1·218		1·131		0·883		1·139		1·057		1·165		1·042		0·941		1·511		1·234	
		1·589		1·516		1·408		1·170		0·963		0·843		0·897		0·926		1·117		1·420		1·576		1·493		1·243
1867	1·521		1·972		1·957		1·326		0·810		1·208		1·055		0·650		1·059		1·286		1·381		1·371		1·299	
		1·583		1·554		1·454		1·183		0·950		0·873		0·910		0·903		1·112		1·409		1·560		1·483		1·248
1868	1·865		1·889		1·824		1·541		1·105		0·833		1·003		0·989		1·411		1·002		1·793		1·704		1·415	
		1·606		1·580		1·482		1·210		0·962		0·870		0·918		0·910		1·135		1·378		1·578		1·500		1·260
1869	1·723		1·452		1·420		1·503		1·121		0·919		0·793		0·923		1·563		1·181		1·150		2·212		1·330	
		1·615		1·571		1·478		1·231		0·973		0·874		0·909		0·910		1·165		1·364		1·547		1·551		1·266
1870	2·024		1·540		1·420		1·197		1·404		1·088		0·805		0·854		1·598		2·114		1·631		1·818		1·458	
		1·642		1·569		1·474		1·229		1·002		0·888		0·902		0·907		1·194		1·414		1·553		1·568		1·278
1871	1·940		1·098		1·421		1·065		0·931		0·893															
		1·660		1·539		1·471		1·219		0·998		0·888														
1872																										
1873																										
1874																										
1875																										
1876																										
1877																										
1878																										
1879																										
1880																										
1881																										
1882																										
1883																										

TABLE 3. SCOTTISH COUNTRY AND TOWN STATIONS, METEOROLOGY OF.

MEAN TEMPERATURE.

Year.	January. Obsd.	January. Mean.	February. Obsd.	February. Mean.	March. Obsd.	March. Mean.	April. Obsd.	April. Mean.	May. Obsd.	May. Mean.	June. Obsd.	June. Mean.	July Obsd.	July Mean.	August. Obsd.	August. Mean.	September. Obsd.	September. Mean.	October. Obsd.	October. Mean.	November. Obsd.	November. Mean.	December. Obsd.	December. Mean.	Year of Observed Quantities.	Means of the Years.
	° F.	° F.	° F.	° F.	° F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.
1856	34·3		39·6		33·4		44·3		46·7		53·1		56·4		57·1		50·9		48·6		39·7		37·9		45·7	
1857	35·7		39·3		39·2		42·7		[illegible]		57·4		58·0		60·0		56·1		49·6		43·7		44·9		48·0	
		35·0		39·4		39·3		[illegible]		[illegible]		55·4		57·4		58·0		53·5		49·2		41·7		41·4		46·8
1858	39·3		35·8		39·5		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		54·5		44·9		39·4		39·9		46·6	
		[illegible]		38·2		39·4		43·6		45·7		56·5		56·8		58·3		51·8		47·8		40·9		40·9		46·8
1859	39·6		40·5		43·0		41·9		51·9		[illegible]		[illegible]		[illegible]		52·3		45·3		39·4		34·0		46·8	
		37·2		38·8		40·3		[illegible]		49·5		[illegible]		57·4		55·2		53·4		47·3		40·6		39·2		46·8
1860	35·5		34·0		38·4		41·5		[illegible]		53·0		[illegible]		54·1		50·2		46·0		39·1		34·1		44·5	
		36·9		37·8		[illegible]		42·8		[illegible]		[illegible]		57·1		57·4		[illegible]		47·0		40·3		38·2		46·3
1861	36·3		39·5		41·1		45·4		49·1		[illegible]		[illegible]		[illegible]		53·7		[illegible]		38·5		38·0		46·9	
		36·8		38·1		40·1		43·3		49·5		56·1		57·2		[illegible]		53·0		47·4		40·0		38·1		46·4
1862	38·4		40·1		37·8		[illegible]		51·1		[illegible]		[illegible]		[illegible]		[illegible]		47·1		37·1		41·8		46·1	
		37·0		39·4		[illegible]		43·5		[illegible]		55·5		56·8		57·2		53·0		47·4		39·6		38·7		46·4
1863	38·5		41·2		42·9		44·4		[illegible]		51·0		56·1		55·7		50·1		[illegible]		43·1		40·8		46·8	
		37·2		38·8		[illegible]		[illegible]		[illegible]		55·4		56·7		57·0		52·6		47·3		40·0		38·9		46·4
1864	36·2		33·5		37·5		46·1		[illegible]		[illegible]		56·7		54·1		52·4		45·8		40·9		39·4		45·5	
		[illegible]		[illegible]		39·0		[illegible]		[illegible]		55·1		56·7		[illegible]		52·6		47·1		40·1		39·0		46·3
1865	34·6		33·9		[illegible]		[illegible]		[illegible]		57·1		[illegible]		58·1		[illegible]		46·0		41·4		42·9		46·9	
		36·8		37·7		[illegible]		[illegible]		[illegible]		55·3		56·8		[illegible]		55·2		47·0		40·2		39·4		46·4
1866	[illegible]		36·7		39·0		44·0		47·9		[illegible]		[illegible]		55·0		51·4		[illegible]		41·2		40·6		46·3	
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		55·1		56·9		56·5		[illegible]		47·2		40·3		39·5		46·4
1867	31·8		41·1		36·2		45·8		47·5		[illegible]		54·8		57·1		53·4		46·4		41·6		38·8		45·7	
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		56·7		[illegible]		53·0		47·1		40·4		39·4		46·3
1868	37·5		41·6		42·8		[illegible]		[illegible]		[illegible]		[illegible]		58·5		53·2		[illegible]		39·2		40·6		47·6	
		36·7		38·2		39·5		44·4		[illegible]		[illegible]		57·0		56·8		53·0		46·9		40·3		39·5		46·4
1869	40·4		[illegible]		37·5		[illegible]		[illegible]		53·1		[illegible]		[illegible]		53·7		47·3		40·4		34·0		46·4	
		[illegible]		[illegible]		39·4		[illegible]		49·5		[illegible]		57·1		[illegible]		53·1		47·0		40·3		39·2		46·4
1870	35·9		35·2		39·5		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		53·6		46·3		39·1		33·5		46·1	
		[illegible]		38·5		39·4		[illegible]		[illegible]		[illegible]		57·3		[illegible]		55·1		46·9		40·2		38·8		46·4
1871	33·8		41·0		42·6		42·5		[illegible]		[illegible]															
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		55·1														
1872																										
1873																										
1874																										
1875																										
1876																										
1877																										
1878																										
1879																										
1880																										
1881																										
1882																										
1883																										

TABLE 4. SCOTTISH COUNTRY AND TOWN STATIONS, METEOROLOGY OF.

MEAN DAILY RANGE OF TEMPERATURE.

Year.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Year of Observed Quantities	Means of the Years.
	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.		
	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.
1856	7·3		8·8		13·2		13·3		14·2		14·4		16·7		14·6		13·2		10·9		10·0		9·3		12·2	
1857	8·2		10·0		9·5		12·0		14·4		17·2		14·7		14·1		12·8		11·4		9·1		8·5		11·8	
		7·8		9·4		11·4		12·6		14·3		15·8		15·4		14·4		13·0		11·2		9·6		8·9		12·0
1858	9·4		10·7		11·9		15·3		14·8		16·4		14·7		16·0		14·6		12·4		9·7		8·3		12·8	
		8·3		9·8		11·5		13·5		14·5		16·0		15·2		14·9		13·5		11·6		9·6		8·7		12·3
1859	9·6		9·8		10·9		10·5		19·7		16·1		14·3		14·7		13·6		12·0		10·4		8·7		12·8	
		8·6		9·8		11·4		13·5		15·8		16·0		15·0		14·9		13·5		11·7		9·8		8·7		12·2
1860	8·1		10·7		11·5		14·9		15·0		13·3		14·5		12·8		13·8		10·9		8·1		8·1		11·8	
		8·5		10·0		11·4		13·8		15·6		15·5		14·9		14·4		15·6		11·5		9·5		8·6		12·3
1861	8·2		9·3		11·4		14·1		15·6		13·6		13·6		11·0		11·0		11·6		10·9		9·5		11·6	
		8·5		9·9		11·4		13·8		15·6		15·2		14·6		15·9		13·2		11·5		9·7		8·7		12·2
1862	7·1		8·6		9·3		13·7		14·1		12·6		13·1		12·6		14·1		12·7		11·0		8·7		11·5	
		8·5		9·7		11·1		13·8		15·4		14·8		14·4		13·7		13·3		11·7		9·9		8·7		12·1
1863	8·7		10·9		11·2		13·4		14·1		13·2		16·8		14·0		12·2		10·6		9·8		9·8		12·1	
		8·3		9·8		11·1		13·8		15·2		14·6		14·7		13·7		13·2		11·6		9·9		8·9		12·1
1864	9·1		11·1		11·0		14·5		16·1		13·7		14·7		16·1		13·8		11·3		10·6		7·7		12·5	
		8·4		10·0		11·1		13·9		15·3		14·5		14·7		14·0		13·2		11·5		10·0		8·7		12·1
1865	9·2		9·3		10·8		16·1		14·0		17·3		15·7		13·3		15·9		12·2		10·9		8·4		12·8	
		8·5		9·9		11·1		14·1		15·2		14·8		14·8		13·9		13·5		11·6		10·0		8·7		12·2
1866	6·9		7·6		11·4		13·1		17·9		15·8		14·0		12·7		12·7		11·3		10·1		9·5		12·1	
		8·5		9·7		11·1		14·0		15·4		14·9		14·7		13·8		13·4		11·6		10·0		8·8		12·2
1867	9·7		9·5		11·4		11·5		12·3		13·9		12·9		13·7		11·7		11·9		10·4		9·2		11·5	
		8·6		9·7		11·1		13·8		15·2		14·8		14·7		13·8		13·3		11·6		10·1		8·8		12·1
1868	9·0		9·9		12·0		12·0		14·9		16·3		18·2		14·0		12·6		12·8		9·3		8·8		12·6	
		8·6		9·7		11·2		13·7		15·2		14·9		14·9		13·8		13·2		11·7		10·0		8·8		12·2
1869	6·1		9·6		12·0		15·8		14·7		15·8		15·8		16·3		12·0		11·1		10·3		9·9		12·6	
		8·6		9·7		11·2		13·9		15·1		15·0		14·9		14·0		13·1		11·6		10·0		8·9		12·2
1870	8·2		9·3		12·3		15·6		14·2		14·9		15·5		17·6		15·5		12·9		10·7		9·7		13·0	
		8·6		9·7		11·3		14·0		15·1		15·0		15·0		14·2		13·3		11·7		10·1		8·9		12·3
1871	6·9		8·2		12·0		13·1		17·5		15·3															
		8·6		9·6		11·4		13·9		15·2		15·0														
1872																										
1873																										
1874																										
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1879																										
1880																										
1881																										
1882																										
1883																										

TABLE 5. SCOTTISH COUNTRY AND TOWN STATIONS, METEOROLOGY OF.

MEAN OF BLACK BULB IN THE SUN.

Year	January Obsd.	January Mean	February Obsd.	February Mean	March Obsd.	March Mean	April Obsd.	April Mean	May Obsd.	May Mean	June Obsd.	June Mean	July Obsd.	July Mean	August Obsd.	August Mean	September Obsd.	September Mean	October Obsd.	October Mean	November Obsd.	November Mean	December Obsd.	December Mean	Year of Observed Quantities	Means of the Years
	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.	F.
1856																										
1857	50·7		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		74·0	
1858	52·6		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		73·8	
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		75·9
1859	54·6		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		73·0	
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		73·6
1860	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		65·5	
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		72·6
1861	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		65·2	
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		71·9
1862	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		71·4
1863	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		70·6
1864	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		70·4
1865	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		70·2	
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]
1866	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]
1867	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		68·4	
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]
1868	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		69·8	
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]
1869	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]
1870	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
		[illegible]																		[illegible]		[illegible]		[illegible]		[illegible]
1871	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]															
		[illegible]				[illegible]																				
1872																										
1873																										
1874																										
1875																										
1876																										
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1882																										
1883																										

TABLE 6.

SCOTTISH COUNTRY AND TOWN STATIONS, METEOROLOGY OF.

MEAN OF BLACK BULB DURING NIGHT.

Year.	January. Obsd.	January. Mean.	February. Obsd.	February. Mean.	March. Obsd.	March. Mean.	April. Obsd.	April. Mean.	May. Obsd.	May. Mean.	June. Obsd.	June. Mean.	July. Obsd.	July. Mean.	August. Obsd.	August. Mean.	September. Obsd.	September. Mean.	October. Obsd.	October. Mean.	November. Obsd.	November. Mean.	December. Obsd.	December. Mean.	Year of Observed Quantities.	Mean of the Years.
	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.
1856																										
1857	28·8		31·7		31·5		33·3		38·7		45·5		45·9		47·7		43·7		39·3		34·2		36·1		38·0	
1858	30·9		24·7		29·2		31·3		37·8		45·4		43·6		43·5		41·1		33·8		29·3		31·0		35·1	
		29·8		28·2		30·4		32·3		38·2		45·4		44·8		45·6		42·4		36·6		31·8		33·6		36·6
1859	30·3		30·8		32·9		28·8		34·1		42·7		45·9		44·7		38·4		35·0		27·8		24·3		34·6	
		30·1		29·1		31·2		31·1		36·9		44·4		45·0		45·3		41·1		36·0		30·4		30·5		35·9
1860	26·7		24·1		27·4		29·7		37·8		42·2		45·5		42·4		38·0		35·2		30·5		26·0		33·8	
		29·2		27·8		30·2		30·8		37·1		44·0		45·2		44·6		40·3		35·8		30·4		29·4		35·4
1861	28·7		31·0		31·6		33·5		36·0		46·0		44·9		47·0		43·1		38·5		28·8		28·8		36·5	
		29·1		28·5		30·5		31·3		36·9		44·4		45·2		45·1		40·9		36·4		30·1		29·2		35·6
1862	31·6		32·0		29·4		33·4		38·9		41·3		42·3		44·9		41·1		35·6		27·2		33·6		35·9	
		29·5		29·0		30·3		31·7		37·2		43·8		44·7		45·0		40·9		36·2		29·6		30·0		35·6
1863	30·4		32·1		33·7		33·1		36·5		41·7		41·7		43·1		38·5		36·6		33·6		31·3		36·0	
		29·6		29·5		30·8		31·9		37·1		43·5		44·3		44·8		40·6		36·3		30·2		30·2		35·7
1864	27·1		23·3		28·3		34·7		37·1		41·6		44·8		41·1		40·2		35·0		30·0		31·6		34·6	
		29·3		28·7		30·5		32·2		37·1		43·3		44·3		44·3		40·5		36·1		30·2		30·3		35·6
1865	26·4		25·6		27·5		32·9		38·5		43·0		44·2		43·7		45·4		33·7		30·3		34·3		35·5	
		29·0		28·4		30·2		32·3		37·3		43·3		44·3		44·2		41·1		35·9		30·2		30·8		35·6
1866	31·2		27·6		27·7		32·3		32·7		43·0		45·3		43·5		39·7		38·5		30·8		30·9		35·3	
		29·0		28·3		29·9		32·3		36·8		43·2		44·4		44·2		40·9		36·1		30·2		30·8		35·5
1867	22·3		32·3		25·0		36·0		37·8		42·7		43·9		45·3		41·6		35·4		31·0		30·1		35·4	
		28·6		28·7		29·6		32·6		36·9		43·2		44·4		44·3		41·0		36·1		30·3		30·7		35·5
1868	28·3		33·4		32·1		34·6		38·7		42·5		45·8		45·9		41·4		32·8		29·4		31·9		36·3	
		28·6		29·0		29·8		32·8		37·0		43·1		44·5		44·4		41·0		35·8		30·2		30·8		35·6
1869	33·0		32·7		27·2		33·4		32·3		40·3		46·1		42·4		40·8		36·2		29·8		25·0		34·9	
		28·9		29·2		29·6		32·8		36·7		42·9		44·6		44·2		41·0		35·8		30·2		30·4		35·3
1870	28·0		25·4		28·1		33·9		38·5		43·0		47·5		43·8		40·2		34·2		28·7		24·0		34·6	
		28·8		29·0		29·4		32·9		36·8		42·8		44·8		44·2		40·9		35·7		30·1		29·9		35·5
1871	25·2		33·3		32·0		31·9		36·5		40·7															
		28·6		29·3		29·6		32·8		36·8		42·7														
1872																										
1873																										
1874																										
1875																										
1876																										
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1878																										
1879																										
1880																										
1881																										
1882																										
1883																										

TABLE 7. SCOTTISH COUNTRY AND TOWN STATIONS, METEOROLOGY OF.

HUMIDITY.

Year	January. Obsd.	January. Mn.	February. Obsd.	February. Mn.	March. Obsd.	March. Mn.	April. Obsd.	April. Mn.	May. Obsd.	May. Mn.	June. Obsd.	June. Mn.	July. Obsd.	July. Mn.	August. Obsd.	August. Mn.	September. Obsd.	September. Mn.	October. Obsd.	October. Mn.	November. Obsd.	November. Mn.	December. Obsd.	December. Mn.	Year of Observed Quantities.	Means of the Years.
1856	85		81		79		79		77		76		[illegible]		81		84		90		[illegible]		89		82	
1857	[illegible]		89		[illegible]		81		80		81		[illegible]		[illegible]		87		90		90		88		86	
		86		86		82		83		78		79		78		[illegible]		85		90		[illegible]		88		84
1858	86		[illegible]		[illegible]		78		81		[illegible]		[illegible]		81		82		87		89		90		84	
		85		85		[illegible]		[illegible]		79		79		81		83		[illegible]		89		89		89		83
1859	87		88		85		[illegible]		78		78		81		80		[illegible]		89		89		88		83	
		86		85		84		80		78		79		80		[illegible]		84		89		89		89		84
1860	[illegible]		85		[illegible]		[illegible]		81		87		83		[illegible]		87		87		90		90		86	
		87		86		[illegible]		81		79		[illegible]		81		[illegible]		[illegible]		89		89		86		84
1861	90		88		86		[illegible]		[illegible]		81		81		80		[illegible]		[illegible]		87		90		86	
		88		[illegible]		82		81		79		80		81		83		[illegible]		[illegible]		89		89		84
1862	[illegible]		89		[illegible]		[illegible]		81		80		[illegible]		87		[illegible]		[illegible]		90		89		87	
		88		85		83		[illegible]		79		81		82		84		[illegible]		89		89		89		85
1863	90		88		85		84		[illegible]		81		81		[illegible]		86		83		89		88		86	
		88		87		85		84		[illegible]		82		81		84		86		89		80		84		85
1864	89		86		[illegible]		81		81		82		81		81		86		89		91		89		86	
		88		85		83		82		80		81		82		83		86		89		84		89		85
1865	87		88		85		89		81		81		82		87		86		88		89		87		86	
		[illegible]		86		[illegible]		[illegible]		[illegible]		81		82		84		[illegible]		84		[illegible]		84		85
1866	81		87		[illegible]		81		77		[illegible]		86		86		87		90		87		89		86	
		[illegible]		85		[illegible]		[illegible]		81		[illegible]		82		81		86		[illegible]		89		89		85
1867	[illegible]		88		80		86		81		82		81		86		87		89		87		89		86	
		88		87		[illegible]		82		[illegible]		81		82		81		86		89		80		89		85
1868	[illegible]		88		[illegible]		84		[illegible]		77		[illegible]		[illegible]		86		87		87		90		84	
		[illegible]		87		[illegible]		[illegible]		82		[illegible]		82		82		86		85		89		[illegible]		85
1869	90		88		84		81		[illegible]		81		[illegible]		82		86		88		87		88		88	
		[illegible]		87		85		[illegible]		80		81		82		84		86		89		89		[illegible]		88
1870	89		88		87		81		[illegible]		[illegible]		[illegible]		[illegible]		87		88		83		87		86	
		88		85		80		82		86		81		82		81		86		89		89		89			85
1871	[illegible]		89		81		[illegible]		79		81															
		[illegible]		87		88		81		[illegible]		81														
1872																										
1873																										
1874																										
1875																										
1876																										
1877																										
1878																										
1879																										
1880																										
1881																										
1882																										
1883																										

TABLE 8. SCOTTISH COUNTRY AND TOWN STATIONS, METEOROLOGY OF.

NUMBER OF DAYS ON WHICH RAIN FELL.

Year.	January. Obsd.	January. Mn.	February. Obsd.	February. Mn.	March. Obsd.	March. Mn.	April. Obsd.	April. Mn.	May. Obsd.	May. Mn.	June. Obsd.	June. Mn.	July. Obsd.	July. Mn.	August. Obsd.	August. Mn.	September. Obsd.	September. Mn.	October. Obsd.	October. Mn.	November. Obsd.	November. Mn.	December. Obsd.	December. Mn.	YEAR of Observed Quantities.	Means of the YEARS.
1856	14		14		4		12		13		18		15		11		17		12		13		16		13	
1857	16		11		16		16		13		9		15		10		15		16		12		14		14	
		14		12		10		14		13		14		15		12		10		12		12		15		14
1858	14		6		13		9		16		12		17		17		14		18		10		17		13	
		14		10		11		12		11		13		11		13		15		15		12		16		15
1859	17		17		11		17		1		11		14		11		17		11		14		15		14	
		15		12		11		13		11		12		13		13		10		15		12		16		14
1860	18		13		19		10		17		18		11		19		14		22		17		17		16	
		10		12		13		12		12		11		14		14		15		16		13		16		14
1861	14		15		22		9		12		12		20		22		15		12		13		13		16	
		15		12		11		12		12		14		13		16		16		16		14		15		14
1862	21		11		16		12		16		20		22		16		13		13		10		21		17	
		16		12		14		12		15		14		16		15		16		10		14		16		15
1863	21		14		15		17		15		18		8		19		21		19		15		18		17	
		17		12		12		15		15		15		15		16		16		17		14		16		15
1864	14		11		16		12		12		17		11		13		14		13		16		17		14	
		16		13		15		13		15		13		15		16		17		16		14		16		15
1865	17		14		15		8		16		7		11		18		7		11		15		15		14	
		16		13		15		12		13		14		15		16		16		10		14		16		15
1866	19		10		16		13		10		12		13		19		19		13		16		20		16	
		17		13		13		12		13		14		11		16		15		10		14		17		15
1867	18		16		11		20		11		12		14		15		16		18		9		16		15	
		17		15		15		13		13		14		13		16		15		16		13		17		15
1868	17		18		17		13		15		11		6		16		13		17		13		13		15	
		17		14		15		13		13		14		14		16		16		16		14		17		15
1869	18		10		12		11		11		9		12		10		20		15		18		15		14	
		17		14		15		13		13		13		14		16		16		16		14		17		15
1870	12		15		10		11		13		14		10		9		12		16		12		13		12	
		17		14		13		13		15		13		14		15		16		10		14		16		15
1871	13		16		13		16		9		11															
		16		14		14		13		15		13														
1872																										
1873																										
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TABLE 9. SCOTTISH COUNTRY AND TOWN STATIONS, METEOROLOGY OF.

DEPTH OF RAIN IN INCHES.

Year.	January. Obsd.	January. Mean.	February. Obsd.	February. Mean.	March. Obsd.	March. Mean.	April. Obsd.	April. Mean.	May. Obsd.	May. Mean.	June. Obsd.	June. Mean.	July. Obsd.	July. Mean.	August. Obsd.	August. Mean.	September. Obsd.	September. Mean.	October. Obsd.	October. Mean.	November. Obsd.	November. Mean.	December. Obsd.	December. Mean.	Year of Observed Quantities.	Means of the Years.
1856	2·38		3·30		0·26		2·44		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		1·43		2·12		[illegible]		2·75	
1857	2·77		1·51		[illegible]		[illegible]		[illegible]		[illegible]		2·17		1·87		[illegible]		[illegible]		2·89		3·37		2·55	
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		2·50		5·73		2·65
1858	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		2·61		[illegible]		1·72		[illegible]		[illegible]		2·83	
		[illegible]		[illegible]		[illegible]				[illegible]								[illegible]		[illegible]		2·46		3·52		2·71
1859	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		3·10	
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]				[illegible]				[illegible]		[illegible]		2·81
1860	[illegible]						[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		3·16	
		[illegible]		[illegible]				[illegible]		[illegible]		[illegible]				[illegible]		[illegible]		[illegible]		[illegible]		5·81		2·58
1861	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		3·76	
										[illegible]		[illegible]		[illegible]		[illegible]				[illegible]		3·37		3·67		3·02
1862	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]				[illegible]		[illegible]		3·77	
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]				[illegible]		3·89		[illegible]
1863	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		1·11		[illegible]		5·01		3·51	
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]				[illegible]		[illegible]		[illegible]		[illegible]		4·03		3·18
1864	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		3·71		3·22	
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		3·18
1865	[illegible]				[illegible]		[illegible]		[illegible]		[illegible]				[illegible]		[illegible]		3·11				[illegible]		[illegible]	
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		3·55		3·96		3·15
1866	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		3·45	
		[illegible]		[illegible]				[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		3·18
1867	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		2·11		[illegible]				[illegible]		[illegible]		[illegible]		[illegible]		3·21	
		[illegible]						[illegible]		[illegible]												[illegible]		4·00		3·18
1868	[illegible]		[illegible]		[illegible]						1·11		[illegible]				[illegible]		·71		[illegible]		[illegible]		3·59	
		[illegible]		[illegible]		[illegible]				[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		3·18		4·16		3·21
1869	[illegible]		[illegible]				[illegible]		[illegible]		[illegible]		[illegible]		1·32		[illegible]		[illegible]		[illegible]		[illegible]		3·04	
		[illegible]				[illegible]		[illegible]		[illegible]		[illegible]				[illegible]				[illegible]		[illegible]		4·19		3·20
1870	[illegible]				[illegible]		[illegible]				[illegible]		[illegible]		1·55		[illegible]		[illegible]		[illegible]		[illegible]		2·67	
		[illegible]		[illegible]		[illegible]				[illegible]		[illegible]		[illegible]		[illegible]						3·21		4·15		[illegible]
1871	2·71		[illegible]		[illegible]		[illegible]		1·42		[illegible]															
		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]														
1872																										
1873																										
1874																										
1875																										
1876																										
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1879																										
1880																										
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1882																										
1883																										

TABLE 10. SCOTTISH COUNTRY AND TOWN STATIONS, METEOROLOGY OF.

MEAN FORCE OF THE WIND; lbs. AVOIR. ON SQUARE FOOT.

Year	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Year of Observed Quantities	Mean of the Years
	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.	Obsd.	Mean.		
1856	1·22		2·20		1·65		0·98		0·97		1·90		1·34		1·01		1·69		0·88		0·97		1·87		1·39	
1857	1·25		1·77		1·88		1·18		0·79		0·65		1·55		1·04		1·38		1·29		1·10		2·32		1·35	
		1·24		1·98		1·76		1·08		0·88		1·28		1·44		[illegible]		1·54		1·08		1·04		2·10		1·57
1858	2·36		1·80		1·89		1·45		1·34		1·36		1·11		0·99		1·68		1·90		1·09		1·80		1·56	
		1·61		1·92		1·81		1·20		1·03		1·30		1·33		[illegible]		1·58		1·36		1·05		2·00		1·43
1859	2·95		2·67		3·19		2·33		0·84		1·66		1·44		1·58		1·80		1·63		1·31		1·67		1·92	
		1·94		2·11		2·15		1·48		0·95		1·39		1·36		[illegible]		1·64		1·42		1·12		1·92		1·36
1860	1·78		2·33		1·95		1·55		1·42		1·28		0·87		[illegible]		1·09		2·34		1·09		1·37		1·52	
		1·91		2·15		2·11		1·50		1·07		1·37		1·26		[illegible]		1·53		1·61		1·11		1·81		1·55
1861	1·83		2·22		2·64		1·13		1·18		0·88		1·41		1·92		1·38		1·28		2·36		1·20		1·68	
		1·82		2·16		2·20		1·44		1·09		1·29		1·29		1·28		1·50		1·55		1·32		1·70		1·55
1862	1·68		1·36		1·36		1·57		1·27		1·67		1·76		0·82		0·92		2·07		0·80		2·15		1·45	
		1·80		2·05		2·08		1·46		1·12		1·34		1·35		1·21		1·42		1·63		1·25		1·77		1·54
1863	1·98		1·90		1·54		1·87		1·14		1·05		1·03		1·14		1·69		1·46		1·37		2·39		1·55	
		1·82		2·03		2·01		1·51		1·12		1·31		1·31		[illegible]		1·45		1·61		1·26		1·85		1·54
1864	1·51		1·31		1·47		1·02		1·13		1·46		1·15		1·09		1·50		1·25		1·13		1·31		1·28	
		1·79		1·95		1·95		1·45		1·12		1·32		1·30		1·10		1·46		1·57		1·25		1·79		1·51
1865	1·97		1·28		1·62		1·22		1·48		1·11		0·98		0·88		1·25		1·73		1·06		2·50		1·42	
		1·81		1·88		1·92		1·43		1·14		1·30		1·26		[illegible]		1·44		1·58		1·23		1·86		1·50
1866	2·18		1·69		1·46		1·54		1·05		0·86		0·90		1·16		1·36		1·06		1·78		1·80		1·42	
		1·84		1·88		1·88		1·44		1·15		1·26		1·23		[illegible]		1·43		1·54		1·28		1·85		1·49
1867	1·43		2·13		1·63		1·84		1·31		0·98		1·04		0·97		1·46		1·37		1·03		1·60		1·40	
		1·81		1·90		1·86		1·47		1·16		1·24		1·22		[illegible]		1·43		1·52		1·26		1·83		1·49
1868	1·92		3·21		2·13		1·56		1·49		1·58		0·94		1·60		1·21		1·64		1·37		1·69		1·70	
		1·82		2·00		1·88		1·48		1·19		1·26		1·19		[illegible]		1·42		1·53		1·27		1·82		1·50
1869	1·83		2·05		1·43		1·40		1·44		1·08		1·28		1·16		1·90		1·62		1·02		1·85		1·58	
		1·82		2·01		1·85		1·47		1·20		1·25		1·20		1·18		1·45		1·54		1·31		1·82		1·51
1870	1·04		1·70		1·31		1·66		1·47		1·12		1·05		0·84		1·13		1·50		1·04		1·28		1·26	
		1·76		1·99		1·81		1·49		1·22		1·21		1·19		1·16		1·43		1·53		1·29		1·79		1·45
1871	1·36		2·12		1·87		1·96		1·12		1·07															
		1·74		2·00		1·82		1·48		1·22		1·23														
1872																										
1873																										
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1882																										
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TABLE 11. SCOTTISH COUNTRY AND TOWN STATIONS, METEOROLOGY OF.

WINDS—NORTHERN QUARTER, ½ N.W., N., AND ½ N.E.

Year.	January. Obsd.	Mn.	February. Obsd.	Mn.	March. Obsd.	Mn.	April. Obsd.	Mn.	May. Obsd.	Mn.	June. Obsd.	Mn.	July. Obsd.	Mn.	August. Obsd.	Mn.	September. Obsd.	Mn.	October. Obsd.	Mn.	November. Obsd.	Mn.	December. Obsd.	Mn.	Year of Observed Quantities.	Means of the Years.
1856	7		[illegible]		7		6				3		1		6		7		2		9		8		6	
1857	7	[illegible]	1	[illegible]	1	[illegible]	1	[illegible]	1	[illegible]	5	[illegible]	1	[illegible]	5	[illegible]	4	[illegible]	4	3	5	7	2	5	4	5
1858	4	[illegible]	4	3	8	[illegible]	1		[illegible]		2			[illegible]	1	5	[illegible]	4	6	4	6	7	2	4	4	5
1859	3	[illegible]	[illegible]	[illegible]		[illegible]		[illegible]	1	[illegible]	6	[illegible]	3	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	5	5	6	7	5	4	4
1860	7	[illegible]	[illegible]	4	[illegible]	[illegible]		[illegible]		[illegible]	1	[illegible]	6	4	4	1	[illegible]	[illegible]	1	5	4	6	7	5	6	5
1861	1	[illegible]	1	4	1	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	3	[illegible]	[illegible]	1	5	4	[illegible]	4	7	6	6	5	5	5
1862	4	7	[illegible]	1	6	[illegible]			3	[illegible]	6	[illegible]	1	[illegible]	1	1	[illegible]	[illegible]	[illegible]	4	4	6	3	5	4	5
1863	4	[illegible]	[illegible]	4	4						[illegible]	1	7	1	4	4	1	4	2	4	2	5	5	5	4	5
1864	[illegible]	[illegible]			[illegible]	[illegible]		[illegible]		[illegible]	1	[illegible]	[illegible]	[illegible]		1	[illegible]	1	[illegible]	4	1	5	3	5	5	5
1865	[illegible]	4		1	[illegible]		1	[illegible]		[illegible]	[illegible]		1	1	1	[illegible]	2	4	[illegible]	4	6	[illegible]	[illegible]	4	5	5
1866	3	[illegible]			[illegible]		[illegible]	[illegible]			[illegible]		7	5	5	1	[illegible]	3		1	6	[illegible]	4	[illegible]	5	5
1867	10			1			1	[illegible]			[illegible]	4	[illegible]			1	1	4	1	1	[illegible]	5	8	5	6	5
1868	[illegible]	[illegible]		4			1	[illegible]		[illegible]		4	[illegible]	5		1	6	4	1	1	6	[illegible]	3	[illegible]	4	[illegible]
1869	[illegible]	[illegible]		[illegible]	11	[illegible]	[illegible]	5				4				4		4	[illegible]	1	[illegible]	[illegible]	8	5	6	[illegible]
1870	1				8		[illegible]				[illegible]		[illegible]		[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	8	[illegible]	[illegible]	[illegible]	6	[illegible]
1871	[illegible]																									
1872																										
1873																										
1874																										
1875																										
1876																										
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1879																										
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1881																										
1882																										
1883																										

TABLE 12. SCOTTISH COUNTRY AND TOWN STATIONS, METEOROLOGY OF.

WINDS—EASTERN QUARTER, ½ N.E., E., AND ½ S.E.

Year.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		YEAR of Observed Quantities.	Means of the YEARS.
	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.		
1856	8		6		12		10		16		4		2		9		8		6		4		2		7	
1857	4		2		10		10		13		10		1		7		6		7		8		0		6	
		6		4		11		10		14		7		2		8		7		6		6		1		6
1858	2		9		3		8		6		4		4		4		4		4		8		3		5	
		5		6		8		9		12		6		2		7		6		6		7		2		6
1859	1		2		2		8		10		8		6		1		4		8		4		5		5	
		4		5		7		9		11		6		3		5		6		6		6		2		6
1860	7		2		3		8		8		10		6		5		4		2		12		9		6	.
		4		4		6		9		11		7		4		5		5		5		7		4		6
1861	5		5		2		8		5		11		6		2		4		4		4		3		5	
		4		4		5		9		10		8		4		5		5		5		7		4		6
1862	5		8		14		4		6		4		4		6		0		2		4		2		5	
		5		5		7		8		9		7		4		5		5		5		6		3		6
1863	4		2		7		2		6		7		4		4		2		6		3		2		4	
		4		4		7		7		9		7		4		5		5		5		6		3		5
1864	5		7		7		6		7		2		4		2		2		10		6		8		6	
		5		5		7		7		9		7		4		4		4		5		6		4		5
1865	5		8		6		7		7		6		4		6		2		12		4		4		6	
		5		5		7		7		8		7		4		5		4		6		6		4		6
1866	2		4		8		10		8		6		7		6		4		6		1		2		5	
		4		5		7		7		8		7		4		5		4		6		5		4		5
1867	8		2		12		4		14		4		9		4		3		2		2		2		6	
		5		5		7		7		9		6		5		5		4		6		5		4		6
1868	7		0		0		5		4		2		6		6		10		2		6		6		4	
		5		4		7		7		8		6		5		5		5		6		5		4		5
1869	3		2		6		6		14		4		4		2		2		4		1		4		4	
		5		4		7		7		9		6		5		5		5		6		5		4		5
1870	5		10		6		2		5		3		5		7		4		6		4		8		5	
		5		5		7		6		9		6		5		5		4		5		5		4		5
1871	6		5		4		11		6		10															
		5		5		6		7		8		6														
1872																										
1873																										
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1881																										
1882																										
1883																										

TABLE 13. SCOTTISH COUNTRY AND TOWN STATIONS, METEOROLOGY OF.

WINDS—SOUTHERN QUARTER, ½ S.E., S., AND ½ S.W.

Year.	January. Obsd.	January. Mn.	February. Obsd.	February. Mn.	March. Obsd.	March. Mn.	April. Obsd.	April. Mn.	May. Obsd.	May. Mn.	June. Obsd.	June. Mn.	July. Obsd.	July. Mn.	August. Obsd.	August. Mn.	September. Obsd.	September. Mn.	October. Obsd.	October. Mn.	November. Obsd.	November. Mn.	December. Obsd.	December. Mn.	Year of Observed Quantities.	Means of the Years.
1856	6		8		4		[illegible]		[illegible]				8		7				10		4		6		7	
1857	6		12		[illegible]		7				7		7		8		8		8		6		11		8	
		6		10		[illegible]		7		[illegible]		8		[illegible]		8		7		9		5		8		8
1858	[illegible]		8		4		6		7		9		6		8		9		6		6		11		7	
		7		9		8		7				8		7		8		8		8		5		9		7
1859	9				[illegible]		[illegible]		8				7		10		10		6		8		8		8	
		8		9		[illegible]						8		[illegible]		8		8		5		6		9		8
1860	8		[illegible]		7		[illegible]				8		6		[illegible]		6		9		6		8		7	
		8		8		9								[illegible]		8		8		8		6		9		7
1861	10		[illegible]		8		7		[illegible]				9		10		8		12		6		8		8	
		8		8		[illegible]		[illegible]				7		[illegible]		8		8		8		6		9		8
1862	10		8				[illegible]		10		7		8		8				[illegible]		9		9		8	
		8						[illegible]		[illegible]		7				8		8		[illegible]		6		9		8
1863	8				9		10		6		10				8				9		11		6		8	
		8		8				[illegible]								8		8		6		7		8		8
1864	12		6				[illegible]				[illegible]		[illegible]		[illegible]		10		[illegible]		8		10		8	
		9		8								8		7		[illegible]		8		8		7		[illegible]		8
1865	6		6				[illegible]		10		6		[illegible]		9		[illegible]		[illegible]		7		10		8	
								[illegible]		[illegible]		8		[illegible]		8				[illegible]		[illegible]		9		8
1866	[illegible]		[illegible]		[illegible]		[illegible]		8		[illegible]				[illegible]		[illegible]		9		[illegible]		8		7	
						[illegible]		[illegible]		[illegible]		[illegible]				8		8		8		7		9		8
1867	[illegible]		7				[illegible]		7		6				10		10		[illegible]				6		7	
				6				[illegible]		[illegible]		8		[illegible]		8				8		7		8		8
1868	[illegible]		7		9		7		[illegible]		9		[illegible]		9				8		7		10		8	
		8		[illegible]		[illegible]		[illegible]				9		[illegible]		8		8		8		7		8		8
1869	12		8				[illegible]		9				10		6		10		6		6		6		7	
		8				7		[illegible]						[illegible]		8		8		8		7		8		8
1870	10		6		[illegible]		[illegible]		10		8				[illegible]						[illegible]		8			
		6				[illegible]		[illegible]		[illegible]		7		[illegible]		8		8		8		7		8		8
1871	11		[illegible]				5				5															
		[illegible]		[illegible]				[illegible]		5		7														
1872																										
1873																										
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TABLE 14. SCOTTISH COUNTRY AND TOWN STATIONS, METEOROLOGY OF.

WINDS—WESTERN QUARTER, ½ S.W., W., AND ½ N.W.

Year.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Year of Observed Quantities.	Means of the Years.
	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.		
1856	5		10		6		6		1		13		14		[illegible]		8		7		11		12		9	
1857	12	10	11	10	8	7	6	6	5	3	5	9	17	16	8	8	9	8	10	8	7	9	16	14	10	10
1858	15	12	4	8	14	9	8	7	10	5	12	10	11	14	10	9	13	10	13	10	7	8	12	13	11	10
1859	18	13	14	10	16	11	8	7	4	5	8	10	13	14	15	10	13	11	8	10	11	9	9	13	12	10
1860	8	12	11	10	14	12	6	7	10	6	6	9	10	13	12	11	13	11	14	10	4	8	4	11	9	10
1861	10	12	8	10	16	12	8	7	12	7	6	8	12	13	16	12	14	12	10	10	11	8	11	11	11	10
1862	10	12	6	9	4	11	10	7	10	7	12	9	15	13	10	11	9	11	15	11	8	8	16	11	10	10
1863	14	12	14	10	10	11	14	8	12	8	8	9	12	13	12	11	16	12	11	11	12	9	16	12	13	11
1864	8	11	8	10	10	11	9	8	10	8	13	9	12	13	12	11	13	12	6	10	8	9	8	12	10	11
1865	10	11	6	9	8	11	9	8	8	8	12	10	10	13	8	11	13	12	4	10	10	9	12	12	9	10
1866	15	12	10	9	8	10	5	8	10	8	8	9	8	12	10	11	10	12	10	10	16	10	14	12	10	10
1867	6	11	14	10	4	10	12	8	3	8	11	10	6	12	12	11	11	12	13	10	13	10	14	12	10	10
1868	10	11	18	10	16	10	12	9	11	8	16	10	10	12	12	11	6	11	14	10	8	10	8	12	12	10
1869	8	11	12	10	6	10	9	9	5	8	11	10	12	12	14	11	12	11	10	10	14	10	8	11	10	10
1870	8	11	4	10	5	10	14	9	9	8	14	10	10	11	6	11	10	11	9	10	9	10	7	11	9	10
1871	8	11	11	10	12	10	6	9	8	8	4	10														
1872																										
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TABLE 15. SCOTTISH COUNTRY AND TOWN STATIONS, METEOROLOGY OF.

MEAN NUMBER OF HOURS OF SUNSHINE.

Year	January.		February.		March.		April.		May.		June.		July.		August.		September		October.		November.		December.		Year of Observed Quantities	Means of the Years
	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.	Obsd.	Mn.		
1856																										
1857	[illegible]		59		[illegible]		136		177		[illegible]		[illegible]		209		148		115		73		67		139	
1858	63		115		138		198		[illegible]		202		217		218		183		114		74		54		152	
		72		102		125		157		181		238		222		224		160		114		74		60		146
1859	66		75		110		163		201		[illegible]		[illegible]		210		164		105		86		61		151	
		70		93		119		[illegible]		221		[illegible]		[illegible]		212		162		112		78		61		147
1860	64		[illegible]		[illegible]		194		205		175		[illegible]		154		153		207		63		61		135	
		68		[illegible]		125		174		217		235		212		155		152		111		75		61		144
1861	58		87		117		173		197		220		208		157		130		127		81		80		140	
		66		[illegible]		124		175		213		235		211		[illegible]		151		114		76		66		143
1862	59		80		80		[illegible]		182		171		200		[illegible]		157		133		108		59		131	
		64		[illegible]		118		17[illegible]		208		226		[illegible]		184		130		125		82		64		141
1863	69		111		125		165		196		158		231		183		171		112		81		62		143	
		63		[illegible]		121		173		200		[illegible]		217		158		153		127		82		63		141
1864	78		108		[illegible]		191		[illegible]		214		221		213		163		99		75		55		148	
		62		[illegible]		124		175		230		225		[illegible]		155		154		115		81		62		142
1865	70		75		128		191		176		250		196		217		195		141		101		64		143	
		67		93		122		125		[illegible]		[illegible]		[illegible]		152		[illegible]		115		82		63		142
1866	70		101		129		161		200		220		207		116		131		99		97		56		141	
		67		[illegible]		123		170		212		221		[illegible]		179		[illegible]		113		[illegible]		62		142
1867	75		93		130		118		213		150		[illegible]		174		131		115		94		68		126	
		68		[illegible]		[illegible]		171		205		221		213		175		154		113		85		62		141
1868	[illegible]		83		[illegible]		111		211		[illegible]		[illegible]		183		123		129		67		58		143	
		67		[illegible]		124		160		[illegible]		[illegible]		218		179		[illegible]		134		83		62		141
1869	[illegible]		81		151		202		173		211		217		[illegible]		118		102		79		72		140	
		65		[illegible]		[illegible]		172		204		224		218		181		149		125		83		63		141
1870	68		7[illegible]		172		185		18[illegible]		206		210		240		182		172		92		59		148	
		[illegible]		61		[illegible]		152		202		[illegible]		219		182		151		124		83		63		141
1871	67		64		131		121		[illegible]		227															
		[illegible]		[illegible]		128		166		205		222														
1872																										
1873																										
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TABLE 16. SCOTTISH COUNTRY AND TOWN STATIONS, METEOROLOGY OF.

MEAN AMOUNT OF CLOUD.

Year.	January. Obsd.	Mn.	February. Obsd.	Mn.	March. Obsd.	Mn.	April. Obsd.	Mn.	May. Obsd.	Mn.	June. Obsd.	Mn.	July. Obsd.	Mn.	August. Obsd.	Mn.	September. Obsd.	Mn.	October. Obsd.	Mn.	November. Obsd.	Mn.	December. Obsd.	Mn.	Year of Observed Quantities.	Means of the Years.
1856																										
1857	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		6·3	
1858	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6·0	6·2
1859	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6·1	6·1
1860	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6·4	
1861	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6·4	6·3
1862	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6·7	6·2
1863	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6·6	6·3
1864	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6·4	6·4
1865	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6·3	6·4
1866	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6·4	[illegible]
1867	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6·8	[illegible]
1868	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6·5	[illegible]
1869	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6·4	[illegible]
1870	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1871	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
1872																										
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TABLE 17. SCOTTISH COUNTRY AND TOWN STATIONS, METEOROLOGY OF.

LIGHTNING.

Mean Number of Days ON WHICH LIGHTNING WAS SEEN OR THUNDER HEARD AT THE REPORTING STATIONS.

Year.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Year of Observed Quantities.	Means of the Years.
	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.		
1856																										
1857																										
1858																										
1859																										
1860	1		1		1		1						[illegible]		1		1		2		2		1		1·5	
1861	1		[illegible]		1		1		1				1		1		1		1		2		1		1·2	
		1·0		0·5		1·0		1·0				[illegible]				[illegible]		[illegible]		1·5		2·0		[illegible]		1·4
1862	2		1		1		[illegible]		[illegible]		[illegible]				1		1		1		1		[illegible]		1·8	
		[illegible]		[illegible]		1·0		1·1		1·7		2·[illegible]				[illegible]		[illegible]		2·1		1·5		1·3		1·5
1863	2		1		1		1		1				1		2		1		1		1		2		1·3	
		[illegible]		0·5		1·0		[illegible]				[illegible]				1·2		[illegible]		2·0		1·5		1·5		1·4
1864	2		[illegible]		1		[illegible]		2				1		1		–		1		1		2		1·7	
		[illegible]		1·0		1·0		[illegible]		[illegible]				[illegible]		[illegible]		[illegible]		[illegible]		1·4		[illegible]		1·5
1865	2		1		1		1		2		1		2		2		1		1		2		2		1·5	
				1·0		[illegible]				1·[illegible]				[illegible]		[illegible]		1·2		[illegible]		1·5		[illegible]		1·5
1866	2				1		1		1				[illegible]		[illegible]		2		1		1		[illegible]		1·6	
				[illegible]		[illegible]		1·1		1·0								1·3				[illegible]		[illegible]		1·5
1867	1				1		1		[illegible]								2				1		2		1·7	
		[illegible]		[illegible]		[illegible]		1·[illegible]		[illegible]				[illegible]				[illegible]		[illegible]		1·1		1·8		1·5
1868	2				1		[illegible]		[illegible]		–						1		[illegible]		1		1		1·8	
		[illegible]		1·1		[illegible]		1·1								1		1·1		1·7		1·5		1·7		1·9
1869	1				1		1		1		2				[illegible]		2		1		2		[illegible]		1·4	
				1		1·0		1·1		1·2				[illegible]		[illegible]		1·1		1·0		1·4		1·0		1·5
1870	2								[illegible]								1		[illegible]		2		1		1·5	
				1·[illegible]				1·1		1·7								1·4		1·5		[illegible]		1·5		
1871	2		1		[illegible]		1		1																	
		1·0		[illegible]		[illegible]		[illegible]		1·[illegible]																
1872																										
1873																										
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TABLE 18. SCOTTISH COUNTRY AND TOWN STATIONS, METEOROLOGY OF.

LIGHTNING.

Number of Stations AT WHICH LIGHTNING WAS SEEN OR THUNDER HEARD.

Year.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		YEAR of Observed Quantities.	Means of the YEARS.
	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.		
1856																										
1857																										
1858																										
1859																										
1860	13		10		9		4		26		37		20		16		7		12		2		6		14	
1861	3		0		32		10		16		28		40		17		8		20		20		11		17	
		8		5		20		7		21		32		30		16		8		16		11		8		15
1862	18		1		1		10		34		20		31		21		16		23		12		18		17	
		11		4		14		8		25		28		30		18		10		18		11		12		16
1863	20		34		6		16		13		25		15		28		24		31		7		20		20	
		14		11		12		10		22		28		26		20		14		22		10		14		17
1864	6		8		4		2		36		33		19		16		9		1		21		8		14	
		12		11		10		8		25		29		25		20		13		17		12		13		16
1865	14		3		5		9		33		11		35		24		3		6		4		14		13	
		12		9		10		8		26		26		27		20		11		16		11		13		16
1866	29		29		1		11		9		27		41		24		25		5		4		12		18	
		14		12		8		9		24		26		29		21		13		14		10		13		16
1867	17		21		5		5		28		28		37		36		26		6		3		7		18	
		14		13		8		8		24		26		30		23		15		13		9		12		16
1868	26		19		5		27		42		29		9		36		31		17		13		6		22	
		16		14		8		10		26		26		27		24		17		13		10		11		17
1869	18		7		7		26		3		8		28		12		19		18		10		5		13	
		16		13		8		12		24		25		28		23		17		14		10		11		17
1870	4		0		1		6		6		17		33		34		12		6		14		2		11	
		15		12		7		11		22		24		28		24		16		13		10		10		16
1871	9		12		14		15		6		39															
		14		12		8		12		21		25														
1872																										
1873																										
1874																										
1875																										
1876																										
1877																										
1878																										
1879																										
1880																										
1881																										
1882																										
1883																										

TABLE 19. SCOTTISH COUNTRY AND TOWN STATIONS, METEOROLOGY OF.

AURORA.

Mean Number of Days ON WHICH AURORA WAS OBSERVED AT THE REPORTING STATIONS.

Year.	January. No.	January. Mn.	February. No.	February. Mn.	March. No.	March. Mn.	April. No.	April. Mn.	May. No.	May. Mn.	June. No.	June. Mn.	July. No.	July. Mn.	August. No.	August. Mn.	September. No.	September. Mn.	October. No.	October. Mn.	November. No.	November. Mn.	December. No.	December. Mn.	YEAR of Observed Quantities	Means of the YEARS.
1856																										
1857																										
1858																										
1859																										
1860	2		3		3		2		0		1		0		3		2		2		2		1		1·8	
1861	2		2		2		2		6		0		1		1		5		3		2		3		2·4	
		2·0		2·5		2·5		2·0		1·0		0·5		0·5		2·0		5·5		2·5		2·8		2·0		2·1
1862	2		2		2		2		1		0		0		3		2		3		4		2		1·9	
		2·0		2·3		[illegible]		2·0		[illegible]		0·5		0·3		2·3		3·0		2·7		2·7		2·0		2·0
1863	2		2		2		2		1		0		0		2		2		2		3		3		1·8	
		2·0		2·1		2·2		2·2		2·0		[illegible]		0·2		2·2		2·8		2·5		2·5		2·2		2·0
1864	2		2		3		2		1		1		1		2		3		2		2		2		1·9	
		2·0		2·2		2·1		2·2		1·8		0·4		0·4		2·2		2·8		2·4		2·6		2·2		2·0
1865	4		2		2		2		2		0		1		2		4		3		3		3		2·3	
		2·3		2·2		[illegible]		2·2		1·8		0·3		0·5		2·2		3·0		2·5		2·7		2·3		2·0
1866	7		1		2		4		1		0		1		1		3		2		3		2		2·4	
		3·0		2·4		2·5		2·3		1·7		0·4		0·6		2·0		[illegible]		2·4		2·7		2·3		2·1
1867	2		2		3		3		2		0		0		2		3		3		3		2		2·1	
		[illegible]		2·4		2·4		2·4		1·8		0·2		0·3		2·3		3·0		2·5		2·8		2·2		2·1
1868	2		3		2		2		2		0		0		2		3		3		2		2		1·9	
		2·8		2·4		2·3		2·3		1·8		0·2		0·4		2·0		3·0		[illegible]		2·7		2·2		2·1
1869	2		3		3		0		1		0		0		2		3		2		3		3		2·0	
		2·7		2·5		2·4		[illegible]		1·7		0·2		0·4		2·0		3·0		2·5		2·7		2·3		2·0
1870	3		2		1		4		4		0		1		3		3		4		3		3		2·6	
		2·7		2·5		2·5		2·5		1·6		0·2		0·5		2·1		3·0		2·6		2·7		2·4		2·1
1871	4		3		2		2		1		0															
		2·8		2·5		2·5		2·4		1·6		0·2														
1872																										
1873																										
1874																										
1875																										
1876																										
1877																										
1878																										
1879																										
1880																										
1881																										
1882																										
1883																										

TABLE 20. SCOTTISH COUNTRY AND TOWN STATIONS, METEOROLOGY OF.

AURORA.

Number of Stations AT WHICH AURORA WAS OBSERVED.

Year.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Year of Observed Quantities.	Means of the Years.
	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.	No.	Mn.		
1856																										
1857																										
1858																										
1859																										
1860	7		[illegible]		10		16		1		[illegible]		[illegible]		[illegible]		12		[illegible]		1		20		11	
1861	18		26		16		11		1		[illegible]		1		2		7		17		[illegible]		18		10	
1862	6	12	17	27	7	[illegible]	9	[illegible]	1		[illegible]		[illegible]			1	13	[illegible]	15	12	11	11	13	19	9	10
1863	16	[illegible]	1	22	10	[illegible]	11	[illegible]	3	2	[illegible]		[illegible]		3	1	12	11	11	[illegible]	22	11	[illegible]	10	9	10
1864	7	[illegible]	14	20	12	[illegible]	10	[illegible]	1	2	1		1		12	1	12	[illegible]	11	11	11	[illegible]	9	16	8	10
		[illegible]		[illegible]		[illegible]		11		2						[illegible]				11		[illegible]		15		9
1865	27		29		27		8		1		[illegible]		1		8		12		27		[illegible]		5		12	
1866	5	[illegible]	26	[illegible]	8	[illegible]	10	11	2		[illegible]				2	1	11		12	15	16	12	17	15	9	10
1867	4	12	10	21	13	[illegible]	4	11	2		[illegible]				1		11		10	[illegible]	[illegible]	13	5	13	7	10
1868	13	11	8	15	13	[illegible]	15	10	4		[illegible]		[illegible]		10		7		[illegible]	[illegible]	5	13	[illegible]	12	9	9
1869	8	11	12	16	19	[illegible]	19	[illegible]	15	8	[illegible]		[illegible]		[illegible]		11	[illegible]		[illegible]	12	12	12	12	12	9
		11		16		[illegible]		[illegible]										[illegible]		17		12		12		10
1870	13		15		22		7		2		[illegible]		1		[illegible]		[illegible]		26		13		11		14	
1871	4	11	[illegible]	12	7	11	18	10	2	[illegible]	[illegible]	[illegible]				[illegible]		12		10		12		12		10
1872		11		17		11		12		[illegible]		[illegible]														
1873																										
1874																										
1875																										
1876																										
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ROYAL OBSERVATORY, EDINBURGH.

MONTHLY ELEMENTS OF ANNUAL CURVES OF SCOTTISH METEOROLOGY,

AS DEDUCED IN 1870 FROM UPWARDS OF 7 MILLIONS OF OBSERVATIONS BY THE SCOTTISH METEOROLOGICAL SOCIETY, BETWEEN 1856 AND THAT DATE.

Subjects.	Terms.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean of Year.
Barometric Mean Pressure	Inches	29·723	29·831	29·795	29·906	29·916	29·937	29·907	29·860	29·815	29·811	29·865	29·785	**29·848**
Monthly Range	Inches	1·642	1·569	1·474	1·229	1·002	0·888	0·902	0·907	1·194	1·414	1·553	1·568	**1·278**
Mean Highest Pressure per Month	Inches	30·544	30·616	30·532	30·520	30·419	30·381	30·358	30·314	30·412	30·518	30·642	30·569	**30·485**
Mean Lowest Pressure per Month	Inches	28·902	29·047	29·058	29·291	29·417	29·493	29·456	29·407	29·218	29·104	29·089	29·001	**29·207**
Temperature Mean, in Shade	° Fahr.	36·9	38·3	39·4	44·7	49·4	55·2	57·3	56·8	53·1	46·9	40·2	38·8	**46·4**
Daily Range, Mean, in Shade	° Fahr.	8·6	9·7	11·3	14·0	15·1	15·0	15·0	14·2	13·3	11·7	10·1	8·9	**12·2**
Mean Highest in Shade by Day	° Fahr.	41·2	43·2	45·0	51·7	57·0	62·7	64·8	63·9	59·8	52·8	45·2	43·2	**52·5**
Mean Lowest in Shade by Night	° Fahr.	32·6	33·5	33·7	37·7	41·9	47·7	49·8	49·7	46·5	41·1	35·1	34·3	**40·3**
Black Bulb, Mean Temp. Exposed	° Fahr.	39·0	42·8	46·2	53·0	58·6	65·6	67·4	66·0	61·1	51·8	43·0	39·4	**52·8**
Daily Range	° Fahr.	20·5	27·5	33·7	40·1	43·6	45·7	45·2	43·5	40·4	32·3	25·8	19·0	**34·7**
Mean Highest Temp. in Sun	° Fahr.	49·3	56·5	63·1	73·0	80·4	88·5	90·0	87·7	81·3	68·0	55·9	48·9	**70·2**
Mean Lowest Temp. at Night	° Fahr.	28·8	29·0	29·4	32·9	35·8	42·8	44·8	44·2	40·9	35·7	30·1	29·9	**35·5**
Humidity, Relative, computed from the Wet Bulb Thermometer	Sat. = 100	88	87	86	82	80	81	82	84	86	89	89	89	**85**
Rain, No. of Days on which it Fell	Days	17	14	14	13	13	13	14	15	16	16	14	16	**15**
Depth of Rainfall	Inches	4·11	3·11	2·79	2·26	2·23	2·49	2·62	3·25	3·64	4·07	3·21	4·15	**3·16**
Wind, Mean Force of	lbs. Av. on sq. foot	1·76	1·99	1·81	1·49	1·22	1·24	1·19	1·16	1·43	1·53	1·29	1·79	**1·49**
Wind, Direction of, North	Days	5	4	6	5	5	5	5	4	4	4	6	5	**5**
East	Days	5	5	7	6	9	6	5	5	4	5	5	4	**5**
South	Days	9	7	6	7	7	7	7	8	8	8	7	8	**8**
West	Days	11	10	10	9	8	10	11	11	11	10	10	11	**10**
Sunshine, No. of Hours of	Hours	66	91	127	172	202	223	219	185	151	114	83	63	**141**
Cloud, Mean Amount of	Whole Hemisphere = 10	6·7	6·4	6·4	6·2	6·3	6·2	6·4	6·5	6·3	6·4	6·4	6·7	**6·4**
Lightning	Days	1·6	1·2	1·0	1·4	1·7	2·0	1·9	1·6	1·4	1·6	1·5	1·5	**1·5**
	Stations	15	12	7	11	22	24	28	24	16	13	10	10	**16**
	Days × Stations	24·0	14·4	7·0	15·4	37·4	48·0	58·2	38·4	22·4	20·8	15·0	15·0	**24·0**
Auroras	Nights	2·7	2·5	2·5	2·5	1·6	0·2	0·5	2·1	3·0	2·6	2·7	2·4	**2·1**
	Stations	11	17	14	11	3	0	1	6	12	19	12	12	**10**
	Nights × Stations	29·7	42·5	35·0	27·5	4·8	0·0	0·5	12·6	36·0	45·4	32·4	28·8	**21·0**

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THE

HYPERBOREAN STORM

OF

2ND AND 3RD OF OCTOBER 1860;

AS INVESTIGATED AT THE ROYAL OBSERVATORY, EDINBURGH; BETWEEN 1861 AND 1871:

WITH A PLATE, No. 56, AT THE END OF THE VOLUME

INTRODUCTORY ACCOUNT.

On the morning of October 3, 1860, the North of Scotland was visited, almost devastated, by a storm as terrible in its violence as short-lived in its duration at each place, and equally unexpected both by sailors and landsmen. The storm occurred too so very early in the morning, that most of the inhabitants were fast asleep, and when they did awake it was to find roofs already destroyed, harvested crops blown away, trees, large and small, levelled with the ground, often so as to interfere with the traffic along the roads, and *no one* to bear witness how such unexampled destruction had come about.

The Storm at Sea.

So far it was only *property* that suffered, but far otherwise were the events that occurred at sea, for, over and above the loss of many of the boats of that useful and often heroically suffering and contending class, the fishermen of Scotland, and the wrecks of sundry small coasters, no less than six well appointed steamers are said to have gone down, with all hands on board, off the Eastern Coast of Great Britain, or in the North Sea.

The knowledge of these greater losses only came upon the community gradually. No one saw the vessels go down, no relics were washed up; but as time passed by and the expected records of arrival were not received from divers foreign ports to be visited, men began to draw the inevitable conclusion for themselves that those fine vessels would never be seen again. But they had been largely officered and manned

from cities on the Eastern Coast of Scotland; and there indeed, amongst the families of the gallant but ill-fated seamen concerned, it was truly heart-rending to have to watch and attempt to alleviate the tension of expectation heightened by acutest fear, increasing from day to day and week to week, until these hapless ones also could no longer resist the dreadful inference that widowhood or orphanage, as the case might be, was all that remained to them in this life.

THE SCREW STEAMER "EDINBURGH."

Amongst all these melancholy cases perhaps none was more truly to be regretted and grievous to bear than that of the Screw Steamer "Edinburgh," Captain David Steele. She was the largest steamer belonging to the Port of Leith, was engaged in the St. Petersburgh trade, and was succeeding both in carrying such immense cargoes and making so many voyages to and fro during the open season of each year, that old Baltic commanders held up their hands in surprise at a new order of things unknown to their youth, the public looked on in admiration, the merchant-owners profited silently, and Captain David Steele and his crew were rapidly becoming famous.

During the previous year, by the kind intervention of my friend Mr R. M. Smith (now a member of the Board of Visitors of the Royal Observatory, Edinburgh), with the liberal owners of "The Edinburgh," especially Mr Millar, M.P. for Leith, and Mr Donald Macgregor,—my wife and self had been favoured with a free passage to Cronstadt and back in what was at the time a goods-steamer only, viz., the "Edinburgh." But Captain David Steele was in command; the voyage was performed splendidly, and we found him not only an eminently worthy man generally, but admirably inclined to add Meteorological observations to his ordinary duties; so that Admiral Fitzroy presently entrusted some valuable instruments to his charge, and we had kept up acquaintance with him ever since.

Indeed, on the very eve of that fatal storm, or in the afternoon of October 2, 1860, my Wife and I had gone down to Leith Pier, both to see Captain Steele off on another of his astonishing voyages of dispatch, and consign to his care a box of photographs and stereoscopes for the Imperial Observatory at Pulkova. The loading of the cargo took rather longer than had been expected, so that not at 3 P.M., but nearer to 6 P.M., yet still in daylight, the magnificent vessel,—with a poop recently added for regular passenger accommodation, and carrying back on this occasion a Scottish doctor and family to take up their abode again in Russia, the Crimean War being happily over,—passed out, like a giant preparing to run his inevitably victorious course, between the comparatively diminutive pier-heads.

No one seemed so happy that they were safe on board so grand a ship as poor Doctor Mackenzie and his family; and no one that evening, who from the shore watched the "Edinburgh" strike out straight Northward to near the middle of the deep-water channel of the Firth, and then turn round Eastward and speed away on its Russian

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voyage, at the rate of 9 knots an hour, through the calm warm air and smooth sea, but fully believed that Captain Steele was going to make another of his most successful voyages. As to *danger*, the idea crossed no man's mind that evening; and why should it? The Barometer was high and steady, the sea smooth almost as a mirror, the wind nowhere, and thin "mousy-coloured" clouds growing insensibly, alone assisted the coming on of night. Yet within 6 short hours of that time, Captain D. Steele and his gallant crew had fought their life and death struggle with a hurricane storm, had succumbed before its unheard of violence, and been entombed altogether, with their brave ship, its passengers and its cargo, somewhere near the entrance of the North Sea.

FIRST PROPOSALS FOR THE INVESTIGATION OF THE STORM.

Time passed, and in the absence of better and more suitable scientists I was requested from many sides to prepare an account or history of this remarkable storm of the night of October 2, or morning of October 3, 1860. Under such circumstances, therefore, I began collecting data from various stations, both at home and abroad. But the work proved far more extensive than I had anticipated. A blow had been delivered on the earth near the North of Scotland, but it did not end there; its effects travelled on to Norway, Sweden, and the Baltic, but did not end there; neither again had they commenced absolutely and accidentally in N.W. Scotland, wherefore Iceland, Greenland, Canada, had each to be questioned as to what they knew of this remarkable "Meteor," before that terrible night when it burst with all its fury on St Kilda, in the presence and the witness of Captain Otter, his officers and crew.

THE EARLY INTEREST IN THIS STORM PALES BEFORE THE GRAND AND STEADY PROGRESS OF PRACTICAL METEOROLOGY ELSEWHERE.

But while I was painfully pursuing these details, I could not but presently perceive that men's interest in "the storm of the Edinburgh," (as the great disturbance of October 2 and 3, 1860, had at first been called) was rapidly declining. It proved to be too isolated and peculiar a phenomenon for either seamen or landsmen to expect much practical advantage from investigating it further; and meanwhile the eminently *good* Admiral Fitzroy had commenced, in 1861, his storm-warnings from the Government Meteorologic Office in London.

Mercantile and shipping folks about Leith were soon delighted with the results. Nothing Meteorological, in their opinion, could come up to the positive utility of these warnings as a means both of saving life and property, and of economising seafaring time and labour. Year by year, too, the Admiral's forecasts of storms improved. The effects of his system began to be favourably manifest in the Board of Trade, and in Lloyd's Statistical, returns; indeed the whole nation became engrossed in beholding the loving, charitable, truly Christian part, for those who go down to the sea in ships, which can be

performed by Meteorological Science, aided by centralised telegraphic information, when placed in able, suitable, kindred hands.

But then came the calamity in 1865, when that one valuable life, on which so many others had come to depend, was removed from among us. An *interregnum* followed, during which the Fitzroy scheme was endeavoured to be carried on by his remaining aids in the office; and then there was announced the appointment of a new set of gentlemen, donated by Government with a large increase on the highest means ever wielded by Admiral Fitzroy, or with no less than £10,000 *per annum*, and under the learned supervision of a council of the Royal Society of London.

PROCEEDINGS OF THE NEW TENANTS OF ADMIRAL FITZROY'S ROOMS.

Did the Government Meteorologic Office, (organised anew in 1866, as described above), did it then proceed, amongst other good works, to take up with its vast wealth and power the discussion of that unique and really most important storm of October 1860, and publish the results for the benefit of the nation?

Not a bit of it. They cut off all British Meteorology before their own time, including many millions of observations never yet thoroughly discussed, and treated them as of no account whatever compared to what they were going to do themselves. Yet these gentlemen did not confine their labours in *everything* to their own times; for they presently went back to a period of no less than twelve years before, and suddenly and authoritatively called on me to account over again for a certain little remnant of Barometers and Thermometers employed in the small and most economical expedition to the Peak of Teneriffe in 1856; a remnant which I had long before duly accounted for to the then head of the office, or on my return in October 1856; while the thanks of the Admiralty, which were presently sent me for my conduct of the expedition, had, I thought, woundup the whole transaction with the said year 1856.

This however was but a private trouble for a single breast. Far otherwise was it when the new officials with the largely increased means in the late Admiral Fitzroy's office indicated to the country that they were *not* going to continue his work of storm-warning. The merchants of Leith, as well as many another British port, were loud in their complaints. The Meteorologic Society of Scotland too took up the subject earnestly, had at length a grand field day, against the ruling Committee of the Royal Society of London, at the meeting of the British Association in Dundee in Sept. 1867, and carried a vote of the Association in favour of storm-warnings being resumed.

Yet such was the official resistance to the idea, that not even then was storm-warning commenced; and it required the tempest of December 1, 1867, (the day when so many brave ships left port on a fine cheerful-looking morning only to be wrecked the same afternoon, with frightful loss of life and property;* by a storm too, which sent such long

* 310 lives lost, and 326 vessels lost or damaged, by that one Storm beginning on December 1, 1867, says the Board of Trade Wreck Return for 1870.

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barometrical indications before it, that it might very easily have been warned against from a central office the previous day); it seemed to require all this to make the new officials tardily consent to take up Admiral Fitzroy's all important warning system once again.

OF A BILL SENT IN BY THE RICHLY ENDOWED OFFICE IN LONDON, TO A POOR VOLUNTARY SOCIETY "IN THE PROVINCES."

But when that so much desiderated warning system had been thus once more set afloat,—was there quiet or satisfaction everywhere; and did Scottish scientists take that convenient opportunity of inquiring again about the proposed history of their own particular storm of October 1860?

By no means. They one and all became more painfully excited than ever at the *manner* in which the new parties were conducting the storm-warnings. It actually seemed as though the said gentlemen had determined that the complainants should be made to repent of ever having asked for storm-signals; for the mandates to hoist the drum, hoist the drum, and still to hoist the drum, came so fast and frequent, that for the sailors to have attended to them all, would have practically extinguished the trade of Leith Docks for the season. The Chamber of Commerce of Edinburgh, in absolute despair, sent me packet after packet of the confusing telegrams that had been received from the London Office, and asked by letter "if modern Meteorologic Science could do no more for them *than that!*"

But it was no affair for me to interfere in, especially as the extensively constituted and highly popular Scottish Meteorological Society was still performing their part for the whole country, *versus* a wealthy centralised office in London. This Society moreover, which had already done so much for Scottish Meteorology, and hitherto on voluntary local subscriptions alone, presently received a sort of permit from Government to apply to the managing Committee of the Royal Society of London, for a portion of that office's £10,000 a year. But the permit was so loosely worded, that the Royal Society Committee stood out against both its letter and spirit, and the Scottish Society got nothing for their pains.

Nay, they presently received less than nothing to assist their modest finances. For when they had, in the usual time-honoured manner of zealous Meteorologists, applied to the London office for some of their numerical observations on a certain scientific question, they got a bill for £10, 10s. sent in to them for the alleged expense of copying out the purely scientific results they had asked for.

"Who sent in that bill?" asked the Chancellor of the Exchequer, before whom a deputation of the Scottish Society was soon afterwards setting forth their grievances.

"Why, the men with the £10,000 a year," answered Colonel Sykes, M.P., one of the deputation of the poor, but hard-working, voluntary Society, "in the Provinces" so-called, though really sitting in the metropolis of the ancient kingdom of Scotland. Not

only too did the London central officials send that bill, but accompanied it by a requirement that they were to be *mentioned* as having furnished the scientific information, whenever or wherever either the whole or any part of the said matter should be published by the Scottish Society.

THE STORM OF 1860 AGAIN COMES UP FOR INVESTIGATION.

The case above mentioned, and as duly published by the daily papers, made a deep sensation throughout Scotland; but as that did not in anything alter the edicts of the London Meteorological Office, guided by the Committee of the R. Society of London, —it presently became inevitably apparent to me at least, that new times had supervened in scientific life, new precedents been established in London head-quarters, such precedents too as would make it impossible *in future* for a small and poor "Provincial" establishment, like that of the R. Observatory, Edinburgh, ever to take up any extensive Meteorological investigation.

Had I, indeed, as the Director of that Observatory, while getting up data for the history of the storm of 1860, in that and the following years, been charged everywhere for information furnished, at the rate proposed by the new London office,—I could never have accumulated the twentieth part of the materials which were freely and ungrudgingly furnished to me in that day, without price and without stipulations, by dozens of the then existing and acting Observatories. Mr Hartnup, for instance, at Liverpool, the Rev. Mr Main at Oxford, the R. Engineers at Southampton, and the Astronomer Royal at Greenwich, had each of them generously furnished me with all the particulars of observations I had asked for, some of them rather voluminous too, yet not one of the parties charged a penny for their trouble; and they had all of them so far forgotten mere self in their zeal for the promotion of science, that they bound me down by no stipulation of any kind or degree to make honourable mention of them whatever portion of their contributions I might find it possible or suitable some day to publish.

Similarly M. Le Verrier in Paris did me the honour of sending here numerous returns not only for his own Imperial Observatory, but for many stations spread over the whole extent of France; yet he charged not a franc for the trouble, and bound me down to no obligatory mention of his deeds. In Holland, Dr Buys Ballot came out enthusiastically, as he *said* for the sake of the science of storms; and he said truly, for besides the admirable observations at his own Observatory at Utrecht and some other Dutch establishments, he collected data from over half of Europe for me; yet he charged not a stivre, and made no stipulation for either personal or official honourable mention. So also the worthy veteran Dr Kupffer, the Director of the Physical Observatories of Russia, not only sent me observations for his own place of abode, St Petersburg, but drew in returns, often lengthy ones too, by telegraph wire from all parts of European Russia, and from across the Ural Mountains even to far into Eastern

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Siberia, as well as from the South of the Caucasus. Yet not one ruble was charged and nothing bargained for as to any notification of himself.

Quite in a similar spirit, too, the Commissioners of Northern Lights in Scotland sent in returns for their Lighthouses: the Chamber of Commerce in Edinburgh and Mr R. M. Smith procured me many logs of ships both British and Foreign; and the Scottish Meteorological Society, through their Secretary, contributed numerous MS. data, but hinted not a word about payment and insisted on no bond at all about my honourably acknowledging their part of the affair.

When such had been the facts on every side, how favourably the men and times of 1860 could not but rise up before one's memory in 1868 and 1870! And so it came about at last, that the interesting storm of October 1860, which had been well nigh forgotten amid the turmoils and struggles for life which had followed the sunset of the immediately succeeding years, now appeared resplendent once again in the *after-glow* shining on it from a higher and more ethereal region. Being myself too especially privileged to behold it thus, I presently found that duty called me, before final night should altogether close in on the lessons for man to learn from the phenomena of nature, to take up the long-delayed investigation once more, and carry it out to such development as I might be able, though at the best in my hands only most imperfectly.

PRACTICAL COURSE ADOPTED IN THE FINAL INVESTIGATION OF THE STORM.

With this view therefore full before me, after reducing all the Barometers to British inches,* a temperature of 68° F. and Sea-level, and after correcting as well as I could for index errors, and finding that *differential* effects at each station were more trustworthy than any other method of proceeding, I have arranged the whole of the documents into 6 Natural and Geographical groups; thus—

GROUP 1, contains 39 station returns, all of them in or near the North of Scotland: that being the region where the storm was first distinctly perceived as such, and felt more severely than at any other place.

The observations recorded are chiefly those of Time, Barometric height, Direction of the Wind, and Strength of the Wind. Thermometric and other observations appear only occasionally, as they are too much influenced by the large daily cycle of change to be of much use in storm warning. But whatever observations there are, have always been arranged in one continuous column according to time, and the reader's eye will be

* The most popular Barometric scale on the Continent seems to be still the old Paris inch, sometimes expressed in Inches, Lines and Decimals, and sometimes in Lines and Decimals thereof only. Millimeters of the modern French meter come next, and then British Inches, especially in Russia, though they are somewhat concealed there by the one and only unit named and decimalised being the twentieth of an Inch; but of a British Inch be it remembered.

easily directed therein to the date of the passage of the storm's centre by a black dot, and concentric circle introduced into the said *Time* column.

At the very first station indeed we make a stumble on the threshold, by getting a return from one of the very chief centres of the storm, which says nothing about the storm. But yet that return has its useful lessons, and the following stations say enough about both the storm and its effects to satisfy even those who love to sup on horrors. Each station return is further wound up with a few words by myself setting forth the chief facts thereby established and the inferences for the whole storm, on the simple assumption of a whirlwind revolving against the direction of the hands of a watch, and proceeding at the same time from West to East.

GROUP 2, consists of 10 stations, in the same Longitude nearly as the North of Scotland, but stretching away Southward to England, France, and Spain, chiefly to show the rapid diminution of the storm's intensity towards the South.

GROUP 3, comprises 18 stations in Norway and Sweden, showing the passage of the storm Eastward through high Latitude parallels.

GROUP 4, consists of 12 stations in Holland and Germany, showing the continued, though much modified, character of the storm when Southward as well as Eastward.

GROUP 5, contains 14 Russian stations, tracing the storm still further Eastward and both Northward and Southward. While finally

GROUP 6, is composed of 11 stations, searching for traces of the storm Westwards in Longitude and backwards in time; or for dates anterior to the Oct. 2, and 3, the period of the storm's arrival in Scotland. This group therefore deals with returns from Iceland, Greenland, and America.

In each of these Groups, every station appears firstly by itself in order of Longitude, and afterwards at the end of the group in a collective summary or table of results for that group, with the view of bringing out the chief storm data as in so far separately and independently deduced from each of the Natural Geographical divisions or groups of stations.

At the close of all the Groups and of their separate terminal tables of summation,—a general summation of, and deduction from, the whole of the stations taken together, is proposed to be introduced as the conclusion of all that was proposed.

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GROUP I.

NORTH BRITISH AND STORM-CENTRAL.

OR 39 STATIONS,

BETWEEN 55° AND 61° NORTH LATITUDE, AND 9° WEST AND 5° EAST LONGITUDE, ARRANGED IN ORDER OF LONGITUDE.

(1.) ST KILDA

Lat. = 57° 40′ N. Long. = 8° 40′ W.

Date.	Barometer at 68° F. and Sea-level approx.	Therm. Air.	Therm. Sea.	Wind. Direction.	Wind. Force.	Rain.
	British Inches.	°F.	°F.			
1860						
Oct. 1. Noon,		52·5	52·0	SW	3	
4 P.M.		52·8	52·0	NW	5	
8 P.M.		52·0	52·0	NW	5	
Oct. 2. Noon,	30·11	52·3	51·9	W	4	Rain.
4 P.M.		49·6	52·0	SW	4	Rain.
8 P.M.		48·5	52·0	S	5	Rain.
⊙						
Oct. 3. Noon,						
4 P.M.						
8 P.M.	30·10	52·5		NNW	7	

Conclusions deduced for this Station.

Eminent for missing all particulars of the great storm; or for having separated the two Barometrical observations by so wide an interval (32 hours), that the "Meteor" was enabled to come unseen and unexpected like a thief in the night, depressing the Mercury by 1·50 inches, crashing, blowing away, or destroying both the cottages of the Islanders and their only big boat, though inside its protecting pier, and then to pass away again so completely and cleanly, that the Barometrical pressure was restored at the next methodical or ordinary routine observation to within ·01 of an inch of what it had been the day before; *i.e.*, just as though nothing but calm, quiet and peace had reigned during the interval.

(2.) OFF ST. KILDA.

H.M. S.S. PORCUPINE, CAPT. OTTER, R.N.

Lat. = 57° 45′ N. Long. 8° 40′ W.

Date.	Barom. at 68° F. and Sea-level approx.	Wind. Direction.	Wind. Character.	Remarks.
1860	Brit. In.			In a letter from Capt. Otter. "We were lying in the Bay at St. Kilda on the evening of Oct. 2, when the wind coming up, and the night looking dirty, I weighed, and scarcely got out of the Bay before the gale commenced from S. and S.S.W., so I steamed round to the N. side of the Island and got under the lee. The squalls were terrific, but the water moderately smooth. About 3 A.M. it was nearly calm, but the barometer still falling, and I was just thinking of returning to the anchorage when the ship was struck as in a moment with the most violent hurricane (from the opposite quarter) I ever experienced.
Oct. 2. 8 A.M.	30·33			
Noon.				
4 P.M.				
8 P.M.	29·86			
8.15	29·71	SSW		
8.45	29·73	SSW		
10.30	29·45	SSW	Heavy squalls, but moderately smooth water.	
11.0	29·37	SSW		
11.45	29·33	SW		
Midnight				

(2.) OFF ST. KILDA—*Continued.*

Date.	Barom. at 68° F. and Sea-level approx.	Wind. Direction.	Wind. Character.	Remarks.
1860	Brit. In.			
Oct. 3. 0.15 A.M.	29·27	SW	Heavy squalls.	"I tried to get the ship's head off shore, but the tiller ropes broke, and the vessel lay a log in the water, drifting at the mercy of the winds and waves. All that now could be done was the dangerous evolution of turning the engines astern, trusting the rest to God's mercy. "The howling and screaming of the wind was terrific and nothing of land, sea, or sky to be seen, except a lurid glare, and every now and then, an imaginary outline of those awful cliffs over our heads. The binnacle lights had been blown out, or were dashed to pieces; the large paddle-box boat was lifted up and down as if made of paper; and her spars, and everything that could break adrift, was flying off to leeward with a dangerous velocity. "For two hours the hurricane continued with unabated force, when a break in the sky showed St. Kilda's Peak bearing north, and the ship in comparative safety. It was not until noon that we again regained an anchorage in the Bay, and then we found that we were not the only sufferers."
0.45	29·20	SW	Terrific squalls	
2.0	29·07	SW	Squally.	
2.40	28·98		Nearly calm.	
⊙ 3.20	28·98	W	Nearly calm.	
3.26		N W	Hurricane.	
5.30	29·63	NNW	Fearful gale.	
6.10	29·76	NNW	Gale.	
7.15	29·66	N	Nearly calm.	
Noon	29·98			
2 30 P.M.	29·98			

Conclusions Deduced for this Station.

Lowest Barometer on Oct. 3d at 3h. A.M.

Whole fall observed = 1·35 inch.

Interval corresponding = 19 hours.

Maximum rate of fall observed = ·08 inch in 0·5 hour, but the Barometer was probably a rather sluggish marine one, and the real quantity was more.

Wind veered through SSW and SW with violence, to West, with nearly calm, and then to NW and NNW, with the maximum hurricane violence.

Wind at West on Oct. 3 at 3h. 20m.A.M., or shortly *after* the lowest Barometrical depression.

The Wind remarked on as "a noisy wind," *howling* and *screaming* beyond all precedent, so as even to be described by an old sailor as "terrific."

Station slightly South of Whirl-centre, and the latter moving from W to E.

(3.) BARRA-HEAD LIGHTHOUSE.

Lat. = 56° 47′ N. Long. = 7° 39′ W.

Date.	Barom. at 68° F. and Sea-level approx.	Wind.		Remarks.	
		Direction.	Character.		
1860	Brit. In.				
Oct. 1. 9 A.M. / 9 P.M.	30·20 / 30·10	SW	Fresh breeze.	Fog—rain.	On the morning of Oct. 3 we were visited by a most terrific storm, which caused damage to the Lighthouse Station, viz., there are 300 yards of the boundary dyke blown down, three small gates destroyed, and one smashing. The lead that covers the tower roof, about one half of it was raised up nearly 8 inches above the sarking by the suction of the wind, and one of the lantern panes was cracked by some small stones.
Oct. 2. 9 A.M. / 9 P.M.	30·27 / 29·72	NW	Strong breeze.	Haze.	
⊙ Oct. 3. 9 A.M. / 9 P.M.	29·83 / 30·20	SW to NW	Most terrific storm.	Haze and rain.	
Oct. 4. 9 A.M. / 9 P.M.	30·12 / 29·70	W	Strong breeze.	Haze.	

Conclusions deduced for this Station.

Lowest Barometer *observed* on Oct. 2 at 9h. P.M.

Actual lowest Barometer occurred in the long interval between the observation of Oct. 2 at 9h. P.M. and Oct. 3d at 9h. A.M.; probably on Oct. 3d at 3h. 30m. A.M. or so nearly in the middle between these observations, that the whole fall observed was quite inconsiderable compared with what must have really taken place, and which may be imagined from the strength of the wind as described in its vulgar effects.

Wind veered from SW through West probably, to NW.

Station South of Whirl's centre, and the latter moving from W to E.

(4.) LOCH FINSBAY, HARRIS.

H. M. Cutter WOODLARK, LIEUT. THOMAS, R.N.

Lat. 57° 46′ N. Long. 6° 50′ W.

Date.	Barometer at 68° F. and Sea-level approx.	Temp. Air.	Temp. Evap.	Temp. of Sea.	Saltness	Wind. Direction	Wind. Force 0–12
1860	British Inches.						
Oct. 1. 9 A.M.	30·35					S	2
3 P.M.	30·23	53·0	51·4	51·9	26·5	S	6
8 P.M.	30·25					W	5
Oct. 2. 9 A.M.	30·39					W	4
3 P.M.	30·34	52·4	50·3	52·2	26·2	WSW	2
8 P.M.	30·09					SSW	6
10.31 P.M.						SSW	7
Oct. 3. 1 A.M.						SSW	2
2 A.M.						—	0
⊙ 3.30 A.M.						S	0–8
5.10 A.M.						NNW	12
6.30 A.M.	29·21					NNW	12
7 A.M.	29·51					NNW	12
8.30 A.M.	29·92					NNW	12
9 A.M.	29·94					NNW	12
10.50 A.M.	30·06					NNW	11
3 P.M.	30·15	50·5	45·5	52·2	24·5	NNW	10
8 P.M.	30·27					NNW	8

Remarks by Lieutenant Thomas.

On October 2, at 1 P.M., a feeling of warmth which the thermometer did not corroborate was remarked. We anchored that evening, but only according to custom, and not in expectation of bad weather.

At 8 P.M., rate of SSW wind = 27 miles per hour.

At 10.30 P.M., rate = 33 miles per hour.

At midnight wind moderated.

At 2 A.M. nearly calm.

At 3.30 A.M., short violent puffs from southward, but calm between. In two different places where women on shore had left out washed clothes to bleach they got up at this time to fetch them in; still the sailors were not expecting anything particular.

At 5·10 A.M. quite suddenly the wind came furiously from NNW, making the ship heel over, so that in an instant glasses left on the table were upset before she could come up head to wind in this new direction. The storm blew steadily from NNW, and continued so for several hours. The sea was all smoke and spray, and the drops of salt water hitting the open eye were like small shot. We veered a good deal of cable, but still the strain was so great as to break some of the windlas pauls.

At 6 A.M. we got daylight, but the land though only 100 yards distant was hid by the spray. The roar of the wind was so great that you could only be heard by bawling into the ear of another. But the wind made every imaginable sort of noise, roaring, screeching, hissing, whistling, &c.

Our spring anemometer or storm gauge registered 22 lbs. on square foot, its maximum, and then broke.

The revolving anemometer gave from 54 to 63 miles per hour in by no means the strongest part of the gale; which must have been more nearly 80 miles per hour.

Conclusions for this Station.

Lowest Barometer on October 3, at 4 A.M. probably. Whole fall observed = 1·08 inch, but really greater. Maximum rate of rise observed = 0·298 in 0·5 of an hour! Unprecedented! Wind veered from WSW and SSW of large force through calm and variable squalls to a hurricane at NNW.

Station slightly south of Whirl centre, and the latter moving from W to E.

(5.) ARMAGH OBSERVATORY.

REV. T. R. ROBINSON, D.D.

Lat. = 54° 21′ N. Long. = 6° 45′ W.

Date.	Barometer at 68° F. and Sea-level approx.	Wind. Direction. Points.	Wind. Direction. Degs.	Wind. Velocity in miles per hour.	Remarks.
1860	British Inches.		°		
Oct. 2. 10 A.M.	30·134	WNW	121·0	3·7	
6 P.M.		SSW	24·0	5·0	
10 P.M.	30·050	SSW	15·0	16·2	
Midnight		SSW	25·1	20·6	
Oct. 3. 1 A.M.		SW	40·0	21·6	
2		SW	42·0	21·0	
3		W	88·5	21·8	
⊙ 4		W	89·5	14·7	

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(5.) ARMAGH OBSERVATORY—*Continued.*

Date.	Barometer at 68° F. and Sea-level approx.	Wind. Direction. Points.	Degrees.	Velocity in miles per hour.	Remarks.
1860	British Inches.				
Oct. 3. 5 A.M.		W	89·5	17·6	At 8 P.M. on Oct. 2, the direction trace assumed the broad shading which marks great irregularity in the wind's course; and is accompanied by a roar out of proportion to its speed. This increased through the day.
6		W	89·5	16·3	
7		W	90·5	13·7	
8		W	9·2	13·5	
9		WNW	105·0	11·2	
10	30·221	WNW	105·0	15·5	
11		NW	127·5	18·8	
Noon		WNW	120·0	11·9	
1 P.M.		WNW	102·5	12·1	
2		W	99·0	9·3	
3		WNW	106·5	11·3	
4		WNW	120·7	11·7	
5		WNW	120·6	7·7	
6		WNW	111·0	7·4	
7		WNW	109·0	5·9	
8		WNW	103·6	7·5	
9		WNW	106·2	6·3	
10	30·410	WNW	103·5	5·9	

Conclusions deduced for this Station.

The Barometric depression on October 3, at 4 A.M. probably, but almost entirely lost at this station.

The wind was well observed by a mechanical register.

Wind veered from SSW and SW, through West to WNW and NW.

There was no central calm.

The wind was a noisy one.

Station considerably south of Whirl's centre; and this moving from W to E.

(6.) STORNOWAY.

JAMES KERR, Esq., Scottish Meteorological Society.

Lat. = 58° 12′ N. Long. = 6° 23′ W.

Date.		Barometer at 68° F. and Sea-level approx.	Wind. Direction.	Force. 0 – 6	Rain.	Remarks.
1860		British Inches.				
Oct. 1.	9 A.M.	30·26	SW	3		
	9 P.M.	30·14	NW	3	·00	
Oct. 2.	9 A.M.	30·28	SW	3		
	9 P.M.	30·11	SW	2	·26	
Oct. 3. ⊙	6 A.M.					Violent storm.
	9 A.M.	29·85	NW	6		
	9 P.M.	30·18	NW	2	1·76	
Oct. 4.	9 A.M.	30·16	NW	2		
	9 P.M.	29·96	NW	1	·28	

Conclusions for this Station.

The Barometer not observed at the interesting point of the gale. Wind veered from SW through W probably to NW.

(7.) BUTT OF LEWIS LIGHTHOUSE.

THOMAS HOPE, Keeper, per T. STEVENSON, C.E.

Lat. = 58° 35′ N. Long. = 6° 20′ E.

No instrumental observations; and only one direction of wind, NW, casually and inaccurately mentioned throughout; but the strength and the data of the wind well described thus:—

"Blowing strong, but thought nothing of it all night, when at a quarter to six in the morning of the 3d October it did blow. I could compare it to nothing but distant *thunder* for about half a minute, and rain I never did see the like. The gale took off about eight o'clock. Seven of the foot-bridges across the rivers between Stornoway and Ness are carried away—four are standing."

Passage of centre of storm on October 3 at 5h. 0m. A.M. probably. Station probably south of centre of whirl.

(8.) PORTREE, ISLE OF SKYE.

MR JAMES GRANT, Scottish Meteorological Society.

Lat. = 57° 25′ N. Long. = 6° 11′ W.

Date.		Barometer at 68° F. and Sea-level approx.	Wind. Direction.	Velocity in Miles per hour.	Rain.	Remarks.
1860.		British Inches.				
Oct. 1.	9 A.M.	30·29	SW			
	9 P.M.	30·19	S		0·12	
Oct. 2.	9 A.M.	30·33	WNW			
	9 P.M.	30·06	S		0·06	
	11 P.M.					Violent gale began.
Oct. 3. ⊙	2 A.M.			80		A most tremendous hurricane.
	5 A.M.	28·88				
	8 A.M.					Violent gale.
	9 A.M.	29·82	NW			Violent gale.
	3 P.M.					Wind moderated.
	9 P.M.	30·23	NW		1·54	Heavy rain.
Oct. 4.	9 A.M.	30·18	WNW			
	9 P.M.	29·97	W		0·30	

Further remarks by Observer.

The hurricane of the 3d uprooted a great many trees, and tore branches off others to a great extent, besides doing an immense deal of damage to the crops, fishing-craft, &c. It was the severest storm felt in Skye for upwards of fifty years.

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3 at 5h. A.M.

Whole fall observed = 1·45 inch.

Interval corresponding = 36 hours.

Quickest fall = 1·18 inch in 8 hours.

Wind veered probably from SW through W to NW, and was of full hurricane strength.

(9.) OBAN.

Capt. BEDFORD, R.N., Scottish Meteorological Society.

Lat. = 56° 25′ N. Long. = 5° 30′ W.

Date.		Barometer at 68° F. and Sea-level approx.	Wind.		Remarks.
			Direction.	Force.	
1860		British Inches.			
Oct. 1.	9 A.M.	30·36	Var.	0·5	
	9 P.M.	30·24	SW	0·5	
Oct. 2.	9 A.M.	30·34	WSW	1·0	
	9 P.M.	30·05	WSW	0·5	
Oct. 3.	1 A.M.				Storm began at 1 A.M.
	⊙5.30 A.M.				At 5.30 A.M. Wind shifted to NW.
	9 A.M.	29·74	NW	6·0	
	8.30 P.M.				Thunder at 8.30 P.M.
	9 P.M.	30·28	NW	4·0	
Oct. 4.	9 A.M.	30·29	W	2·0	
	9 P.M.	30·07	W	2·0	

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3 at 5 h. 30 m. A.M.

Whole fall not observed.

Wind veered from WSW, though West, probably to NW.

(10.) SCOURIE.

J. SIMPSON, Esq., Scottish Meteorological Society.

Lat. = 58° 21′ N. Long. = 5° 8′ W.

Date.		Barometer at 68° F. and Sea-level approx.	Wind.		Rain.	Remarks.
			Direction.	Force.		
1860		British In.				
Oct. 1.	9 A.M.	30·22	SW	1·0		
	9 P.M.	30·08	SW	2·0	Rain.	
Oct. 2.	9 A.M.	30·21	SW	1·5		
	9 P.M.	30·08	SW	2·0	Do.	
Oct. 3. ⊙	7 A.M.*					*Storm began with torrents of rain.
	9 A.M.	29·81	NW	6·0		
	9 P.M.	30·03	NW	4·0	Do.	A sloop wrecked here.
Oct. 4.	9 A.M.	30·06	W	2·0		
	9 P.M.	29·95	W	2·0	Do.	

Conclusions deduced for this Station.

All the more interesting parts of the storm had passed before the observer looked at his Barometer.

Wind veered from SW, through West, probably to NW, and was a full storm in strength.

(11.) SOUTH CAIRN.

Mr JAMES KENNEDY, Farmer, Scottish Meteorological Society.

Lat. = 55° 0′ N. Long. = 5° 8′ W.

Date.		Barometer at 68° F. and Sea-level approx.	Wind.		Rain.	Remarks.
			Direction.	Force.		
1860		British Inches.				
Oct. 1.	9 A.M.	30·38	S by W	2		
	9 P.M.	30·28	S by E	3	·20	
Oct. 2.	9 A.M.	30·43	N by W	2		
	6 P.M.			4		Cloudy, gale increasing.
	9 P.M.	30·25	S	4	·00	
⊙ Oct. 3.	9 A.M.	29·98	W by S	5		On morning and day of Oct. 3, a dreadful storm of wind all forenoon, showers and heavy squalls in afternoon.
	9 P.M.	30·33	W by N	5	·15	
Oct. 4.	9 A.M.	30·40	WSW	3		
	9 P.M.	30·18	SSW	3	·00	

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3 at 6 A.M., probably, but unobserved.

Whole fall observed = 0·40 inch; but real fall much greater. This station, however, the southernmost of all belonging to the Scottish Meteorological Society, shows unmistakably the decreasing fall of the Mercury, and less strength of Wind experienced southward.

(12.) CAPE WRATH LIGHTHOUSE.

Lat. = 58° 37′ N. Long. = 4° 59′ W.

At 6 A.M. on October 3 we were visited by a very sudden storm of wind and rain; so strong was the wind as to blow small stones and earth up against the Lighthouse windows.

Conclusions deduced for this Station.

Passage of centre of storm, at 6h. A.M., probably.

(13.) GLASGOW OBSERVATORY.

Professor GRANT and H. SEELING, Dr PHIL.

Lat. 55° 51′ N. Long. 4° 17′ W.

Date.		Barometer at 68° F. and Sea-level approx.	Wind.	
			Direction.	Force.
1860				
Oct. 2.	Noon	30·069	W	0·4
	1 P.M.	30·053	W	0·3
	2	30·083	W	0·5
	3	30·089	W	0·6
	4	30·088	WSW	0·6
	5	30·088	WSW	0·6
	6	30·078	SW	0·5
	7	30·056	SSW	0·5
	8	30·053	SSW	0·5
	9	30·019	SSW	0·5
	10	29·951	SSW	0·7
	11	29·853	SW	2·5
	Midnight	29·778	SW	10·0
Oct. 3.	1 A.M.	29·725	SW	6·0
	2	29·691	SW	17·0
	3	29·643	Anemometer broken.	

(13.) GLASGOW OBSERVATORY—*Continued.*

Date.	Barometer at 68° F. and Sea-level approx.	Wind.	
		Direction.	Force.
1860	British Inches.		
Oct. 3. 4 A.M.	29·622		
5	29·613		
6	29·608		
7	29·618		
8	29·681		
9	29·718	NW	
10	29·720	NW	
11	29·733	NW	
Noon	29·741	NW	
1 P.M.	29·741	NW	
2	29·741	NW	
3	29·745	NW	
4	29·763	NW	
5	29·809	NW	
6	29·813	WNW	
7	29·817	NW	
8	29·823	NW	
9	29·823	NW	
10	29·833	NW	
11	29·925	NW	

Conclusions deduced for this Station.

Lowest barometrical pressure on Oct. 3 at 6h A.M.

Whole fall within 12 hours = 0·47 inch.

Wind veered from SW through West to NW.

Wind at West probably on Oct. 3 at 7 A.M.

The storm was spoken of in the Glasgow papers as a tempestuous storm, a violent hurricane which came on suddenly without any warning, "eddying, wheeling, and *howling* tremendously."

(14.) CULLODEN.

ARTHUR FORBES, Esq.

Lat. = 57° 30′ N. Long. = 4° 7′ W.

Date.	Barometer at 68° F. and Sea-level approx.	Wind.		
		Direction.	Pressure on Square Foot.	Velocity in Miles per Hour.
1860	British Inches.			
Oct. 2. 9 A.M.	30·22	SSW	0·1	5
7 P.M.	30·08	SW	0·1	5
10 P.M.	29·90	SSW	0·1	5
Oct. 3. 3.30 A.M.	29·17	SSW	25·0	70
4.0	29·10	SSW	25·0	70
4.30	29·08	SSW	25·0	70
5.0	28·96	SW	25·0	70
5.30	28·90	SW	30·0	77
⊙ 6.0	28·88	SW	30·0	77
6.30	28·90	SW	16·0	56
7.0	28·98	WSW	1·0	14
7.30	29·09	W	25·0	70
8.0	29·20	W by N	33·0	80
9.0	29·39	WNW	27·0	73

(14.) CULLODEN—*Continued.*

Date.	Barometer at 68° F. and Sea-level approx.	Wind.		
		Direction.	Pressure on Square Foot.	Velocity in Miles per Hour.
1860	British Inches.			
Oct. 3. 10.0 A.M.	29·58	WNW	2·2	21
11.0	29·66	WNW	4·0	28
Noon	29·76	W by S	5·0	31
1.0 P.M.	29·80	W by S	5·0	31
2.0	29·86	W by S	4·0	28
3.0	29·86	WNW	4·0	28
4.0	29·90	WNW	2·2	21
5.0	29·94	WNW	2·2	21
7.0	29·93	WNW	2·2	21
10.0	30·06	W by N	0·1	5

Conclusions deduced for this Station.

Minimum Barometer on Oct. 3 at 6h. A.M.

Whole fall observed = 1·33 inch; interval corresponding = 21 hours.

Maximum rate of fall = 0·12 inch in half an hour.

Wind veered from storm at SSW, through West and calm to another great storm at WNW.

Wind at West, Oct. 3, at 7h. 30m. A.M.

Station south of centre of Whirl.

Second half of storm much broken and lengthened out, compared with Western places.

The observer at this station appreciated the phenomenon as it passed, knew his duty, and performed it splendidly.

Description of Force.

Thousands of forest trees (some of them measuring 11 feet in circumference in the stem and 70 feet in height), have been rooted up, with many tons of earth adhering to their roots, their large branches being in some instances either broken or twisted in an extraordinary manner, or carried in the air by the force of the wind a distance of 50 or 60 yards. Observations by the dry and wet Bulb Thermometers at Culloden, both before and after the storm show nothing unusual in either the temperature or the moisture of the atmosphere, or anything to account, in this way, for the suddenness of such a tempest, surpassing in violence even the great hurricane of the 11th Oct. [illegible].

(15.) BAILLIESTON.

Mr P. JARVIE, Schoolmaster, Scott. Met. Soc.

Lat. 55° 52′ N. Long. 4° 6′ W.

Date.	Barometer at 68° F. and Sea-level approx.	Wind.		Rain.	Remarks.
		Direction.	Force.		
1860.	British Inches.				
Oct. 1. 9 A.M.	30·38	E	0·5		
9 P.M.	30·28	W	1·0	0·00	
2. 9 A.M.	30·39	SW	1·0		A very high wind from S.W. began Oct. 2, at 12 P.M.
9 P.M.	30·27	SW	1·0	0·00	
3. ⊙ 9 A.M.	29·77	W	4·0		
9 P.M.	30·28	W	2·0	0·13	
4. 9 A.M.	30·28	W	2·0		
9 P.M.	30·14	W	2·0	0·00	

Conclusions deduced for this Station.

Lowest Barometer on October 3, at 7 A.M. probably.

Full fall not observed.

Wind veered from SW to West.

Symptoms in this Latitude of decreasing force of the storm, less Barometrical depression, and less veering of wind.

(16.) CRIEFF. (Daily papers.)

Lat. = 56° 22′ N. Long. = 3° 50′ W.

The district of Strathearn was visited early on the morning of October 3, with the most terrific and destructive hurricane which has occurred for many years.

The wind began to blow from the SW about 3 A.M., and continued with increasing force until 7 A.M., when the town presented a sad appearance from the large number of chimney cans, slates, roofs of houses, and other debris scattered through the streets; while a large lime tree, which had withstood the blasts and breezes of a century in St James' Square, was torn up by the roots and blown over.

In the country districts the destruction of property has been even greater. The number of trees blown down and stacks upset is prodigious. On the Comrie and Muthill turnpike all traffic was suspended for some time owing to the large trees blown across the roads. The wind abated about mid-day and the afternoon was showery.

(17.) WANLOCKHEAD.

Mr Gilbert Dawson, Schoolmaster. Scott. Met. Soc.

Lat. = 55° 24′ N. Long. = 3° 48′ W. Hill Station.

Date.		Barometer at 68° F. and Sea-level approx.	Wind.		Rain.
			Direction.	Force. 0 – 6.	
1860		British Inches			
Oct. 1.	9 A.M.	30·36	W	0·0	
	9 P.M.	30·28	SW	0·5	0·02
2.	9 A.M.	30·39	NW	0·5	
	9 P.M.	30·26	W	0·5	0·00
3.	⊙ 9 A.M.	29·87	W	5·0	
	9 P.M.	30·26	W	3·0	0·30
4.	9 A.M.	30·30	W	3·0	
	9 P.M.	30·13	W	4·0	0·38

Conclusions deduced for this Station.

Lowest Barometer on October 3, at 7 A.M. probably. Whole fall observed = 0·49 inch, but real fall greater. Stormy wind at the same time, generally from the West.

(18.) AUCHTERARDER. (Daily Papers).

Lat. = 56° 18′ N. Long. = 3° 42′ W.

Early in the morning of Oct. 3, this part of the country was visited with a tremendous hurricane of Wind from the West, such as has not been experienced for a long time.

Great numbers of stacks have been overturned, and scattered to a great extent. The stacks remaining in the fields were thrown down, the sheaves scattered, and in some places blown away. Large trees have been rooted up, and branches broken off. Orchards and gardens, even in sheltered situations, have suffered severely, the fruit trees having been stripped of their fruit, and the flower gardens laid waste. This hurricane was not accompanied by rain, otherwise the damage would have been still more serious.

(19.) FORRES.

David Bonthrone, Esq., Scot. Met. Soc.

Lat. 57° 37′ N. Long. 3° 36′ W.

Date.		Barometer at 68° F. and Sea-level approx.	Wind.		Rain.	Remarks.
			Direction.	Force 0 – 6.		
1860		British Inches.				
Oct. 1.	9 A.M.	30·32	S	0·5		
	9 P.M.	30·16	SW	0·5	0·00	
2.	9 A.M.	30·29	SW	1·0		
	9 P.M.	30·03	S	0·5	0·11	
3.	2 A.M.					Gale began.
	7 A.M.					Violent storm, cans blown down, houses stripped of slates, stacks overturned, thatch blown away.
	⊙ 8 A.M.					
	9 A.M.	29·42	NW	5·0		
	9 P.M.	30·12	W	2·0	0·10	
4.	9 A.M.	30·14	SW	3·0		Trees of great age and size torn up by the roots.
	9 P.M.	29·97	S	2·0	0·21	

Conclusions deduced for this Station.

The most important part of the storm unobserved instrumentally.

(20.) BRAEMAR. HILL STATION.

Mr James Aitken and James Cameron, Esq., M.D., Scot. Met. Soc.

Lat. = 57° 4′ N. Long. = 3° 24′ W.

Date.		Barometer at 68° F. and Sea-level approx.	Wind.			Rain.	Remarks.
			Direction.	Force 0 – 6.	Velocity in miles per hour.		
1860		British Inches.					
Oct. 1.	9 A.M.	30·33	SW	0·0			
	9 P.M.	30·25	SW	0·5		0·00	
2.	9 A.M.	30·26	SW	0·02			
	9 P.M.	30·29	SW	0·05			
	11 P.M.					0·40	Began to rain heavily.
3.	2 A.M.				25		Rain ceases, but wind strong.
	⊙ 7 A.M.				80		
	9 A.M.	29·52	W (?)	6·0			Wind veered to N and NW, whence it blew a perfect hurricane, with a pressure of 32 lbs. on each square foot.
	9 P.M.	30·15	NW	5·0		0·32	
4.	9 A.M.	30·20	SW	6·0			
	9 P.M.	30·06	SW	1·5		0·38	

Conclusions deduced for this Station.

Lowest Barometer on October 3 at 6·30 A.M. probably.

Whole fall not observed.

Wind veered from SW to NW on October 3 at 7 A.M., and the purely West direction at 9 A.M. is probably an inaccuracy.

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(21.) SANDWICK.

REV. CHARLES CLOUSTON, LL.D., Scottish Meteorological Society.

Lat. = 59° 2′ N. Long. = 3° 18′ W.

Date.			Barometer at 68° F. and Sea-level, approx.	Wind.		Rain.	Remarks.
				Direction.	Force.		
1860			British Inches.				
Oct. 1.	9	A.M.	30·33	S	0·5		
	9	P.M.	30·12	S	1·5	0·29	
Oct. 2.	9	A.M.	30·27	W	2·0		
	9	P.M.	30·08	S	1·0	0·17	
Oct. 3. ⊙	8·40	A.M.					Storm began
	9	A.M.	29·30	NW	5·0		
	1	P.M.					Storm ended.
	9	P.M.	30·00	NW	3·0	1·05	
Oct. 4.	9	A.M.	30·05	NW	2·0		
	9	P.M.	29·92	W	2·0	0·16	Five peals of thunder about 5 P.M.

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3 at 7 A.M., probably.

Whole fall observed = 1·03 inch.

Interval corresponding = 48 hours.

Quickest fall = 0·78 inch in 12 hours.

Wind spoken of as a storm, but not of the utmost violence, and strongest from NW.

(22.) ELGIN.

DR WILLIAM GEDDES, Scottish Meteorological Society.

Lat. = 57° 38′ N. Long. = 3° 15′ W.

Date.			Barometer at 68° F. and Sea-level, approx.	Wind.		Rain.	Remarks.
				Direction.	Force.		
1860			British Inches.				
Oct. 1.	9	A.M.	30·36	W	0·5		
	9	P.M.	30·19	SW	1·5	·01	
Oct. 2.	9	A.M.	30·33	W	1·0		
	9	P.M.	30·14	W	1·0	·13	
Oct. 3. ⊙	6·30	A.M.	29·06				
	7	A.M.					Barometer began to rise.
	9	A.M.	29·37	NW	5·0		
	9	P.M.	30·13	NW	2·5	·01	Most severe wind shortly before this time, when the direction veered more to the North than previously.
Oct. 4.	9	A.M.	30·15	W	1·5		
	9	P.M.	30·00	W	1·0	·35	

Conclusions deduced for this Station.

Observer commendable for noticing lowest Barometer, though out of observing hour.

Lowest Barometer on Oct. 3 at 6·30 A.M.

Whole fall observed = 1·27 inch in 21 hours.

Winds insufficiently observed.

(23.) EDINBURGH. (DAILY PAPERS.)

Lat. = 55° 52′ N. Long. = 3° 15′ W.

The mild westerly breeze which blew over Edinburgh on the evening of Oct. 2, gradually strengthened towards midnight and during the whole of the morning and forenoon of Oct. 3, raged in tempestuous gusts of unusual force and severity over the city, reaching its maximum between 8 and 9 A.M.

Several casualties occurred from the falling of slates, chimney-cans, and plaster. Scaffolding at a church under repair was blown away, the gable end of an old house was blown in, also the windows of the Church of Scotland Normal School, and the school had to be closed for the day. Three large trees were blown down in the Meadows and had their trunks broken across, twisted and shattered remarkably.

(24.) LEITH AND NEWHAVEN. (DAILY PAPERS.)

Lat. = 55° 58′ N. Long. = 3° 10′ W.

Late on Tuesday night, Oct. 2, there was no indication of the pending storm; but by 2 A.M. on Oct. 3, the wind had become so high from the West, that efforts were taken, as far as possible, to secure the shipping against the storm; but in many instances little could be done; and some persons had to witness the destruction of their property without being able to do anything to avert the destruction. Several vessels in the Firth drifted from their moorings, many of the fishermen's boats sank at the anchorage grounds, or were driven ashore; and for a time neither pilot boat nor tug-steamer could venture out.

(25.) BALFOUR.

MR JAMES DEWAR, Gardner, Scot. Met. Soc.

Lat. = 56° 11′ N. Long. = 3° 5′ W.

Date.			Barometer at 68° F. and Sea-level, approx.	Wind.		Rain.	Remarks.
				Direction.	Force 0—6.		
1860			British Inches.				
Oct.	1.	9 A.M.	30·39				
		9 P.M.	30·30	W	0·5	·00	
	2.	9 A.M.	30·37	W	0·5		
		9 P.M.	30·28	SW	0·5	·00	
	3. ⊙	3 A.M.					Violent gale commenced at 8 A.M., continued the greater part of the day, and did great damage to the trees, crops, &c.
		9 A.M.	29·65	W	5·0		
		9 P.M.	30·24	W	2·0	·00	
	4	9 A.M.	30·25	NW	2·0		
		9 P.M.	30·16	SW	1·5	·08	

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3 at 8h. A.M. probably.

Whole fall observed = 0·62 inch.

Interval corresponding = 24 hours.

Winds insufficiently observed.

(26.) DUNDEE. (DAILY PAPERS.)

Lat. = 56° 28′ N. Long. = 2° 58′ W.

One of the most severe and destructive gales of wind which we have experienced for a long time, broke upon the town and neighbourhood early in the morning of Oct. 3. During the day before the weather had been calm

and almost sultry, but in the evening a light breeze sprang up from the west, which continued to increase until between 3 and 4 A.M. of Oct. 3, when it blew a perfect hurricane, and continued to do so until well on in the forenoon.

At the harbour a great deal of damage was done by ships drifting from their moorings and injuring or destroying sometimes each other, sometimes the quay buildings.

In the town the damage has been very considerable. In all directions the streets are strown with broken chimneys, the *debris* of the storm, church pinnacles and crokets, lamp-posts, sign-boards, railings, balustrades, &c.

The 8 A.M. down train from Perth was detained nearly an hour at Kinfauns by a large tree being thrown down across the line, which had to be cut in pieces before it could be removed. Several smaller trees and branches also obstructed the line.

(27.) BARRY.

Mr JAMES PROCTOR, A.M., Scottish Meteorological Society.
Lat. = 56° 31′ N. Long. 2° 44′ W.

Date.		Barometer at 68° F. and Sea-level, approx.	Wind.		Rain.	Remarks.
			Direction.	Force.		
1860		British Inches.				
Oct. 1.	9 A.M.	30·41		0·0		
	9 P.M.	30·23	S	0·5	0·02	
2.	9 A.M.	30·37	S	0·5		
	9 P.M.	30·17	S	1·0	0·02	
	11 P.M.					Violent gale began
3. ⊙	8.30 A.M.	29·32				Barometer fell suddenly in night 0·85 inch, and began to rise regularly after 8.30 A.M. Pressure of wind at 9 A.M. = 18 lb., and velocity 60 miles p. hour. Many large trees uprooted. Violent gale ended at 12 P.M.
	9 A.M.	29·48	W	6·0		
	9 P.M.	30·11	W	3·0		
	12 P.M.				0·03	
4.	9 A.M.	30·23	W	1·0		
	9 P.M.	30·11	W	1·0	0·00	

Conclusions deduced for this Station.

Lowest Barometer on October 3, at 8 A.M.
Whole fall observed = 1·05 inch.
Interval corresponding = 23 hours.
Wind directions insufficiently observed.

(28.) SMEATON, EAST LINTON.

Mr JOHN BLACK, Smeaton; and Mr JOHN STORIE, East Linton, Scottish Meteorological Society.
Lat. = 56° 0′ N. Long. = 2° 40′ W.

Date.		Barometer at 68° F. and Sea-level, approx.	Wind.		Rain.	Remarks.
			Direction.	Force.		
1860		British Inches.				
Oct. 1.	9 A.M.	30·41	SW	0·5		
	9 P.M.	30·32	SW	0·5	·02	
2.	9 A.M.	30·41	SW	0·5		
	9 P.M.	30·27	SW	1·0		

(28.) SMEATON, EAST LINTON—*Continued.*

Date.		Barometer at 68° F. and Sea-level, approx.	Wind.		Rain.	Remarks.
			Direction.	Force.		
		British Inches.				
Oct. 2.	10 P.M.	30·00				
	12 P.M.		SSW	3·0	·02	Wind rose at 12 P.M. on Oct. 2.
3	3 A.M.		SSW	5·0		
	6 A.M.		SW	6·0		Great destruction to trees.
⊙	7 A.M.	29·41	W			
	8 A.M.	29·41				
	9 A.M.	29·59	W	5·0		
	4 P.M.		NW	4·0		
	9 P.M.	30·19	W	2·0	·00	
4.	9 A.M.	30·28	W	3·0		
	9 P.M.	30·16	W	2·0	·00	

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3, at 7.30 A.M.
Whole fall observed = 1·00 inch, very creditably for the observers.
Interval corresponding = 22 hours.
Wind veered from SSW and SW through W to NW.

(29). NORTH RONALDSHAY LIGHTHOUSE.

Lat. 59° 23′ N. Long. 3° 22′ W.

Date.		Barometer at 68° F. and Sea-level, approx.	Wind.		
			Direction.	Force.	
1860		British Inches.			
Oct. 1.	9 A.M.	30·25			
	9 P.M.	30·02	S	Fresh breeze.	Showers.
2.	9 A.M.	30·09			
	9 P.M.	30·01	NW	Strong breeze.	Showers.
3. ⊙	9 A.M.	28·95	NNW	Storm.	Rain.
	9 P.M.	29·87			
4.	9 A.M.	29·93	NNW	Gale.	Showers.
	9 P.M.	29·86			

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3 at 9 A.M.
Whole fall observed = 1·30 inch.
Interval corresponding = 48 hours.
Most rapid fall = 1·14 inch in 24 hours.
More rapid part of the fall = 1·06 inch in 12 hours.
Winds imperfectly observed.

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(30.) ABERDEEN.

THOMAS DAVID GRAY, Esq., M.A., Scottish Meteorological Society.

Lat. = 57° 9'. Long. = 2° 6' W.

Date.		Barometer at 68° F. and Sea-level, approx.	Wind.		Remarks.
			Direction.	Force.	
1860		British Inches.			
Oct. 1.	9 A.M.	30·37	SW	1·5	
	9 P.M.		SW	1·0	
Oct. 2.	9 A.M.	30·34	W	1·0	
	9 P.M.	30·12	W	2·0	
3.	3 A.M.				Great wind storm, commenced with wind at WSW.
☉	9 A.M.	29·35	NW	6·0	
	10 A.M.				Greatest force of the wind, NW.
	9 P.M.	30·09	NW	4·0	
	10 P.M.			0·0	N.B.—Several hundreds of the largest trees (ash, elm, beech, &c.), were uprooted or broken across. Several persons were brought to the Infirmary with wounds and dislocations (one of the shoulder joint), caused by the wind throwing them against solid objects.
4.	9 A.M.	30·16	NW	2·0	
	9 P.M.	29·92	NW	2·0	

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3 at 9h. A.M. nearly.

Whole fall observed = 0·99 inch.

Interval corresponding = 24 hours.

Wind veered from WSW, through West probably, to NW, and with hurricane force.

(31.) SUNBURGH-HEAD LIGHTHOUSE.

Lat. = 59° 51' N. Long. = 1° 17' W.

Date.		Barometer at 68° F. and Sea-level, approx.	Wind.		
			Direction.	Character.	
1860		British Inches.			
Oct. 1.	9 A.M.	30·39	SW	Fresh breeze.	Clear.
	9 P.M.	29·82			
2.	9 A.M.	29·86	SW	Strong breeze.	Showers.
	9 P.M.	29·80			
3. ☉	9 A.M.	28·84	SE	Storm.	Rain.
	9 P.M.	29·60			
4.	9 A.M.	29·70	Var.	Strong breeze.	Showers.
	9 P.M.	29·64			

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3 at 9 A.M.

Whole fall observed = 1·55 inch.

Interval corresponding = 48 hours.

More rapid part of fall = 0·96 inch in interval of 12 hours.

Winds imperfectly observed.

(32.) BRESSAY.

Rev. T. M. HAMILTON, D.D., Scottish Meteorological Society.

Lat. = 60° 10' N. Long. = 1° 10' W.

Date.		Barometer at 68° F. and Sea-level, approx.	Wind.		Rain.
			Direction.	Force 0—6.	
1860		British Inches.			
Oct. 1.	9 A.M.	30·23	SW	1·5	
	9 P.M.	30·16	SW	3·0	Rain.
Oct. 2.	9 A.M.	30·15	WSW	1·5	
	9 P.M.	30·04	SW	1·5	do.
Oct. 3. ☉	9 A.M.	29·26	N	4·0	
	9 P.M.	30·06	N by W	2·0	do.
Oct. 4.	9 A.M.	29·94	W	1·0	
	9 P.M.	29·84	W by N	1·5	do.

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3 at 9 A.M.

Whole fall observed = 0·97 inch.

Interval corresponding = 48 hours.

Quickest fall = 0·78 inch in 12 hours.

Wind chiefly North, and not a full storm in strength; but imperfectly observed.

(33.) EAST YELL.

MR ANDREW MATHEWSON, Scottish Meteorological Society.

Lat. = 60° 33' N. Long. = 1° 3' W.

Date.		Barometer at 68° F. and Sea-level, approx.	Wind.		Rain.
			Direction.	Force 0—6.	
1860		British Inches.			Inches.
Oct. 1.	9 A.M.	30·34	WSW	0·5	
	9 P.M.	30·08	SW	2·0	0·30
Oct. 2.	9 A.M.	30·21	W	2·0	
	9 P.M.	30·03	SW	2·0	1·00
Oct. 3. ☉	9 A.M.	29·42	NE	3·0	
	9 P.M.	29·90	NNW	3·5	0·46
Oct. 4.	9 A.M.	30·02	WSW	0·8	
	9 P.M.	29·87	W	0·6	0·04

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3 at 9 A.M.

Whole fall observed = 0·92 inch.

Interval corresponding = 48 hours.

Quickest fall = 0·61 inch in 12 hours.

Wind veered from NE to NNW, but was only half a storm in strength.

(34.) WHALSEY SKERRIES LIGHTHOUSE.

Lat. = 60° 20′ N. Long. = 1° 0′ W.

Date.	Barometer at 68° F. and Sea-level, approx.	Wind.		Remarks.
		Direction.	Character.	
1860	British Inches.			
Oct. 1. 9 A.M.	30·24	SSW	Fresh breeze	Haze, fog, rain.
9 P.M.	30·00			
Oct. 2. 9 A.M.	30·08	NW	Strong breeze	Haze, rain.
9 P.M.	30·03			
⊙ 3. 9 A.M.	29·26	NE	Strong gale	Haze, rain.
9 P.M.	29·70			
4. 9 A.M.	29·84			
9 P.M.	29·76			

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3 at 9 A.M.
Whole fall observed = 0·98 inch.
Interval corresponding = 48 hours.
More rapid part of fall = 0·77 inch in 12 hours.
Winds imperfectly observed.

(35.) NORTH UNST LIGHTHOUSE.

Lat. = 60° 45′ N. Long. = 0° 53′ W.

Date.	Barometer at 68° F. and Sea-level, approx.	Wind.		Remarks.
		Direction.	Character.	
1860	British Inches.			
Oct. 1. 9 A.M.	30·20	SSW	Fresh breeze	Clear.
9 P.M.	29·94			
2. 9 A.M.	29·90	W	Strong breeze	Showers.
9 P.M.	29·90			
3. ⊙ 9 A.M.	29·30	Variable	Gale	Rain.
9 P.M.	29·64			
4. 9 A.M.	29·80			
9 P.M.	29·76			

Conclusions deduced for this Station.

Lowest Barometer on October 3, at 9 A.M.
Whole fall observed = 0·90 inch.
Interval corresponding = 48 hours.
More rapid part of fall = 0·60 inch in 12 hours.
Winds imperfectly observed; but, it is stated, with some force, that the gale of the 3d was by no means so strong here as they had heard of its being southward in Scotland.

(36.) THE "ELISE,"

From Copenhagen to the Faro Islands.
On 3d October at 10 A.M., in Lat. 60° 48′ N., and Long. 0° 50′ W.

Date.		Wind.	
		Direction.	Character.
1860			
Oct. 2.	10 P.M.	WNW	Very light indeed.
Oct. 3.	2 A.M.	—	Calm.
	4 A.M.	SSE	Breeze.
	6 A.M.	SSE	Increasing.
	8 A.M.	SSE	Stiff breeze, increasing.
⊙	9 A.M.	E	A terrible gale.
	11 A.M.	E	
	1 P.M.	NNE	
	4 P.M.	NNE	An awful sea.
	6 P.M.	N	
	8 P.M.	N	Storm continues.
	Midnight	N	Heavy showers. Storm decreases.

Conclusions deduced for this Station.

Wind veers from SSE through East to NNE.
Wind at East on October 3, at 10 A.M.
This is the only example of the wind veering through East in place of West, or of the station being North of centre of storm, and that centre still proceeding from West to East.

(37.) BARQUE "BRUTUS."

Captain BLACK.
Off the Yorkshire Coast, in Lat. 54° 15′ N., Long. 0° 15′ W.
On Oct. 3, at Noon.

Date.	Barometer.	Wind.	
		Direction.	Force and Description.
1860			
Oct. 2. 1 A.M.		SW	Light airs and changeable.
Noon		NW	Moderate breezes.
6 P.M.		W to SW	Light breezes. The scud coming two ways from NW to SW.
3. 1 A.M.		SW	Squally.
4 A.M.		WSW	Squally and strong breezes.
7 A.M.			Strong gales, shortened sails.
8 A.M.			Heavy squalls, ship under close-reefed topsails.
11 A.M.			I have seldom seen the wind blow so hard on our coasts.
⊙ 11.30 A.M.	Lowest Barom.		Had to take in my foretopsail, wind enough to take everything away.
Noon	Barom. rising		Squalls fearful; many vessels around cannot show a yard of canvas, and have to drive away.
2 P.M.			Gale moderated.

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3 at 11.30 A.M.
Wind veered from SW and WSW, through West, to probably NW (but not stated).
Strength of Wind = grand storm.

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(38.) NORWEGIAN SCHOONER "CONCORDIA,"

from Christiania to Leith.

Lat. = 57° 9′ N. Long. = 2° 32′ East of Greenwich.

On Oct. 3, at Noon.

Date.		Wind.	
		Direction.	Force.
1860			
Oct. 2.	Noon		Calm.
	5 P.M.	WNW	Light.
	10 P.M.	WSW	Increasing.
Oct. 3.	2 A.M.	SW	Almost a storm.
	⊙ 4 A.M.	S	A storm; furled the sails.
	8 A.M.	SW	A hurricane.
	Noon	WSW	A hurricane—showers of rain—high sea—lost deck cargo.
	3 P.M.	WSW	
	5 P.M.	WNW	A complete hurricane.
	8 P.M.	WNW	
	10 P.M.	NW	
	Midnight	NNW	Abated a little, but fearful sea.

Conclusions deduced for this Station.

Wind veered from SSW, through West, to WNW and NNW.

Wind at West Oct. 3 at 4 P.M. Barometrical depression at 2 P.M. probably.

(39.) SCREW STEAMER "STIRLING,"

from Pentland Firth to Cattegat.

Captain JAMES CLARKE.

Lat. = 57° 57′ N. Long. = 4° 35′ E.

Date.	Barometer at 68° F. and Sea-level, approx.	Lat. N.	Long. E.	Wind.	
				Direction.	Character.
1860	British Inches.				
Oct. 2. Noon	30·15				
10 P.M.	30·00				
Oct. 3. 2 A.M.	29·80				
10 A.M.	29·50			South	Increasing gale.
Noon				S by W	Gale still increasing.
⊙ 5 P.M.	28·90			West	
6 P.M.	29·00	57° 57′	4° 35′	W by N	Terrific storm.
7 P.M.				NW	Dreadful sea.
8 P.M.	29·30			NW	
10 P.M.				NW	Terrific storm & [illegible]
Midnight				NW½N	Terrific storm and sea.
Oct. 4. 2 A.M.	29·30			NW by N	Violent storm.
Noon	29·80			NNW	Strong gale.

Conclusions deduced for this Station.

Minimum Barometer on Oct. 3 at 5 P.M.
Whole fall observed = 1·2 inch.
Interval for that fall = 19 hours.
Maximum rate of fall observed = 0·1 inch in 1 hour.
Wind veered from South, through West, to N West.
Wind at West at 5.30 P.M. on Oct. 3.
Station South of centre of whirl.

A very carefully and conscientiously kept log, in all matters of seamanship. At 8 A.M. on Oct. 2, with wind from South, Captain Clarke prudently turned his ship's head to the wind, and kept her so all day, letting the storm blow over him until 7 P.M., when, finding that the wind had veered through W to NW, he concluded (rightly) that the centre of the storm had passed, and he then put the ship before the wind, and sped on his voyage Eastward; taking in, however, immense quantities of water, and unable to keep any signal lights burning.

"There were no electrical indications, lightning, thunder, or St Elmo's fire, that I saw or heard, but my Chief Officer thinks he heard two peals of thunder about 5 P.M. The wind at this time was so very violent, and making such an awful noise of its own, that very loud thunder might not have been heard. I could not have judged from any indications then shown in the heavens that any thing more than a strong breeze, with dull, heavy, rainy, or hazy weather, was to be apprehended, and until the wind went round to the NW, the atmosphere wore a dull heavy appearance. The Barometer had risen 0·4 inch, which it did in two hours, before I felt the heaviest of the storm. (Signed) JAMES CLARKE."

"29*th Oct.* 1860."

NORTH BRITISH OR CENTRAL STATIONS.

LEADING CONCLUSIONS DEDUCED FROM THEM IN ORDER OF LONGITUDE.

No.	Stations.	Lat. N.	Long.	Date of Barometric Depression.	Amount of such Depression.	Interval Corresponding.	Wind Veered From	Wind Veered Through	Wind Veered To	Wind's Force, 0 - 12
		° ′	° ′		Inch.	Hours.				
1	St. Kilda,	57 40	8 40 W	?						
2	**Off St. Kilda,**	**57 45**	**8 40 W**	**Oct. 3. 3 A.M.**	**1·35**	**19**	**SSW**	**Calm.**	**NNW**	**12**
3	Barra Head,	56 47	7 39 W	3. 3.30 A.M.	?	?	SW	W	NW	12
4	**Harris,**	**57 46**	**6 50 W**	**3. 4 A.M.**	**1·5 ?**	?	**SSW**	**Calm.**	**NNW**	**12**
5	**Armagh,**	**54 21**	**6 45 W**	**3. 4 A.M.**	?	?	**SSW**	W	**WNW**	**10**
6	Stornoway,	58 12	6 23 W	?	?	?	SW	W	NW	11
7	Butt of Lewis,	58 35	6 20 W	Oct. 3. 5 A.M.	?	?				12
8	Portree,	57 25	6 11 W	3. 5 A.M.	1·45 / 1·18	36 / 8	SW	W	NW	12
9	Oban,	56 25	5 30 W	3. 5.30 A.M.			WSW	W	NW	10
10	Scourie,	58 21	5 8 W	?	?	?	SW	W	NW	11
11	South Cairn,	55 0	5 8 W	Oct. 3. 6 A.M.	?	?	S	W	W	10
12	Cape Wrath,	58 37	4 59 W	3. 6 A.M.	?	?	?	?	?	12
13	**Glasgow,**	**55 51**	**4 17 W**	**3. 6 A.M.**	**0·47**	**12**	**SW**	**W**	**NW**	**11**
14	**Culloden,**	**57 30**	**4 7 W**	**3. 6 A.M.**	**1·33**	**21**	**SSW**	**Calm.**	**WNW**	**12**
15	Baillieston,	55 52	4 6 W	3. 7 A.M.	?	?	SW	W	W	9
16	Crieff,	56 22	3 50 W	Oct. 3. 7 A.M.	?	?	SW	?	?	12
17	Wanlockhead,	55 21	3 48 W	3. 7 A.M.	0·49	24	W	W	W	9
18	Auchterarder,	56 18	3 42 W	?	?	?	?	?	?	12
19	Forres,	57 37	3 36 W				S	?	NW	13
20	Braemar,	57 4	3 24 W	3. 6·30 A.M.			SW	W	NW	12
21	Sandwick,	59 2	3 18 W	Oct. 3. 7 A.M.	1·03 / 0·78	48 / 12	S	?	NW	10
22	Elgin,	57 [illegible]	3 15 W	3. 6.30 A.M.	1·27	21	?	?	?	11
23	Edinburgh,	55 52	3 15 W	3. 7.30 A.M.	?	?	WSW	?	WNW	11
24	Leith,	55 58	3 10 W	?	?	?	?	?	?	12
25	Balfour,	56 11	3 5 W	3. 8 A.M.	0·62	24	?	?	?	10
26	Dundee,	56 28	2 58 W	?	?	?	?	?	?	12
27	Barry,	56 31	2 44 W	3. 8 A.M.	1·05	23	S	W	W	11
28	Smeaton,	56 0	2 40 W	3. 7.30 A.M.	1·00	22	SSW	W	NW	11
29	North Ronaldshay,	59 23	2 22 W	3. 9 A.M.	1·30 / 1·14	48 / 24	?	?	?	10
30	Aberdeen,	57 9	2 6 W	3. 9 A.M.	0·99	24	WSW	W	NW	12
31	Sunburgh Head,	59 51	1 17 W	Oct. 3. 9 A.M.	1·55 / 0·96	48 / 12	?	?	?	10
32	Bressay,	60 10	1 10 W	3. 9 A.M.	0·97 / 0·78	48 / 12	?	N	N	9
33	East Yell,	60 33	1 3 W	3. 9 A.M.	0·92 / 0·61	48 / 12	NE	?	NNW	7
34	Whalsey Skerries,	60 20	1 0 W	3. 9 A.M.	0·98 / 0·77	48 / 12	?	NE	NE	8
35	North Unst,	60 45	0 53 W	3. 9 A.M.	0·90 / 0·60	48 / 12	?	?	?	7
36	**The "Elise" at Sea,**	**60 48**	**0 50 W**	**Oct. 3. 10 A.M.**	?	?	**SSE**	**E**	**NNE**	**10**
37	Barque "Brutus,"	54 15	0 15 W	3. 11.30 A.M.	?	?	WSW	W	NW	11
38	Schooner "Concordia,"	57 9	2 32 E	3. 2 P.M.	?	?	SSW	W	WNW	12
39	**S.S. "Stirling,"**	**57 57**	**4 35 E**	**3. 5 P.M.**	**1·20**	**19**	**S**	**W**	**NW**	**12**

GROUP II.

ENGLISH, FRENCH, AND SOUTHERLY,

OR 10 STATIONS;

BETWEEN LATITUDE 36° AND 54° NORTH, AND LONGITUDE 6° WEST AND 3° EAST.

ARRANGED IN ORDER OF LONGITUDE WEST TO EAST.

(1.) GIBRALTAR.

COLONEL STEHELIN, R.E.

Lat. = 36° 6′ N. Long. = 5° 21′ W.

Date.		Barometer at 68° F. and Sea-level, approx.	Temp. of Air.	Temp. of Evap.	Wind.	
					Direction.	Force. Miles per hour.
1860		British Inches.	°F.	°F.		
Sept. 30.	9.30 A.M.	30·18			ENE	14
	3.30 P.M.	30·15	69·2	59·5	E	14
Oct. 1.	9.30 A.M.	30·24			ESE	23
	3.30 P.M.	30·24	69·7	65·0	E	
2.	9.30 A.M.	30·41			E	16
	3.30 P.M.	30·37	73·2	66·2	SE	
3. ⊙	9.30 A.M.	30·47			E	27
	3.30 P.M.	30·39	69·0	62·4	ESE	
4.	9.30 A.M.	30·33			E	22
	3.30 P.M.	30·26	66·9	61·4	E	
5.	9.30 A.M.	30·22			E	24
	3.30 P.M.	30·21	65·8	63·2	E	

Conclusions deduced for this Station.

The storm may be supposed to have been on this Meridian on Oct. 3 about 9h. A.M., but instead of a Barometric depression then, there is a very decided elevation, accompanied too by a smart Easterly wind. A Thermometric depression, however, followed the storm date, as in other places where the Barometric effect was more marked.

(2.) FRENCH OR SOUTHERLY STATIONS.

BREST.

Lat. = 48° 23′ N. Long. = 4° 27′ W.

Date.		Barometer at 68° F. and Sea-level, approx.	Wind.	
			Direction.	Force 0 — 3.
1860		British Inches.		
Oct. 1.	8 A.M.	30·39	N	0
	9 A.M.	30·42	N	0
	Noon	30·39	N	0
	3 P.M.	30·39	N	0
	6 P.M.	30·39	N	0
	9 P.M.	30·39	N	0
Oct. 2.	8 A.M.	30·52	NW	0
	9 A.M.	30·55	NW	0
	Noon	30·51	NW	1
	3 P.M.	30·51	SW	0
	6 P.M.	30·54	W	0
	9 P.M.	30·54	W	0
Oct. 3.	8 A.M.	30·45	W	1
⊙	9 A.M.	30·43	W	1
	Noon	30·46	NW	1
	3 P.M.	30·51	NW	1
	6 P.M.	30·47	NW	1
	9 P.M.	30·47	NW	1
Oct. 4.	8 A.M.	30·58	N	0
	9 A.M.	30·62	N	0
	Noon	30·55	N	0
	3 P.M.	30·57	N	0
	6 P.M.	30·59	N	0
	9 P.M.	30·59	N	0

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Conclusions deduced for this Station.

Lowest Barometer on Oct. 3 at 9 A.M.; but always a high Barometer.
Whole fall observed = 0·12 inch.
Interval for that fall = 24 hours.
Wind veered from SW, through West, to NW.
Wind at West on Oct. 3 at 6 A.M.
Wind's force feeble.

(3.) LIVERPOOL OBSERVATORY.

Lat. 53° 25′ N. Long. 3° 0′ W.

Date.	Barometer.	Wind. Direction.		Wind. Force. In Sq. Ft.	Velocity.
1860	British Inches.				
Oct. 3. 0 A.M.		8	S	1	9
1		8	S	1	11
2		9	SSW	4	16
3		9	SSW	4	18
4		11	WSW	4	28
5		11	WSW	10	35
6		11	WSW	14	37
⊙ 7		13	WNW	18	40
8		14	NW	21	40
9		14	NW	16	40
10		14	NW	17	37
11		14	NW	12	40
Noon		14	NW	14	40
1		14	NW	17	41
2		14	NW	12	35
3		14	NW	12	36
4		14	NW	12	36
5		14	NW	10	32
6		14	NW	10	30
7		14	NW	11	35
8		14	NW	13	37
9		15	NNW	11	33
10		15	NNW	13	40
11		15	NNW	11	38
Midnight		15	NNW	10	36
Oct. 4. 1 A.M.		14	NW	7	36
2		14	NW	6	32
3		14	NW	4	28
4		14	NW	4	25
5		14	NW	6	23
6		14	NW	4	22

Conclusions deduced for this Station.

Wind veered from WSW, through West, to WNW.
Wind at West on Oct. 3 at 7 A.M.
Wind's mean hourly velocity = 40 miles.
Wind's occasional force = 21 lbs. on square foot.
No Central calm.
The wind well observed here, both in direction and velocity.

(4.) FRENCH OR SOUTHERN STATIONS.
BAYONNE.

Lat. = 43° 31′ N. Long. = 1° 26′ W.

Date.	Barometer at 68° F. and Sea-level approx.	Wind. Direction.	Wind. Force. 0—3.
1860	British Inches.		
Oct. 1. 8 A.M.	30·36	SSW	5
Noon.	30·43	W	1
3 P.M.	30·44	W	1
6 P.M.	30·46	W	1
9 P.M.	30·51	W	1
Oct. 2. 8 A.M.	30·61	S	1
Noon.	30·68	SE	1
3 P.M.	30·64	N	1
6 P.M.	30·66	N	1
9 P.M.	30·66	N	1
Oct. 3. 8 A.M.	30·64	S	0
⊙ Noon.	30·66	SW	
3 P.M.	30·62	WNW	1
6 P.M.	30·59	WNW	1
9 P.M.	30·54	W	1
Oct. 4. 8 A.M.	30·57	N	2
Noon.	30·51	NW	1
3 P.M.	30·54	NNE	1
6 P.M.	30·56	NE	1
9 P.M.	30·60	N	1

Conclusions deduced for this Station.

Barometrical disturbance unrecognisable, or overlaid by the daily tide or secular change, and the pressure always high.
Wind veered from SW to WNW through W probably.
Wind at West on Oct. 3, at 1 P.M.

(5.) FRENCH OR SOUTHERLY STATIONS.
NAPOLEON VENDÉE.

Lat. = 46° 41′ N. Long. = 1° 25′ W.

Date.	Barometer at 68° F. and Sea-level, approx.	Wind. Direction.	Wind. Force. 0 – 3.
1860	British Inches.		
Oct. 1. 8 A.M.	30·49	SW	1
9 A.M.	30·48	SW	1
Noon.	30·48	NW	1
3 P.M.	30·50	NNW	1
6 P.M.	30·52	NW	1
9 P.M.	30·58	NW	1
2. 8 A.M.	30·68	NNW	1
9 A.M.	30·72	NNW	1
Noon.	30·73	NW	1
3 P.M.	30·74	N	1
6 P.M.	30·73	N	1
9 P.M.	30·74	N	1

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(5.) NAPOLEON VENDÉE—*Continued.*

Date.		Barometer at 68° F. and Sea-level, approx.	Wind.	
			Direction.	Force. 0—3.
1860		British Inches.		
Oct. 3.	8 A.M.	30·64	SW	1
	9 A.M.	30·62	W	1
	Noon.	30·62	W	1
	⊙ 3 P.M.	30·58	W	1
	6 P.M.	30·59	W	1
	9 P.M.	30·58	W	1
4.	8 A.M.	30·70	NNW	0
	9 A.M.	30·71	NNE	1
	Noon.	30·71	NW	1
	3 P.M.	30·70	NW	1
	6 P.M.	30·70	NNW	1
	9 P.M.	30·72	NNW	1

Conclusions deduced for this Station.

Barometrical disturbance barely recognisable, and pressure always high.
Lowest Barometer on Oct. 3, at 3 P.M. probably.
Whole fall observed = 0·16 inch.
Interval for that fall = 24 hours.
Wind veered from SW, through W, to NNW.
Wind at West on Oct. 3, at 3 P.M.
Wind force feeble.

(6.) RADCLIFF OBSERVATORY, OXFORD.

Rev. R. MAIN.

Lat. = 51° 46′ N. Long. = 1° 16′ W.

Date.		Barometer at 68° F. and Sea-level, approx.	Wind.	
			Direction.	Velocity in miles p. hour.
1860		British Inches		
Oct. 2.	4 A.M.	30·19	W	5·1
	8 A.M.	30·23	W	8·1
	Noon.	30·27	W	7·5
	4 P.M.	30·25	W	4·2
	8 P.M.	30·25	W	2·7
	Midnight.	30·21	W	5·1
3.	4 A.M.	30·10	SW	12·9
	⊙ 8 A.M.	30·02	WSW	17·4
	Noon.	30·06	WNW	16·2
	4 P.M.	30·14	NW	12·3
	8 P.M.	30·21	WNW	8·7
	Midnight.	30·26	W	10·8
4.	4 A.M.	30·28	W	7·8
	8 A.M.	30·32	W	10·2
	Noon.	30·33	WNW	8·7
	4 P.M.	30·29	W	16·5
	8 P.M.	30·27	W	9·0
	Midnight.	30·20	SW	13·5

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3, at 8 A.M.; but Barometric pressure always high.
Whole fall = 0·24 inch.
Duration of fall = 20 hours.
Wind veered from SW and WSW, through West, to WNW and NW
Wind at West on Oct. 3, at 10 A.M.

(7.) FRENCH OR SOUTHERLY STATIONS.

ROCHEFORT.

Lat. = 45° 56′ N. Long. = 0° 57′ W.

Date.		Barometer at 68° F. and Sea-level, approx.	Wind.	
			Direction.	Force 0—3.
1860		British Inches.		
Oct. 1.	8 A.M.	30·40	NE	1
	3 P.M.	30·39	NW	0
	9 P.M.	30·48	NW	0
Oct. 2.	8 A.M.	30·65	ENE	0
	3 P.M.	30·63	NW	1
	9 P.M.	30·70	NW	0
Oct. 3.	8 A.M.	30·60	W	0
	3 P.M.	30·55	NW	2
	⊙ 9 P.M.	30·52	NW	1
Oct. 4.	8 A.M.	30·59	NE	2
	3 P.M.	30·62	NE	2
	9 P.M.	30·64	NE	1

Conclusions deduced for this Station.

Barometrical and Wind disturbance insignificant.
Lowest Barometer on October 3, at 9 P.M.; but barometric pressure very high.
Whole fall observed = 0·18 inch.
Interval for that fall = 24 hours.
Wind veered from NW, through probably North to NE.
Wind at North on Oct. 3 at 11 P.M.
Greatest force of the Wind from NW, and on October 3, at 3 P.M.

These Rochefort observations are anomalous.

(8.) ROYAL OBSERVATORY. GREENWICH.

G. B. Airy, Astronomer Royal.

Lat. = 51° 28′ N. Long. = 0° 0′ W.

Date.		Barometer at 68° F. and Sea-level, approx.	Wind.	
			Direction.	Force lbs. on square foot.
1860		British Inches.		
Oct. 2.	Noon	30·29	W	0·0
	1 P.M.	30·29	W	0·0
	2	30·29	W by N	0·0
	3	30·28	W by N	0·0
	4	30·28	W	0·0
	5	30·28	W	0·0
	6	30·29	W	0·0
	7	30·29	W	0·0
	8	30·29	W	0·0
	9	30·29	W	0·0
	10	30·29	W	0·0
	11	30·29	WSW	0·0
	Midnight	30·27	WSW	0·0
Oct. 3.	1 A.M.	30·24	SW	0·0
	2	30·21	SW	0·0
	3	30·18	SW	0·0
	4	30·05	SW	2·3
	5	30·02	SW	0·0
	6	30·10	SW	0·0
	7	30·08	SW	1·0
	8	30·07	WSW	2·3
⊙	9	30·07	WSW	4·0
	10	30·07	W	2·5
	11	30·08	W	3·3
	Noon	30·08	W	3·5
	1 P.M.	30·08	NW	3·8
	2	30·08	NW	2·0
	3	30·09	NW	3·5
	4	30·12	NW	2·5
	5	30·16	NNW	0·0
	6	30·20	NNW	0·0
	7	30·20	W	0·0
	8	30·22	W	0·0
	9	30·24	W by S	0·0
	10	30·24	W	0·0
	11	30·25	W	1·8
	Midnight	30·25	WNW	0·0

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3 at 9 A.M.; but Barometric pressure always high.

Whole fall = 0·22 inch.

Duration of fall = 11 hours.

Wind veered from SW and WSW, through West, to NW and NNW.

Wind at West on Oct 3 at 11 A.M.

Wind strongest in second half of whirl.

(9.) FRENCH OR SOUTHERLY STATIONS. DUNKIRK.

Lat. = 51° 3′ N. Long. = 2° 20′ E.

Date.		Barometer at 68° F. and at Sea-level, approx.	Temp. of Air ° F.	Wind.	
				Direction.	Force 0–3.
1860		British Inches.			
Oct. 1.	8 A.M.	30·37		NW	0
	3 P.M.	30·40	58·5	NNW	1
	9 P.M.	30·43		NNW	1
2.	8 A.M.	30·37		W	0
	3 P.M.	30·48	60·6	N	2
	9 P.M.	30·45		N	1
3.	8 A.M.	30·35		SW	1
⊙	3 P.M.	30·31	61·8	WNW	2
	9 P.M.	30·37		WNW	2
4.	8 A.M.	30·50		NE	2
	3 P.M.	30·50	55·4	W	2
	9 P.M.	30·51		W	2

Conclusions deduced for this Station.

Lowest Barometer on October 3, at 1 P.M.; but pressure always high.

Whole depression observed = 0·17 inch.

Interval for that depression = 22 hours.

Wind veered from SW to WNW through West, probably.

Wind at West on October 3, at 2 P.M. probably.

A rise of temperature precedes and a fall follows the Barometric depression.

(10.) PARIS IMPERIAL OBSERVATORY,

Under M. Le Verrier.

Lat. = 48° 50′ N. Long. = 2° 20′ E.

Date.		Barometer at 68° F. and Sea-level, approx.	Temp. of Air. ° F.	Wind	
				Direction.	Force. 0–4.
1860		British Inches.			
Sept. 28.	7 P.M.	29·79		S	0·5
	9 A.M.	29·81		W	1·0
	Noon.	29·85		SSW	1·0
	3 P.M.	29·84	60·8	SSW	1·0
	6 P.M.	29·87		S	1·0
	9 P.M.	29·87		S	1·0
	Midnight.	29·85		SSW	1·0
Sept. 29.	7 A.M.	29·90		S	1·0
	9 A.M.	29·98		WSW	2·0
	Noon.	30·02		SW	1·0
	3 P.M.	30·04	60·3	WSW	1·0
	6 P.M.	30·09		SW	1·0
	9 P.M.	30·14		SSW	1·0
	Midnight.	30·17		SSW	1·0

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PARIS IMPERIAL OBSERVATORY—*Continued.*

Date.		Barometer at 68° F. and Sea-level, approx.	Temp. of Air. ° F.	Wind.	
				Direction.	Force. 0 – 8.
1860		British Inches.			
Sept. 30.	7 A.M.	30·23		SSW	1·0
	9 A.M.	30·25		SSW	1·0
	Noon.	30·26		WSW	2·0
	3 P.M.	30·24	58·3	SSE	1·0
	6 P.M.	30·27		NNW	1·0
	9 P.M.	30·31		NW	1·0
	Midnight.	30·31		NW	1·0
Oct. 1.	7 A.M.	30·33		N	1·0
	9 A.M.	30·36		N	1·0
	Noon.	30·35		W	1·0
	3 P.M.	30·33	58·3	NW	1·0
	6 P.M.	30·35		NW	2·0
	9 P.M.	30·37		NW	2·0
	Midnight.	30·40		NW	2·0
Oct. 2	7 A.M.	30·49		W	1·0
	9 A.M.	30·55		WNW	1·0
	Noon.	30·52		WNW	1·0
	3 P.M.	30·51	58·8	NW	2·0
	6 P.M.	30·54		NW	1·0
	9 P.M.	30·57		NW	1·0
	Midnight.	30·55		NW	1·0
Oct. 3.	7 A.M.	30·47		WSW	1·0
	9 A.M.	30·47		WSW	1·0
	Noon.	30·42		WSW	1·0

PARIS IMPERIAL OBSERVATORY—*Continued.*

Date.		Barometer at 68° F. and Sea-level, approx.	Temp. of Air. ° F.	Wind.	
				Direction.	Force. 0 – 8.
1860		British Inches.			
Oct. 3. ☉	3 P.M.	30·37	62·0	WSW	1
	6 P.M.	30·39		W	1
	9 P.M.	30·41		WNW	2
	Midnight.	30·43		NW	2
Oct. 4.	7 A.M.	30·56		NW	1
	9 A.M.	30·57		NNW	1
	Noon.	30·59		NNW	1
	3 P.M.	30·56	55·8	NNW	1
	6 P.M.	30·60		NW	1
	9 P.M.	30·62		NW	1
	Midnight.	30·57		NW	2

Conclusions deduced for this Station.

N.B.—The gradual increase of Barometric pressure from Sept. 28 to Oct. 2; this is a marked feature in all the French stations.

Lowest Barometer on Oct. 3, at 3 P.M.; but during very high Barometric pressure.

Whole fall observed = 0·20 inch.

Interval for that fall = 18 hours.

Wind veered very regularly from WSW, through West, to WNW and NW.

Wind at West on Oct. 3, at 6 P.M.

Wind strongest from WNW and NW.

A rise of temperature precedes and a fall follows the Barometric depression.

GROUP II. SUMMARISED.

ENGLISH, FRENCH, AND SOUTHERLY STATIONS.

LEADING CONCLUSIONS DEDUCED FROM THEM IN ORDER OF LONGITUDE.

No.	Stations.	Lat. N.	Long.	Date of Barometrical Depression.	Amount of such Depression.	Interval Corresponding.	Wind Veered			Wind. Force 0 to 12.
							From	Through	To	
		° ′	° ′		Inch.	Hour.				
1	Gibraltar,	36 6	5 21 W	Oct. 3. A.M.	0·00	00	ESE	ESE	ESE	4
2	Brest,	48 23	4 27 W	3. 9 A.M.	0·12	24	SW	W	NW	4
3	Liverpool,	53 25	3 0 W	3. 7 A.M.?			WSW	W	WNW	9
4	Bayonne,	43 31	1 26 W	3. 12 A.M.?			SW	W	WNW	4
5	Napoleon-Vendée,	46 41	1 25 W	3. 3 P.M.?	0·16	24	SW	W	NNW	3
6	**Oxford,**	**51 46**	**1 16 W**	**3. 8 A.M.**	**0·24**	**20**	**SW**	**W**	**NW**	**7**
7	Rochefort,	45 56	0 57 W	?						
8	**Greenwich.**	**51 28**	**0 0**	**3. 9 A.M.**	**0·22**	**11**	**SW**	**W**	**NW**	**5**
9	Dunkirk,	51 3	2 20 E	3. 1 P.M.	0·17	22	SW	W	WNW	6
10	**Paris,**	**48 50**	**2 20 E**	**3. 3 P.M.**	**0·20**	**18**	**WSW**	**W**	**WNW**	**4**

GROUP III.
SCANDINAVIAN AND NORTH-EASTERN,
OR 18 STATIONS;
BETWEEN 55° AND 71° N. LATITUDE, AND 4° AND 25° E. LONGITUDE.
ARRANGED IN ORDER OF LONGITUDE.

(1.) NORWEGIAN.
LIGHTHOUSE OF HELLISO.
Lat. = 60° 45° N. Long. = 4° 43′ E.

Date.		Wind. Direction.	Wind. Force.
1860			
Oct. 3.	9 A.M.	SE	Moderate.
⊙	9 P.M.	N	Storm.
Oct. 4.	9 A.M.	N	Strong.
	9 P.M.	NNE	Moderate.

Conclusions deduced for this Station.

Wind veered from SE, through E, probably to N abnormally, and then to NNE.

More full observations would have been invaluable at this latitude and longitude.

(2.) NORWEGIAN.
LIGHTHOUSE OF UDSIRE.
Lat. = 59° 18′ N. Long. = 4° 53′ E.

Date.		Barometer reduced to 68° F. and Sea-level, approx.	Temperature.	Wind. Direction.	Wind. Character.
1860		British Inches.	°F		
Oct. 1.	9 A.M.	30·4	54	SSW	Fresh.
	9 P.M.	29·8	54	SSW	Fresh.
2.	9 A.M.	30·1	50	W	Fresh.
	9 P.M.	30·1	49	NW by W	Fresh.
3.	9 A.M.	29·5	41	SW	Heavy
⊙	9 P.M.	28(?)	44	NNW	Storm.
4.	9 A.M.	29·5	45	NNW	Heavy
	9 P.M.	29·6	46	NNW	Storm.
5.	9 A.M.	29·9	43	SSW	Light.
	9 P.M.	30·0	44	NNW	Fresh.
6.	9 A.M.	30·1	45	N	Light.
	9 P.M.	30·2	43	SSE	Strong.

Conclusions deduced for this Station.

Lowest Barometrical pressure on Oct. 3 at 9 P.M., but uncertain what.
Wind veered from SW, probably through West, to NNW.
Wind at West on Oct. 3 at 8 P.M.
Station was only slightly South of Storm's centre.
The N Western portion alone spoken of as *the* storm.
A notable Thermometrical depression accompanied the storm.

(3.) NORWEGIAN.
LIGHTHOUSE OF LISTER.
Lat. = 58° 7′ N. Long. = 6° 34′ E.

Date.		Barometer at 68° F. and Sea-level, approx.	Thermometer.	Wind. Direction.	Wind. Force.
1860		British Inches.	°F		
Oct. 1.	9 A.M.	30·4	56	SE	Moderate.
	9 P.M.	30·4	47	SE	Moderate.
2.	9 A.M.	30·2	53	SE	Moderate.
	9 P.M.	30·2	53	NW	Fresh.
3.	9 A.M.	29·7	51	SSW	Heavy.
⊙	9 P.M.	29·1	50	NW	Storm.
4.	9 A.M.	29·6	48	NNW	Strong.
	9 P.M.	29·8	43	NNW	Strong.
5.	9 A.M.	29·5	47	WSW	Moderate.
	9 P.M.	29·7	48	NW	Strong.
6.	9 A.M.	30·1	48	NNW	Light.
	9 P.M.	30·2	48	SW	Moderate.

Conclusions deduced for this Station.

Lowest Barometrical pressure on Oct. 3 at 10 P.M.
Whole fall observed = 1·3 inches.
Interval for that fall = 48 hours.
Wind veered from SSW, through West, to NW.
Station South of centre of Storm.
Wind at West probably on Oct. 3 at 8 P.M.
Storm spoken of as altogether the N Western portion.

(4.) NORWEGIAN.
LIGHTHOUSE OF LINDESNAS.
Lat. = 57° 59′ N. Long. = 7° 3′ E.

Date.		Barometer at 68° F. and at Sea-level, approx.	Temp.	Wind.	
				Direction.	Force.
1860		British Inches.	° F.		
Oct. 1.	9 A.M.	30·3	53	ENE	Moderate.
	9 P.M.	30·3	53	E	Moderate.
2.	9 A.M.	30·1	53	NE	Light.
	9 P.M.	30·0	52	NW	Moderate.
3.	9 A.M.	29·7	52	SSW	Moderate.
	⊙ 9 P.M.	28·9	51	WNW	Storm.
4.	9 A.M.	29·6	47	NW	Storm.
	9 P.M.	29·8	45	NW	Moderate.
5.	9 A.M.	29·6	47	SW	Moderate.
	9 P.M.	29·6	46	NW	Moderate.
6.	9 A.M.	30·0	44	NW	Light.
	9 P.M.	30·1	47		Calm.

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3 at 9h. P.M.
Whole fall observed = 1·4 inch.
Interval for that fall = 48 hours.
Wind veered from SSW through W to WNW and NW.
Wind at West probably on Oct. 3 at 8h. P.M.
Station South of centre of storm.
Only the NW portion spoken of as a storm.

(5.) NORWEGIAN.
LIGHTHOUSE OF GRUITHOLMEN.
Lat. = 63° 2′ N. Long. = 7° 13′ E.

Date.		Barometer reduced to 68° F. and Sea-level, approx.	Temp.	Wind.	
				Direction.	Character.
1860		British Inches.	° F.		
Oct. 1.	9 A.M.	29·5	55	SE	Light.
	9 P.M.	29·7	55	S	Light.
2.	9 A.M.	29·5	50	SW	Fresh.
	9 P.M.	29·4	50	SW	Fresh.
3.	9 A.M.	29·5	52	WSW	Fresh.
	9 P.M.	29·6	55	SW to NE	Strong.
4.	9 A.M.	29·4	50	NNW	Fresh.
	9 P.M.	29·4	48	NW	Fresh.
5.	9 A.M.	29·2	46	NW	Fresh.
	9 P.M.	29·2	41	W	Fresh.

Conclusions deduced for this Station.

The Barometric observations are entirely fictitious, and the Thermometer observations not much better.

It would have been, from its Latitude and Longitude, an important station to have been well observed.

(6.) BARQUE "FIFESHIRE" OF SUNDERLAND.
CAPT. G. ROBINSON, from Cronstadt to Leith.
Lat. = 57° 30′ N. Long. = 8° 30′ E.

Date.	Lat.	Long.	Wind.	
			Direction.	Force.
1860	N.	E		
Oct. 4 (3). 2 A.M.			SW	Fresh breeze.
4 A.M.				
6 A.M.			SW	
8 A.M.				Increasing gales.
10 A.M.				Heavy gales, and thick with rain.
Noon.	57° 12′	8° 15′		Hard gales with heavy sea; ship labouring and washing heavy.
2 P.M.			WSW	Hard gales, with heavy sea.
4 P.M.				Tremendous heavy gale, with a fearful cross sea running.
6 P.M.				Ship washing and straining very heavy.
8 P.M.				Shipping heavy seas, filling cabin and washing water casks adrift.
⊙ 10 P.M.				A complete hurricane, jib blowing adrift; had to cut it away.
Midnight.	57 30	8 30	WNW	Dreadful hurricane, with fearful cross sea.
5 (4). 2 A.M.				Shipped a heavy sea, washing bulwarks, casks, and several things off decks.
4 A.M.				The cargo shifted, and caused the ship to be completely under water.
6 A.M.				Found the ship making more water, keeping one pump going.
8 A.M.				Continued hurricane, with fearful heavy sea.
10 A.M.			NW by W	Passed a great quantity of deals and timber.
Noon.	57 54	8 45		Wind a little moderated, with a heavy sea.
2 P.M.			NW by W	Strong continued gales, with heavy sea.
4 P.M.				Set main trysail reefed.
6 P.M.				
8 P.M.				Ship labouring very heavy.
10 P.M.				
Midnight.				Wind a little moderated, with high sea running.

Conclusions deduced for this Station.

Wind veered from SW and WSW, through W, to WNW and NW by W.
Wind at West Oct. 4 (3) at 11 P.M.
No intermediate calm.

The dates in this log are evidently one day too large.

The vessel is stated to be on a voyage from Cronstadt to Leith, and yet is increasing her Eastern longitude daily; that, however, is the real case, her leeway under the violent Westerly gales being put down at 8 knots, when her forward way was only 1·5 knots.

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(7.) NORWEGIAN.
LIGHTHOUSE OF VILLA.

Lat. = 64° 31′ N. Long. = 10° 42′ E.

Date.			Barometer	Thermometer.	Wind.	
					Direction.	Force.
1860			British Inches.	°F.		
Oct.	1.	9 A.M.	Not observed	52·2	SW	Moderate
		9 P.M.		52·2	S	Light.
	2.	9 A.M.		52·2	SW	Fresh.
		9 P.M.		53·0	WNW	Fresh.
	3.	9 A.M.		45·5	WNW	Fresh.
		9 P.M.		45·5	Calm	
	⊙					
	4.	9 A.M.		43·2	E	Light.
		9 P.M.		41·0	ENE	Strong.
	5.	9 A.M.		38·8	NE	Strong.
		9 P.M.		41·0	NE	Strong.

Conclusions deduced for this Station.

Wind veered from WNW, through E, to ENE.

Station North of Storm's centre.

Wind at East on Oct. 4, at 3 A.M. probably; but observations very imperfect.

(8.) CHRISTIANIA OBSERVATORY.
Professor HANSTEENS.

Lat. = 59° 55′ N. Long. = 10° 45′ E. Height 74 feet.

Date.			Barometer at 65° F. and Sea-level, approx.	Wind.	
				Direction.	Force 0—5.
1860			British Inches.		
Oct.	2.	7 A.M.	30·25	ENE	0
		9 A.M.	30·23		
		2 P.M.	30·14	S	1
		4 P.M.	30·08	S	1
		10 P.M.	29·97		
		Midnight.			
Oct.	3.	7 A.M.	29·85	NNE	0
		9 A.M.	29·81	NE	0
		2 P.M.	29·58	ENE	1
		4 P.M.	29·36	E	2
	⊙	10 P.M.	29·05	NE	3
		Midnight.			
Oct.	4.	7 A.M.	29·31	NW	3
		9 A.M.	29·38	NNW	2
		2 P.M.	29·55	WNW	2
		4 P.M.	29·58	NW	1·2
		10 P.M.	29·70	Calm	
		Midnight.			
Oct.	5.	7 A.M.	29·76	NNW	0
		9 A.M.	29·74	NNE	0

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3, at 10 P.M.

Whole fall observed = 1·20 inch.

Duration of fall = 39 hours.

Wind veered from NE to NW, probably through North.

Wind at N on Oct 4, at 2 A.M. probably.

(9.) SWEDISH.
GOTEBORG.

Lat. = 57° 42′ N. Long. = 11° 57′ E.

Date.			Barometer reduced to 68° F. and Sea-level, approx.	Wind.	
				Direction.	Force. 0 – 8.
1860			British Inches.		
Oct.	1.	8 A.M.	30·41	E	0·5
		2 P.M.	30·37	SE	0·5
		9 P.M.	30·34	SE	0
	2.	8 A.M.	30·17	S	1·5
		2 P.M.	30·09	S	1·5
		9 P.M.	29·99	S	0
	3.	8 A.M.	29·80	SW	1
		2 P.M.	29·51	SSW	2
		9 P.M.	29·07	WSW	3
	⊙				
	4.	8 A.M.	29·19	NW	3
		2 P.M.	29·42	NW	2·5
		9 P.M.	29·50	N	1·5
	5.	8 A.M.	29·66	W	0·5

Conclusions deduced for this Station.

Lowest Barometer on Oct. 4, at 1 A.M. probably.

Whole fall observed = 1·34 inch.

Interval corresponding = 65 hours.

Wind veered from SW, through W, to NW.

Wind at West on Oct. 4, at 3 A.M. probably.

(10.) COPENHAGEN.

Lat. 55° 41′ N. Long. 12° 35′ E. Height, 12 ft.

Date.		Barometer reduced to 68° F. and Sea-level, approx.	Wind.	
			Direction.	Force.
1860		British Inches.		
Oct. 2.	6 A.M.			
	9 A.M.	30·31		
	Noon	30·29	ESE	3
	4 P.M.	30·27		
	6 P.M.			
	Midnight		SSW	2
			SW	2
Oct. 3.	6 A.M.		WSW	2
	9 A.M.	30·06		
	Noon	29·93	SW	3

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(10.) COPENHAGEN—*Continued.*

Date.		Barometer reduced to 68° F. and Sea-level, approx.	Wind.	
			Direction.	Force.
1860		British Inches.		
Oct. 3.	4 P.M.	29·74		
	6 P.M.		SW	4
	Midnight		SW	7
	⊙			
Oct. 4.	6 A.M.		W	7
	9 A.M.	29·64		
	Noon	29·69	WNW	7
	4 P.M.	29·81		
	6 P.M.		WNW	5
	Midnight		WNW	3
Oct. 5.	6 A.M.		WNW	1
	9 A.M.	29·91		

The observer saw the Barometer going rapidly down during the day of Oct. 3, yet he left it to itself for 17 hours, and then found it rising rapidly. Of course, in that precious interval, the crisis of the fall had come and gone unnoted by man. Was it his fault, or that of the system which had ordained that the three daily observations here should be compressed into 7 hours, leaving 17 hours of every 24 blank?

Conclusions deduced for this Station.

Lowest Barometer on Oct. 4 probably at 2 A.M.

Whole fall observed = 0·67, but probably only half of what really took place during the long period of 17 hours, when this observer every day goes to sleep.

Wind veered from SW, through West, to WNW.

Wind at West on Oct. 4 at 6 A.M.

Station South of centre of Whirl.

(11.) SWEDISH.
HALMSTAD.
Lat. = 56° 39′ N. Long. = 12° 49′ E.

Date.		Barometer reduced to 68° F. and Sea-level, approx.	Wind.	
			Direction.	Force 0—8.
1860		British Inches.		
Oct. 1.	8 A.M.	30·43	N	1
	2 P.M.	30·41	NE	1
	9 P.M.	30·36	E	0
2.	8 A.M.	30·23	NE	1
	2 P.M.	30·17	W	1
	9 P.M.	30·09	SW	1
3.	8 A.M.	30·17	W	1
	2 P.M.	30·70	SW	2
	9 P.M.	29·30	SW	3
⊙				
4.	8 A.M.	29·31	W	3
	2 P.M.	29·53	W	3
	9 P.M.	29·72	W	2
5.	8 A.M.	29·78	W	2

Conclusions deduced for this Station.

Lowest Barometer on Oct. 4 at 2 A.M. probably.

Whole fall observed = 1·13 inch.

Interval corresponding = 65 hours.

Wind veered from SW, through West, to WNW probably.

(12.) SWEDISH.
CARLSTAD.
Lat. = 59° 25′ N. Long. = 13° 35′ E.

Date.		Barometer reduced to 68° F. and Sea-level, approx.	Wind.	
			Direction.	Force 0—8.
1860		British Inches.		
Oct. 1.	8 A.M.	30·39		0
	2 P.M.	30·35	S	1
	9 P.M.	30·27		0
2.	8 A.M.	30·08	S	1
	2 P.M.	30·01	S	1
	9 P.M.	29·84	SSW	1
3.	8 A.M.	29·68		0
	2 P.M.	29·49	SSE	1
	9 P.M.	29·00	S	2
⊙				
4.	8 A.M.	28·94	NW	2
	2 P.M.	29·20	WNW	2
	9 P.M.	29·43	WNW	1
5.	8 A.M.	29·57		0

Conclusions deduced for this Station.

Lowest Barometer on Oct. 4 at 7 A.M. probably.

Whole fall observed = 1·34 inch.

Interval corresponding = 71 hours.

Wind veered somewhat abnormally from S, through NW, to WNW.

(13.) SWEDISH.
FAHLUN.
Lat. = 60° 36′ N. Long. = 15° 38′ E. Height 425.

Date.		Barometer at 68° F. and Sea-level, approx.	Wind.	
			Direction.	Force.
1860		British Inches.		
Oct. 1.	8 A.M.	30·46		0
	2 P.M.	30·40		0
	9 P.M.	30·33		0
2.	8 A.M.	30·16		0
	2 P.M.	30·01	SW	0
	9 P.M.	29·88	SW	0
3.	8 A.M.	29·72		0
	2 P.M.	29·57	S	0
	9 P.M.	29·29	ESE	0·5
4. ⊙	8 A.M.	28·94	N	1
	2 P.M.	29·14	NNW	1
	9 P.M.	29·34	NW	1
5.	8 A.M.	29·50	NW	0·5

Conclusions deduced for this Station.

Lowest Barometer on Oct. 4, at 10 A.M. probably.
Whole fall observed = 1·52 inch.
Interval corresponding = 74 hours.
Wind veered from ESE, through N, to NNW rather abnormally.

(14.) SWEDISH.
KALMAR.
Lat. = 56° 40′ N. Long. = 16° 20′ E. Height .

Date.			Barometer at 68° F. and Sea-level, approx.	Wind.	
				Direction.	Force.
1860			British Inches.		
Oct.	1.	8 A.M.	30·43	E	1
		2 P.M.	30·41	NE	1·5
		9 P.M.	30·36	ESE	1
Oct.	2.	8 A.M.	30·27	NE	0·5
		2 P.M.	30·14		0
		9 P.M.	29·85	W	1
Oct.	3.	8 A.M.	29·85	WSW	1
		2 P.M.	29·76	S	2
		9 P.M.	29·44	SSW	3
Oct.	4. ⊙	8 A.M.	29·21	SW	4
		2 P.M.	29·25	W	4
		9 P.M.	29·48	NW	1
Oct.	5.	8 A.M.	29·68	WSW	1

Conclusions deduced for this Station.

Lowest Barometer on Oct. 4, at noon probably.
Whole fall observed = 1·21 inch.
Interval corresponding = 76 hours.
Wind generally SW with little regular veering.

(15.) SWEDISH.
WESTERVIK.
Lat. = 57° 45′ N. Long. = 16° 40′ E.

Date.			Barometer Reduced to 68° F. and Sea-level, approx.	Wind.	
				Direction.	Force.
1860			British Inches.		
Oct.	1.	8 A.M.	30·42		0
		2 P.M.	30·41	ESE	1·5
		9 P.M.	30·35		0
	2.	8 A.M.	30·21		0
		2 P.M.	30·14		0
		9 P.M.	30·02		0
	3.	8 A.M.	29·78	WSW	1·5
		2 P.M.	29·69	W	1·5
		9 P.M.	29·35	SSW	2·5
	4. ⊙	8 A.M.	29·03	W	3·5
		2 P.M.	29·16	NW	3·5
		9 P.M.	29·45	NNW	3
	5.	8 A.M.	29·64	WNW	2

Conclusions deduced for this Station.

Lowest Barometer on Oct. 4, at 11 A.M. probably.
Whole fall observed = 1·39 inch.
Interval corresponding = 75 hours.
Wind veered regularly from SSW, through West, to NW.

(16.) SWEDISH.
WISBY.
Lat. = 57° 40′ N. Long. = 18° 20′ E.

Date.			Barometer at 68° F. and Sea-level, approx.	Wind.	
				Direction.	Force.
1860			British Inches.		
Oct.	1.	8 A.M.	30·43	SE	1
		2 P.M.	30·39	SE	1
		9 P.M.	30·33	SE	1
Oct.	2.	8 A.M.	30·18	SE	1
		2 P.M.	29·92	NW	1
		9 P.M.	30·02	NW	1
Oct.	3.	8 A.M.	29·77	W	2
		2 P.M.	29·71	SW	2
		9 P.M.	29·44	SSW	2
Oct.	4. ⊙	8 A.M.	29·10	SW	3
		2 P.M.	29·12	NW	3
		9 P.M.	29·37	NW	3
Oct.	5.	8 A.M.	29·57	WNW	3
		2 P.M.	29·61	NW	3

Conclusions deduced for this Station.

Lowest Barometer on Oct. 4, at noon probably.
Whole fall observed = 1·33 inch.
Interval corresponding = 76 hours.
Wind veered regularly from SW through W, probably to NW.

(17.) NORWEGIAN.
HAMMERFEST.
Lat. = 70° 40′ N. Long. = 23° 46′ E.

Date.			Barometer Reduced to 68° F. and Sea-level, approx.	Wind.	
				Direction.	Force 0–6.
1860			British Inches.		
Oct.	2.	8 A.M.	29·54	NE	
		2 P.M.	29·59	NE	2
		8 P.M.	29·55	NE	1
	3.	8 A.M.	29·55	SW	2
		2 P.M.	29·55	NW	1
		8 P.M.	29·55	W	2
	4.	8 A.M.	29·41	NW	1
		2 P.M.	29·51	NW	2
		8 P.M.	29·55	W	2
	5.	8 A.M.	29·64	NW	2
		2 P.M.	29·73	NW	2
		8 P.M.	29·73	NW	1

Conclusions deduced for this Station.

This Barometer, I fear, is altogether out of order, and the wind observations are nothing important; a matter exceedingly to be regretted, as otherwise this station was admirably adapted to have rendered an account of the Northern half of the whirl.

(18.) SWEDISH.

HAPARANDA.

Lat. = 65° 52′ N. Long. = 24° 3′ E.

Date.	Barometer at 68° F. and Sea-level, approx.	Wind.	
		Direction.	Force.
1860	British Inches.		
Oct. 1. 8 A.M.	30·24	SW	1
2 P.M.	30·26	SW	1
9 P.M.	30·28	SW	1
2. 8 A.M.	30·18	SW	2
2 P.M.	30·05	S	3
9 P.M.	29·85	S	3
3. 8 A.M.	29·60	SSW	1
2 P.M.	29·52	SSW	2
9 P.M.	29·46	SSW	1

HAPARANDA—*Continued.*

Date.	Barometer at 68° F. and Sea-level, approx.	Wind.	
		Direction.	Force.
1860	British Inches.		
Oct. 4. 8 A.M.	29·43	N	1
2 P.M.	29·40	NE	2
9 P.M.	29·32	NE	2
5. ⊙ 8 A.M.	29·27	NE	2
2 P.M.	29·28	NNE	2·5
9 P.M.	29·34	NE	3
6. 8 A.M.	29·51	N	2·5
2 P.M.	29·73	NNE	2
9 P.M.	29·86	NE	2
7. 8 A.M.	30·05	NE	1

Conclusions deduced for this Station.

Lowest Barometer on Oct. 5 at 10 A.M.

Whole fall observed = 1·01 inch.

Interval corresponding = 85 hours.

Wind generally from NNE, in so far normal for a high Northern Station, as the SSW direction is for a low Northern Station, or one far on the Southern side of whirl's centre.

GROUP III. SUMMARISED.

SCANDINAVIAN, OR NORTH-EASTERN STATIONS.

LEADING CONCLUSIONS DEDUCED FROM THEM IN ORDER OF LONGITUDE.

No.	Stations.	Lat. N.	Long. E.	Date of Barometrical Depression.	Amount of such Depression.	Interval.	Wind Veered			Wind's Force 0—12.
							From	Through	To	
	Last North British Station,	51° 28′	0° 0′	Oct. 3. 9 A.M.	Inches.	Hours.				
1	Helliso,	60 45	4 43	?			SE	E	NNE	10
2	Udsire,	59 18	4 53	Oct. 3. 9 P.M.(?)			SW	W	NNW	10
3	Lister,	58 7	6 34	3. 10 P.M.	1·30	48	SSW	W	NW	10
4	Lindesnas,	57 59	7 3	3. 9 P.M.	1·40	48	SSW	W	NW	10
5	Gruitholmen,	63 2	7 13	?	?	?				
6	Barque "Fifeshire,"	57 30	8 30	Oct. 3. 11 P.M.			SW	W	NW	12
7	Villa,	64 31	10 42	?	?		WNW	E	ENE	10
8	**Christiania,**	**59 55**	**10 45**	**3. 10 P.M.**	**1·20**	**39**	**NE**	**N**	**NW**	**9**
9	Goteborg,	57 42	11 57	4. 1 A.M.	1·34	65	SW	W	NW	9
10	Copenhagen,	55 41	12 35	4. 2 A.M.(?)			SW	W	WNW	8
11	Halmstad,	56 39	12 49	Oct. 4. 2 A.M.	1·13	65	SW	W	WNW	8
12	Carlstad,	59 25	13 35	4. 7 A.M.	1·34	71	S	NW	WNW	7
13	Fahlun,	60 36	15 38	4. 10 A.M.	1·52	74	ESE	N	NNW	4
14	Kalmar,	56 40	16 20	4. 12 A.M.	1·21	76	SW	SW	SW	7
15	Westervik,	57 45	16 40	4. 11 A.M.	1·29	75	SSW	W	NW	8
16	Wisby,	57 40	18 20	Oct. 4. 12 A.M.	1·33	76	SW	W	NW	10
17	Hammerfest,	70 40	23 46	?	?	?	NW	NW	NW	7
18	Haparanda,	65 52	24 3	5. 10 A.M.(?)	1·01	85	NE	NNE	NE	8

GROUP IV.

TEUTONIC AND SOUTH-EASTERN,

OR 12 STATIONS;

BETWEEN LATITUDE 48° AND 55° NORTH, AND LONGITUDE 4° AND 17° EAST.

ARRANGED IN ORDER OF LONGITUDE.

(1.) BRUSSELS.

ROYAL OBSERVATORY.

M. QUETELET.

Lat. = 50° 51′ N. Long. 4° 21′ E.

Date.	Barometer at 68° F. and Sea-level, approx.	Wind. Direction.
1860	British Inches.	
Oct. 3. 1 A.M.	30·23	W
2	30·22	WSW
3	30·21	WSW
4	30·18	WSW
5	30·14	WSW
6	30·14	SW
7	30·13	SW
8	30·12	SW
9	30·11	SW
10	30·08	SW
11	30·07	SW
Noon.	20·05	WSW
1 P.M.	30·05	WSW
⊙ 2	30·04	WSW
3	30·05	WSW
4	30·05	WSW
5	30·08	WSW
6	30·10	W
7	30·11	W
8	30·12	W
9	30·13	W
10	30·13	W
11	30·14	W
Midnight.	30·13	W

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3, at 2 P.M.
Whole fall observed = 0·19 inch.
Interval corresponding = 14 hours.
Wind veered from SW, through WSW, to W.

(2.) NAMUR.

Lat. = 50° 27′ N. Long. = 4° 48′ E.

Date.	Barometer at 68° F. and Sea-level, approx.	Temp. of Air.	Wind. Direction.	Wind. Velocity in Miles per hour.
1860	British Inches.	°F.		
Oct. 1. 9 A.M.	30·07	53·2	N	2
Noon.	30·07	55·2	NNW	6
3 P.M.	30·05	58·7	NNW	5
9 P.M.	30·06	54·5	NW	8
2. 9 A.M.	30·15	53·2	WNW	5
Noon.	30·18	57·4	NW	6
3 P.M.	30·18	58·5	NW by W	3
9 P.M.	30·22		WNW	5
3. 9 A.M.	30·09	55·0	SW	13
Noon.	30·03	58·2	S	19
3 P.M.	30·00	56·8	WSW	10
⊙ 4 P.M.	29·97			11
9 P.M.	30·12	50·3	NW by W	4
4. 9 A.M.	30·19	48·2	WNW	10
Noon.	30·22	53·6	NNW	11
3 P.M.	30·23	56·0	WNW	10
9 P.M.	30·27	46·4	W	4

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3, at 4 P.M.
Whole fall observed = 0·25 inch.
Interval corresponding = 19 hours.
Wind veered from WSW, probably through West, to NNW.

(3.) UTRECHT.

Observatory, Dr BUYS BALLOT.

Lat. = 52° 5′ N. Long. = 5° 7′ E.

Date.		Barometer at 68° F. and Sea-level, approx.	Temp.	Wind.	
				Direction.	Force.
1860		British Inches	° F.		
Oct. 2.	1 A.M.	30·30	50·0	NNW	0
	2	30	49·5	NNW	0
	3	30	48·4	NNW	0
	4	29	47·8	NNW	0
	5	30	47·5	NW	0
	6	32	47·7	NW	0
	7	32	50·7	NW	0
	8	34	53·6	WNW	0
	9	35	57·4	WNW	0
	10	35	60·8	NW	0·5
	11	36	60·4	NW	1·5
	Noon.	36	60·8	NW	1
	1 P.M.	36	58·0	NW	1·5
	2	36	59·0	NW	2
	3	36	58·7	NW	3
	4	36	58·0	WNW	2
	5	37	56·7	WNW	0·5
	6	38	55·0	WNW	0
	7	38	54·0	WNW	0
	8	38	52·5	W	0
	9	39	51·8	W	0
	10	38	50·7	W	0
	11	38	50·7	W	0
	Midnight.	30·38	51·0	W	0
Oct. 3.	1 A.M.	30·37	51·6	WSW	0
	2	35	51·8	WSW	0
	3	31	52·0	WSW	0
	4	30	52·2	WSW	0
	5	27	52·2	WSW	0·5
	6	24	52·0	WSW	2
	7	23	52·7	WSW	4
	8	21	53·6	WSW	5
	9	18	55·8	WSW	8
	10	16	58·2	WSW	11
	11	14	57·6	WSW	16
	Noon.	12	57·4	WSW	15
	1 P.M.	12	57·0	W	15
	⊙ 2	12	60·4	W	14
	3	13	58·7	WNW	17
	4	14	57·0	WNW	17
	5	15	54·7	WNW	11
	6	17	52·8	WNW	6
	7	19	52·2	WNW	6
	8	19	51·8	NW	6
	9	20	51·8	NW	4
	10	20	50·8	WNW	4
	11	20	50·3	WNW	3·5
	Midnight.	30·20	50·2	WNW	4
Oct. 4.	1 A.M.	30·20	50·0	WNW	4·5
	2	20	49·3	WNW	4·0
	3	19	48·8	WNW	7·5
	4	21	48·0	NW	5·5

UTRECHT—*Continued.*

Date.		Barometer at 68° F. and Sea-level, approx.	Temp.	Wind.	
				Direction.	Force.
1860		British Inches.	° F.		
Oct. 4.	5 A.M.	30·22	47·5	NW	3·5
	6	24	47·2	NW	4·0
	7	27	49·8	NW	3·5
	8	30	52·2	NW	5
	9	32	53·2	NW	7
	10	33	54·3	NW	12
	11	34	55·0	NW	15
	Noon.	36	56·0	NW	13
	1 P.M.	36	57·0	NW	14
	2	36	56·5	WNW	13
	3	37	55·2	WNW	11
	4	37	53·2	WNW	11
	5	37	51·8	WNW	7
	6	39	50·0	W	2
	7	39	49·2	W	0·5
	8	39	48·0	W	1·5
	9	37	48·6	W	2
	10	37	49·0	W	1
	11	36	48·2	W	0·5
	Midnight.	30·37	48·0	W	0·5
Oct. 5.	1 A.M.	30·35	48·0	W	0·5
	2	33	47·8	WSW	1
	3	31	47·3	WSW	1
	4	28	46·6	WSW	1·5
	5	28	46·4	WSW	3
	6	25	46·2	WSW	2
	7	22	47·5	SW	5
	8	17	49·7	SW	11
	9	15	51·2	WSW	15
	10	12	54·0	WSW	27
	11	11	53·6	W	26
	Noon.	10	52·2	WSW	23
	1 P.M.	09	53·0	WSW	28
	2	07	54·3	WSW	19
	3	06	54·7	W	18
	4	06	54·7	W	15
	5	06	54·5	W	16
	6	06	55·0	W	17
	7	07	55·2	W	17
	8	10	55·6	W	18
	9	11	55·8	WNW	9
	10	13	56·0	WNW	6
	11	14	55·6	NW	5·5
	Midnight.	30·15	55·4	NW	4

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3 at 1h. 30m. P.M.

Whole fall observed = 0·26 inch.

Interval corresponding = 14 hours.

Wind veered regularly from WSW through W to WNW, NW.

This is the best observed station for Barometer and Wind combined on the Continent; and the storm phenomena come out all the more clearly on that account.

(4.) GRONINGEN.

Lat. = 53° 15′ N. Long. = 6° 30′ E.

Date.		Barometer at 68° F. and Sea-level, approx.	Temp. of Air.	Wind. Direction.	Wind. Force.
1860		British Inches.	°F.		
Oct. 3.	1 A.M.	30·30		SW	0
	2	30·29		SW by S	0·5
	3	30·26		SW by S	0·5
	4	30·24		SW by S	0·5
	5	30·20		S by W	0·5
	6	30·16		S by W	0·5
	7	30·13		S by W	9
	8	30·11		SW by S	10
	9	30·08		SSW	17
	10	30·07		SSW	25
	11	29·97		SSW	27
	Noon.	29·97		SW by S	30
	1 P.M.	29·96		SW	22
	⊙ 2	29·95		WSW	31
	3	29·96	57·0	W	37
	4	29·97		W	33
	5	29·99		W by N	27
	6	30·02		W by N	25
	7	30·04		W by N	22
	8	30·05		W	25
	9	30·06		W	19
	10	30·07		W	15
	11	30·06		W by N	16
	Midnight.	30·06		W by N	20
Oct. 4.	1 A.M.	30·06		WNW	16
	2	30·06		W by N	13
	3	30·06		W by N	15
	4	30·07		W by N	14
	5	30·07		W by N	17
	6	30·11		WNW	22
	7	30·12		WNW	15
	8	30·15		W	21
	9	30·16		W	30
	10	30·19		W by N	25
	11	30·21		WNW	34
	Noon.	30·21		WNW	33
	1 P.M.	30·22		W by N	27
	2	30·23		W	39
	3	30·24	51·8	W	32
	4	30·23		W	25
	5	30·23		W by S	19
	6	30·23		W by S	12
	7	30·23		W by S	10
	8	30·23		WSW	9
	9	30·23		SW by W	6
	10	30·23		WSW	5
	11	30·22		WSW	5
	Midnight.	30·23		WSW	5

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3, at 2 P.M.
Whole fall observed = 0·35 inch.
Interval corresponding = 14 hours.
Wind veered from SSW, through West, to WNW.
Wind at West on Oct 3, at 4 P.M.
Both Barometer and Winds well observed at this Station.

(5.) ALTONA, OBSERVATORY.

Lat. = 53° 33′ N. Long. = 9° 57′ E.

Date.		Barometer at 68° F. and Sea-level, approx.	Wind. Direction.	Wind. Force.
1860		British Inches.		
Oct. 1.	6 A.M.	30·39	W	1
	2 P.M.	30·36	W	1
	10 P.M.	30·31		
2.	6 A.M.	30·31	WNW	0
	2 P.M.	30·31	NW	1
	10 P.M.	30·32		
3.	6 A.M.	30·22	SSW	1
	2 P.M.	30·00	SW	3
	⊙ 10 P.M.	29·98		
4.	6 A.M.	30·00	W	1
	2 P.M.	30·13	W	3
	10 P.M.	30·20		

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3, at 10 P.M.
Whole fall observed = 0·34 inch.
Interval corresponding = 24 hours.
Wind SSW and W.

(6.) MULHAUSEN IN THURINGIA.

Lat. = 51° 13′ N. Long. = 10° 30′ E.

Date.		Barometer at 68° F. and Sea-level, approx.	Wind. Direction.	Wind. Force.
1860		British Inches.		
Oct. 3.	6 A.M.	30·04	WSW	
	2 P.M.	29·88	SSW	8
	10 P.M.	29·87	SW	8
	⊙			
4.	6 A.M.	29·87	WSW	7
	2 P.M.	29·99	WSW	
	10 P.M.	30·08	WSW	
5.	6 A.M.	30·03	WSW	5
	2 P.M.	29·86	SSW	8
	10 P.M.	29·80	S	9

Conclusions deduced for this Station

Lowest Barometer on Oct. 3, at 11 P.M.
Whole fall observed = 0·17 inch.
Interval corresponding = 20 hours.
Wind generally from SW, but imperfectly observed.

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(7.) BAMBERG.

Lat. = 49° 58′ N. Long. = 11° 0′ E.

Date.	Barometer at 68° F. and Sea-level, approx.	Wind. Direction.
1860	British Inches.	
Oct. 3. 7 A.M.	30·01	S
2 P.M.	29·90	S
11 P.M.	29·85	SW
⊙		
Oct. 4. 7 A.M.	29·85	NNE
2 P.M.	30·03	N
11 P.M.	30·01	N

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3 at 12 P.M.
Whole fall observed = 0·16 inch.
Interval corresponding = 18 hours.
Winds imperfectly observed.

(8.) KIEL.

Lat. = 54° 20′ N. Long. = 11° 10′ E.

Date.	Barometer at 68° F. and Sea-level, approx.	Wind. Direction.
1860	British Inches.	
Oct. 3. 6 A.M.	30·22	W
2 P.M.	29·98	SW
⊙ 10 P.M.	29·94	SW
4. 6 A.M.	30·00	W
2 P.M.	30·13	W
10 P.M.	30·18	W

Conclusions deduced for this Station.

Lowest Barometer on Oct. 3 at 10 P.M.
Whole fall observed = 0·28 inch.
Interval corresponding = 16 hours.

(9.) MUNICH.

Lat. = 48° 9′ N. Long. = 11° 30′ E.

Date.	Barometer at 68° F. and Sea-level, approx.	Wind.	
		Direction.	Force.
1860	British Inches.		
Oct. 3. 8 A.M.	30·02	W	1
2 P.M.	29·95	W	1
6 P.M.	29·90	W	1
⊙			
4. 8 A.M.	29·86	W	2·5
2 P.M.	29·94	W	2·5
6 P.M.	30·00	W	1·5

Conclusions deduced for this Station.

Lowest Barometer on Oct. 4 at 4 A.M.
Whole fall observed = 0·16 inch.
Interval corresponding = 24 hours.
Wind West all through.

(10.) LEIPSIG.

Lat. = 51° 20′ N. Long. = 12° 30′ E.

Date.	Barometer at 68° F. and Sea-level, approx.	Wind.	
		Direction.	Force.
1860	British Inches.		
Oct. 3. 6 A.M.	30·02	SSW	0·1
2 P.M.	29·83	SW	2
10 P.M.	29·80		
⊙			
Oct. 4. 6 A.M.	29·82	SW	2
2 P.M.	29·90	W	3
10 P.M.	29·99	W	3

Conclusions deduced for this Station.

Lowest Barometer on Oct. 4 at 2 A.M.
Whole fall observed = 0·22 inch.
Interval corresponding = 30 hours.
Wind generally SW.

(11.) PRAGUE.

Lat. = 50° 5′ N. Long. = 14° 30′ E.

Date.	Barometer at 68° F. and Sea-level, approx.	Wind.	
		Direction.	Force.
1860	British Inches.		
Oct. 3. 6 A.M.	30·13	SW	0·5
2 P.M.	30·05	W	1·5
10 P.M.	29·97	W	2·5
⊙			
Oct. 4. 6 A.M.	29·95	W	1·0
2 P.M.	30·05	W	4·0
10 P.M.	30·17	W	1·5

Conclusions deduced for this Station.

Lowest Barometer on Oct. 4 at 3 A.M.
Whole fall observed = 0·18 inch.
Interval corresponding = 21 hours.
Winds insignificant.

(12.) BRESLAU.

Lat. = 51° 7′ N. Long. = 17° 0′ E.

Date.	Barometer at 68° F. and Sea-level, approx.	Wind.	
		Direction.	Force.
1860	British Inches.		
Oct. 3. 6 A.M.	30·10	W	1
2 P.M.	30·05	W	2
10 P.M.	29·94	W	1
⊙			
Oct. 4. 6 A.M.	29·93	W	2
2 P.M.	29·96	W	4
10 P.M.	30·11	W	2

Conclusions deduced for this Station.

Lowest Barometer on Oct. 4 at 6 A.M.
Whole fall observed = 0·17 inch.
Interval corresponding = 24 hours.
Winds insignificant.

GROUP IV. SUMMARISED.

TEUTONIC OR SOUTH EASTERN STATIONS.

LEADING FEATURES DEDUCED FROM THEM IN ORDER OF LONGITUDE.

No.	Stations.	Lat. N.	Long. E.	Date of Barometrical Depression.	Amount of such Depression.	Interval Corresponding.	Wind veered From	Wind veered Through	Wind veered To	Wind. Force 0-12.
No.	Last good English Station,	51° 28′	0° 0′	Hours. Oct. 3. 9 A.M.	Inch. 0·22	Hours. 11	SW	W	WNW	5
1	**Brussels**,	**50 51**	**4 21**	**Oct. 3. 2 P.M.**	**0·19**	**14**	**SW**	**WSW**	**W**	**8?**
2	Namur,	50 27	4 48	3. 4 P.M.	0·25	19	WSW	W	NNW	7
3	**Utrecht**,	**52 5**	**5 7**	**3. 1.30 P.M.**	**0·26**	**14**	**WSW**	**W**	**NW**	**10**
4	**Groningen**,	**53 15**	**6 30**	**3. 2 P.M.**	**0·35**	**14**	**SSW**	**W**	**WNW**	**10**
5	Altona,	53 33	9 57	3. 10 P.M.	0·34	24	SW	W	W ?	9
6	Mulhausen,	51 13	10 30	3. 11 P.M.	0·17	20	SW	WSW	WSW	8
7	Bamberg,	49 58	11 0	3. 12 P.M.	0·16	18	SW	NNE	N	
8	Kiel,	54 20	11 10	3. 10 P.M.	0·28	16	SW	W	W	
9	Munich,	48 9	11 30	4. 4 A.M.	0·16	24	W	W	W	8
10	Leipsig,	51 20	12 30	4. 2 A.M.	0·22	30	SW	SW	SW	8
11	Prague,	50 5	14 30	4. 3 A.M.	0·18	21	W	W	W	6
12	Breslau,	51 7	17 0	4. 6 A.M.	0·17	24	W	W	W	4

GROUP V

RUSSIAN AND SIBERIAN STATIONS,

14 IN NUMBER;

BETWEEN 41° AND 60° NORTH LATITUDE, AND 24° AND 119° EAST LONGITUDE.

ARRANGED IN ORDER OF LONGITUDE.

(1.) REVEL.

Lat. = 59° 30′ N. Long. = 24° 45′ E.

Date.			Barometer at 68° F. and Sea-level, approx.	Wind.	
				Direction.	Force. 0 – 8.
1860			British Inches.		
Oct.	1.	7 A.M.	30·55	S	1
		2 P.M.	30·56		0
		9 P.M.	30·55	E	1
	2.	7 A.M.	30·37	S	1
		2 P.M.	30·25	S	1
		9 P.M.	30·11	S	1
	3.	7 A.M.	29·89	S	1
		2 P.M.	29·78	S	1
		9 P.M.	29·68	S	1
	4.	7 A.M.	29·38	S	2
		2 P.M.	29·29	SW	3
		9 P.M.	29·12	SW	2
	⊙				
	5.	7 A.M.	29·27	W	3
		2 P.M.	29·43	W	3
		9 P.M.	29·50	W	2

Conclusions deduced for this Station.

Lowest Barometer on Oct. 4, at 10 P.M.

Whole fall observed = 1·44 inch; during 80 hours.

Wind veered from S, through SW to W, indicating the Station to be SE of whirl's centre, and the latter to be moving to NE.

Cold weather followed the gale.

(2.) ST PETERSBURG.

Lat. = 59° 56′ N. Long. = 30° 17′ E.

Date.			Barometer at 68° F. and Sea-level, approx.	Temperature.		Wind.	
				Dry bulb.	Wet bulb.	Direction.	Force. 0 – 8.
1860			British Inches.	° F.	° F.		
Oct.	1.	1 A.M.	30·64				0
		2	65			N	1
		3	65			N	1
		4	65			N	1
		5	65			N	1
		6	65			N	1
		7	65			N	1
		8	65			SE	1
		9	66			SE	1
		10	66			SE	1
		11	67			SE	1
		Noon.	67			SE	1
		1 P.M.	65			SE	1
		2	63			SE	1
		3	62	47·2	44·0	SE	1
		4	61			SE	1
		5	61			SE	1
		6	60			SE	1
		7	58			SE	1
		8	57			SE	1
		9	56			SE	1
		10	56			SE	0
		11	54			SE	0
		Midnight.	30·53			SE	0
Oct.	2.	1 A.M.	30·52			SE	0
		2	51			SE	0
		3	49			SE	0
		4	49			SE	0

(2.) ST PETERSBURG—*Continued.*

Date.			Barometer at 68° F. and Sea-level, approx.	Temperature.		Wind.	
				Dry bulb.	Wet bulb.	Direction.	Force. 0 – 8.
1860			British Inches.	° F.	° F.		
Oct.	2.	5 A.M.	30·48			SE	0
		6	47			SE	0
		7	47			SE	0
		8	47			SE	0
		9	45			SE	0
		10	44			E	1
		11	42			E	1
		Noon.	42			SE	1
		1 P.M.	39			SE	1
		2	36			SE	1
		3	35	46·5	43·5	SE	1
		4	33			SE	1
		5	29			SE	1
		6	25			SE	1
		7	24			SE	1
		8	22			SE	1
		9	19			SE	1
		10	18			SE	1
		11	16				0
		Midnight.	30·13				0
Oct.	3.	1 A.M.	30·09				0
		2	08				0
		3	04				0
		4	01				0
		5	29·98				0
		6	93				0
		7	92			S	0
		8	93			S	0
		9	91			S	0
		10	91			S	0
		11	90			S	0
		Noon.	88			SW	0
		1 P.M.	88			SW	0
		2	86			SW	1
		3	85	47·7	44·8	SW	1
		4	85			SW	1
		5	83			SW	0
		6	84			SW	0
		7	83			SW	0
		8	80			SW	0
		9	81			SW	0
		10	80			SW	0
		11	79			SW	0
		Midnight.	29·77			S	1
Oct.	4.	1 A.M.	29·75			S	1
		2	72			S	1
		3	71			S	1
		4	69			S	1
		5	67			S	1
		6	71			S	1
		7	70			S	1
		8	63			S	1
		9	62			S	1
		10	61			S	1
		11	60			S	2

(2.) ST PETERSBURG—*Continued.*

Date.			Barometer at 68° F. and Sea-level, approx.	Temperature.		Wind.	
				Dry bulb.	Wet bulb.	Direction.	Force. 0 – 3.
1860			British Inches.	° F.	° F.		
Oct.	4.	Noon.	29·58			S	2
		1 P.M.	60			S	2
		2	60			S	2
		3	57	51·7	47·8	S	2
		4	53			S	2
		5	51			S	2
		6	50			S	2
		7	49			S	2
		8	46			S	2
		9	45			S	2
		10	43			S	2
		11	42			S	2
		Midnight.	29·40			S	2
Oct.	5.	1 A.M.	29·37			S	2
		2	34			S	2
		3	32			S	2
		4	29			S	2
		5	26			S	2
		6	24			S	2
		7	24			S	2
		8	23			S	2
		⊙ 9	23			SW	2
		10	25			SW	2
		11	27			SW	2
		Noon.	29			SW	2
		1 P.M.	30			SW	2
		2	31			SW	2
		3	38	46·0	43·5	SW	3
		4	40			W	3
		5	41			W	3
		6	42			W	2
		7	44			W	2
		8	45			W	2
		9	45			SW	2
		10	45			SW	2
		11	45			SW	2
		Midnight.	45			SW	2

Conclusions deduced for this Station.

Lowest Barometer on Oct. 5, at 8.30 A.M.
Whole fall observed = 1·44 inch.
Interval for that fall = 92 hours.
Wind veered from S, through SW to West, indicating the station to be SE of whirl's centre, and that to be moving to NE.

Cold weather followed the gale. On Oct. 5, at 2 P.M., the Neva had risen more than 3 feet.

N.B.—The observations of Barometer and Thermometer observed in the original at every hour at this station are splendid and worthy of the best savants; but the notices of wind's force and direction, and also of the rain are paltry and wanting in all accuracy and refinement.

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(3.) ODESSA.

Lat. = 46° 30′ N. Long. = 30° 45′ E. Height not stated.

Date.		Barometer at 68° F. and Sea-level, approx.	Temperature of Air.	Wind. Direction.	Wind. Force 0–8.
1860		British Inches.	° F.		
Oct. 6.	6 A.M.	29·94		SW	1
	☉ 2 P.M.	29·93	60·3	SW	1
	10 P.M.	29·96		W	1
Oct. 7.	6 A.M.	30·04		NW	2
	2 P.M.	30·06	54·5	NW	2
	10 P.M.	30·15		NW	1
Oct. 8.	6 A.M.	30·15			0
	2 P.M.	30·04	58·4	SW	1
	10 P.M.	29·99		SW	2

Conclusions deduced for this Station.

Lowest Barometer on Oct. 6 at 3 P.M.

Whole subsequent rise observed = 0·22 inch, interval for it = 32 hours.

The Winds were not distinctly affected, but low temperature followed.

(4.) NICOLAIEFF.

Lat. = 46° 55′ N. Long. = 31° 55′ E. Height not stated.

Date.		Barometer at 68° F. and Sea-level, approx.	Temperature of Air.
1860		British Inches.	° F.
Oct. 6.	8 A.M.	29·94	
	10 A.M.	29·94	
	Noon.	29·94	57·7
	2 P.M.	29·94	
	10 P.M.	29·94	
7.	8 A.M.	29·94	
	10 A.M.	29·96	
	Noon.	29·96	
	2 P.M.	29·95	61·2
	10 P.M.	29·94	
8.	8 A.M.	29·98	
	10 A.M.	29·97	
	Noon.	29·97	
	2 P.M.	29·96	60·2
	10 P.M.	29·99	

Conclusions deduced for this Station.

Barometer very sluggish here.

Lowest Barometer probably on Oct. 6 about Noon.

(5.) POLKOVA.

Lat. = 49° 35′ N. Long. = 34° 38′ E. Height not stated.

Date.		Barometer at 68° F. and Sea-level, approx.	Temperature of Air.	Wind. Direction.	Wind. Force 0–8.
1860		British Inches.	° F.		
Oct. 6.	7 A.M.	29·96			0
	2 P.M.	29·94	55·0	S	2
	☉ 9 P.M.	29·93		SW	2
7.	7 A.M.	29·94		NW	1
	2 P.M.	29·95	48·3	W	1
	9 P.M.	29·96		S	1
8.	7 A.M.	29·98		S	1
	2 P.M.	29·97	51·4	SW	1
	9 P.M.	29·97		W	2

Conclusions deduced for this Station.

Lowest Barometer on Oct. 6 at 9 P.M.

Whole fall observed insignificant, perhaps from the Barometer being sluggish.

Wind veered regularly from SW, through West, probably to NW.

Temperature decreased after the passage of the Barometric depression.

(6.) KALOUGA.

Lat. = 54° 45′ N. Long. = 36° 30′ E. Height not stated.

Date.		Barometer at 68° F. and Sea-level, approx.	Temp. of Air.	Wind. Direction.	Wind. Force 0–8.	Remarks.
1860		British Inches.	° F.			
Oct. 6.	7 A.M.	30·04		S	2	Rain.
	2 P.M.	29·82	46·0	SW	1	Rain.
	9 P.M.	29·64		SW	3	Rain.
☉ 7.	7 A.M.	29·46		SE	1	Rain.
	2 P.M.	29·73	43·8	NW	2	Rain.
	9 P.M.	29·99		NW	2	Rain-cloud.
8.	7 A.M.	30·09		W	1	Snow-cloud.
	2 P.M.	30·07	44·4	SW	1	Rain.
	9 P.M.	30·02			0	Rain-cloud.

Conclusions deduced for this Station.

Lowest Barometer on Oct. 7, at 3 A.M.

Whole fall observed = 0·58 inch, in interval of 24 hours.

Wind veered from SW, through variables, to NW.

(7.) CATHERINODAR.

Lat. = 45° 3′ N. Long. = 38° 53′ E.

Date.		Barometer at 68° F. and Sea-level, approx.	Temperature of Air.	Wind. Direction.	Wind. Force 0—3.
1860		British Inches.	° F.		
Oct. 6.	8 A.M.	30·04		E	1
	2 P.M.	30·02	76·3	E	1
	9 P.M.	30·00		E	1
7.	8 A.M.	29·98		E	1
	2 P.M.	29·96	68·8	E	1
	9 P.M.	29·95			0
⊙ 8.	8 A.M.	29·95			0
	2 P.M.	29·95	64·2		0
	9 P.M.	30·01		E	1

Conclusions deduced for this Station.

Lowest Barometer on Oct. 8, at 3 A.M. probably, from the observations as recorded, but they seem far from accurate.

Insignificant in amount, but accompanied with large change of temperature.

(8.) TEMNIKOV.

Lat. = 54° 50′ N. Long. = 43° 15′ E. Height not stated.

Date.		Barometer at 68° F. and Sea-level, approx.	Temp.	Winds not Observed.	Remarks.
1860		British Inches.	° F.		
Oct. 6.	8 A.M.	30·07			Rain.
	8 P.M.	30·01	47·8		Rain.
⊙ 7.	8 A.M.	29·55			Rain.
	8 P.M.	29·63	41·0		Rain.
8.	8 A.M.	29·74			Rain.
	8 P.M.	29·91	41·0		Rain.

Conclusions deduced for this Station.

Lowest Barometer on Oct. 7, at 5 A.M.

Whole fall observed = 0·52 inch in interval of 21 hours.

This fall was therefore smart, and was followed by much lowering of temperature.

(9.) TIFLIS.

Lat. = 41° 42′ N. Long. = 44° 48′ E. Height unknown.

Date.		Barometer at 68° F. and Sea-level, approx.	Temperature of Air.	Wind. Direction.	Wind. Force 0—3.
1860		British Inches.	° F.		
Oct. 6.	Noon.	30·07		E	1
	1 P.M.	30·04		SE	1
	2	30·03		SE	1
	3	30·01	69·3	SE	1
	4	30·00		SE	1
	5	29·99		SE	1
	6	30·00		SE	1
	7	30·01		SE	1
	8	30·02		SE	0
	9	30·02			0
	10	30·02			0
	11	30·02			0
	Midnight.	30·01		NE	0
Oct. 7.	1 A.M.	30·01		NE	0
	2	30·00		N	1
	3	29·99		N	0
	4	29·98		N	0
	5	29·97		NW	1
	6	29·97		NW	1
	7	29·97		NW	1
	8	29·97		NW	1
	9	29·96		NW	1
	10	29·94		NW	1
	11	29·92		NW	1
	Noon.	29·89		NW	1
	1 P.M.	29·87		NW	1
	2	29·86		NW	1
	⊙ 3	29·86	69·8	NW	2
	4	29·86		NW	2
	5	29·86		NW	2
	6	29·88		NW	1
	7	29·89		NW	2
	8	29·90		NW	2
	9	29·89		NW	3
	10	29·90		NW	3
	11	29·92		NW	1
	Midnight.	29·92		NW	1
Oct. 8.	1 A.M.	29·93		NW	2
	2	29·95		NW	2
	3	29·97		NW	2
	4	29·99		NW	3
	5	30·03		NW	3
	6	30·02		NW	3
	7	30·07		NW	2
	8	30·09		NW	1
	9	30·09		NW	2
	10	30·09		NW	2
	11	30·08		NW	2

Conclusions deduced for this Station.

Lowest Barometer on Oct 7 at 3 P.M.

Whole fall observed = 0·21 inch; interval = 26 hours.

Wind very rudely observed, said to be all along from the NW, but freshened in force with the passage of the Barometrical depressions over the place.

No decrease of Temperature seems to have followed.

The situation must, however, be exceptional, being under the lee of the Caucasus, for the wind that was blowing: the centre of the whirl being at the same time in the direction of the Caspian Sea, and NE of it, and moving Eastward.

(10.) ORENBURG.

Lat. = 51° 45′ N. Long. = 55° 15′ E. Height unknown.

Date.	Barometer at 68° F. and Sea-level, approx.	Temperature of Air.	Wind.		Rain.
			Direction.	Force 0—3.	
1860	British Inches.	° F.			
Oct. 6. 10 A.M.	30·08		E	1	
2 P.M.	30·06	55·4	S	1	
10 P.M.	30·01		S	1	
7. 10 A.M.	29·91		E	1	
2 P.M.	29·84	60·0	SSE	3	At 7 hours.
10 P.M.	29·73		SE	3	At 10 hours.
⊙					
8. 10 A.M.	29·78		SSE	2	
2 P.M.	29·87	50·0	SSE	3	At 2 and 3
10 P.M.	29·98		SW	1	hours.

Conclusions deduced for this Station.

Lowest Barometer on Oct. 7 at midnight probably, or early on Oct. 8.

Whole fall observed = 0·35 inch, in interval of 36 hours.

Wind freshened during the time of the Barometrical depression passing; the veering of the wind indistinct.

(11.) EKATERINBURG.

Lat. = 56° 50′ N. Long. = 60° 40′ E. Height unknown.

Date.	Barometer at 68° F. and Sea-level, approx.	Temperature.		Wind.	
		Dry Bulb.	Wet Bulb.	Direction.	Force 0 – 3.
1860	British Inches.	° F.	° F.		
Oct. 6. Noon.	30·07			SE	1
1 P.M.	30·06			SE	1
2	30·05			SE	1
3	30·06	50·8	42·7	SE	1
4	30·06			SE	1
5	30·06			SE	1
6	30·07			SE	0
7	30·08			SE	0
8	30·09			SE	0
9	30·10				0
10	30·10				0
11	30·10				0
Midnight.	30·10				0
Oct. 7. 1 A.M.	30·09				0
2	30·08				0
3	30·07				0

(11.) EKATERINBURG—*Continued.*

Date.	Barometer at 68° F. and Sea-level, approx.	Temperature.		Wind.	
		Dry Bulb.	Wet Bulb.	Direction.	Force 0 – 3.
1860	British Inches.	° F.	° F.		
Oct. 7. 4 A.M.	30·07			S	0
5	30·06			S	0
6	30·05			S	0
7	30·04				0
8	30·02				0
9	30·02				0
10	30·02				0
11	30·02				0
Noon.	30·01				0
1 P.M.	29·96			SE	1
2	29·99			SE	1
3	29·98	50·4	43·7	SE	1
4	29·98			SE	1
5	29·97			SE	1
6	29·98			SE	1
7	29·98			SE	1
8	29·97			SE	0
9	29·96			SE	0
10	29·96			SE	0
11	29·96			SE	1
Midnight.	29·95			SE	1
Oct. 8. 1 A.M.	29·94			SE	0
2	29·92			SE	0
3	29·91			SE	0
4	29·89			SE	1
5	29·86			SE	1
6	29·84			SE	1
7	29·83			SE	1
8	29·83			SE	1
9	29·83			SE	1
10	29·82			SE	1
11	29·82			SE	1
⊙ Noon.	29·82			SE	1
1 P.M.	29·82			SE	1
2	29·82			SE	1
3	29·83	44·0	42·4	SE	1
4	29·85			SE	0
5	29·85			SE	0
6	29·85			SE	0
7	29·85			SE	0
8	29·85				0
9	29·86				0
10	29·86				0
11	29·86				0
Midnight.	29·87			S	0
Oct. 9. 1 A.M.	29·87			S	0
2	29·87				0
3	29·87			S	0
4	29·88			S	1
5	29·90			S	1
6	29·92			SW	1
7	29·95			SW	1
8	29·96			SW	1
9	29·98			SW	1
10	29·98			SW	1
11	29·99			SW	1

Conclusions deduced for this Station.

Lowest Barometer on Oct. 8 at Noon.

Whole depression observed = 0·28 inch; interval for it = 40 hours.

The movements of the Barometer very gentle; the wind undisturbed, but a large depression of Temperature follows the Barometric depression.

(12.) TOBOLSK.

Lat. = 58° 20′ N. Long. = 67° 28′ E. Height not stated.

Date.		Barometer at 68° F. and Sea-level, approx.	Temperature of Air.	Wind.	
				Direction.	Force.
1860		British Inches.			
Oct. 6.	7 A.M.	30·22		SE	
	3 P.M.	30·15	53·3	S	
	11 P.M.	30·14		S	
7.	7 A.M.	30·13		S	
	3 P.M.	30·11	55·5	S	
	11 P.M.	30·08		S	
8.	7 A.M.	30·03		S	
	⊙ 3 P.M.	29·93	55·0	SW	
	11 P.M.	29·94		S	

Conclusions deduced for this Station.

Lowest Barometer on Oct. 8 at 6 P.M.

Whole fall observed = 0·29 inch, in interval of 59 hours, but the observations much curtailed.

(13.) BARNAOUL.

Lat. = 53° 14′ N. Long. = 83° 22′ E.

Observations for this place extend only from Oct. 6 to Oct. 9 at Noon; at that last date a barometric depression commenced 24 hours before, was proceeding at its most rapid rate, and culminated probably some time on Oct. 10.

(14.) NERTCHINSK.

Lat. = 51° 27′ N. Long. = 119° 22′ E.

The observations from this station extend only from Oct. 6 to Oct. 9 at Noon; at that last date a gentle barometric depression had begun, but did not probably culminate until some time on Oct. 10.

GROUP V. SUMMARISED.

RUSSIAN AND SIBERIAN STATIONS.

LEADING CONCLUSIONS DEDUCED FROM THEM, IN TWO GROUPS, NORTHERN AND SOUTHERN, BUT OTHERWISE IN ORDER OF LONGITUDE.

No.	Stations.	Lat. N.	Long. E.	Date of Barometric Depression.			Amount of such Depression.	Interval Corresponding.	Wind Veered			Wind Force, 0 - 12
									From	Through	To	
	Last good Scandinavian Station,	57° 40′	18° 20′	Oct.	4.	12 A.M.	Inch. 1·33	Hours. 76	SW	W	NW	10
1	Revel,	59 30	24 45	Oct.	4.	10 P.M.	1·44	80	S	SW	W	11
2	**St. Petersburg,**	**59 56**	**30 17**	**Oct.**	**5.**	**8.30 A.M.**	**1·44**	**92**	**S**	**SW**	**W**	**10**
6	Kalouga,	54 45	36 30	Oct.	7.	3 A.M.	0·58	24	SW	Var.	NW	9
8	Temnikov,	54 50	43 15	Oct.	7.	5 A.M.	0·52	21				
10	Orenburg,	51 45	55 15	Oct.	8.	1 A.M.	0·35	26	SE	SSE	SSE	9
11	**Ekaterinburg,**	**56 50**	**60 40**	**Oct.**	**8.**	**Noon.**	**0·28**	**40**	**SE**	**SE**	**SE**	**3**
12	Tobolsk,	58 20	67 28	Oct.	8.	6 P.M.	0·29	59	SW	S	S	
13	Barnaoul,	53 14	83 22	Oct.	10.	(x)						
14	Nertchinsk,	51 27	119 22	Oct.	14.	(x)						
	Last good Teutonic Station,	50 5	14 30	Oct.	4.	3 A.M.	0·18	21	W	W	W	4
3	Odessa,	46 30	30 45	Oct.	6.	3 P.M.	0·22	32	SW	SW	W	4
4	Nicolaieff,	46 55	31 55	Oct.	6.	Noon.	0·04	36				
5	Polkova,	49 35	34 38	Oct.	6.	9 P.M.	0·04	36	S	SW	NW	6
7	Catherinodar,	45 3	38 53	(Oct.	8.	3 A.M.)	0·09	48	E	Calm	Calm	2
9	**Tiflis,**	**41 42**	**44 48**	**Oct.**	**7.**	**3 P.M.**	**0·21**	**28**	**NW**	**NW**	**NW**	**8**

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GROUP VI.

WESTERLY AND AMERICAN,

OR 11 STATIONS;

BETWEEN 18° AND 65° N. LATITUDE, AND 21° AND 79° W. LONGITUDE.

ARRANGED IN ORDER OF LONGITUDE.

(1.) REYKJAVICK, ICELAND.

Lat. = 64° 8′ N. Long. = 21° 55′ West. Height unknown, and uncorrected.

Date	Barometer by Greiner junior, of Berlin, at 68° F.
1860 Hour unknown.	British Inches
September 30.	29·66
October 1. ⊙	29·04
2.	29·66
3.	29·63
4.	29·57
5.	29·50
6.	29·49
7.	29·61
8.	29·84
9.	30·01
10.	29·88

Conclusions deduced for this Station.

Lowest Barometer on Oct. 1 at midnight probably.

Whole fall observed = 0·62 inch, but probably greater in the too long interval between the observations.

Interval for the fall observed = 24 hours.

Nothing but the above daily Barometric heights, or rather their equivalents in old French inches and decimals, are given for this station.—no records of wind, weather, or anything else.

(2.) OFF GREENLAND.

H.M. SHIP "BULLDOG." Captain Sir L. M'Lintock.

Lat. = 60° 0′ N. Long. = 47° 30′ W.

Date		Lat.	Long.	Barometer at 68° F. and Sea-level, approx.	Temp. of Air.	Temp. of Evaporation.	Wind. Direction.	Wind. Force.	Description.
1860		N.	W.	British Inches	° F.	° F.			
Sept. 26.	4 A.M.			[illegible]			SW	4	
	8 A.M.			29·97					
	Noon	58·23	48·50	30·00					
	4 P.M.			29·98	46·8	45·6			
	8 P.M.			29·91			SE	3	
	Midnight			[illegible]			SE	5	
Sept. 27.	4 A.M.			29·82			ESE	6	Heavy squalls.
	8 A.M.			29·70			E	7	
	Noon	59·0	46·30	29·55			E	8	
	4 P.M.			29·47	41·2	40·8			
	8 P.M.			29·46			ESE	10	
	Midnight			29·47			ESE	8	
Sept. 28.	4 A.M.			29·40			SE	7	
	8 A.M.			29·38			S by E	6	
	⊙ Noon	59·55	48·13	29·35			S	5	
	4 P.M.			29·40	41·2	40·2	SSW	4	
	8 P.M.			29·43			S	4	
	Midnight			29·60			S by W		
Sept. 29.	4 A.M.			29·60			SW	4	Heavy cross swell from Eastward and S.W.
	8 A.M.			29·64			SW	4	
	Noon	60·20	47·09	29·71			S	4	
	4 P.M.			29·70	35·0	35·0	SE	3	
	8 P.M.			29·70			SE	3	
	Midnight			29·59			SE	2	
Sept. 30.	4 A.M.			29·46			SE		
	⊙ 8 A.M.			29·46				0	
	Noon			29·50				0	
	4 P.M.			29·56	36·0	36·0	SSE	2	
	8 P.M.			29·63			SW	2	
	Midnight			29·65			WSW	1	
Oct. 1.	4 A.M.			29·72			SW	2	
	8 A.M.			29·80			WNW	1	
	Noon			29·85				0	
	4 P.M.			29·87	35·6	35·2	W	1	
	8 P.M.			29·90			WNW	2	
	Midnight			29·92			WSW	2	

Conclusions deduced for this Station.

Lowest Barometer on Sept. 28 at Noon.
Whole fall observed = 0·65 inch.
Interval for that fall = 48 hours.
Wind veered from SE, through S, to SSW.
Station, therefore, Eastward of centre of whirl.
Movement of whirl centre from S to N.

N.B.—A *second* depression occurred on Sept. 30 at 8 A.M., with fall of 0·26 inch in 24 hours, and rise afterwards of 0·47 inch in 40 hours. The wind veered from WSW, through W, to WNW, or station was South of centre of whirl, and whirl travelling from W to E. A large fall of temperature is observable over the period of both barometrical depressions.

(3.) NEWFOUNDLAND.

Capt. MURRAY, R.E.

Lat. = 47° 35′ N. Long. = 52° 42′ W. Height = 130 feet.

Date.		Barometer at 68° F. and Sea-level, approx.	Temperature of Air.	Wind.	
				Direction.	Velocity in Miles p. hour.
1860		British Inches.	° F.		
Sept. 25.	9.30 A.M.	30·32		E	0
	3.30 P.M.	30·12	53·8	E	0
26.	9.30 A.M.	29·96		W	0
	3.30 P.M.	29·87	62·7	S	0
27. ⊙	9.30 A.M.	29·83		W	26
	3.30 P.M.	29·83	53·2	W	24
28.	9.30 A.M.	30·13		W	14
	3.30 P.M.	30·14	51·3	W	10
29.	9.30 A.M.	29·78		S	0
⊙	3.30 P.M.	29·63	50·0	W	14
30.	9.30 A.M.	30·09		W	21
	3.30 P.M.	30·15	49·6	W	0
Oct. 1.	9.30 A.M.	30·36		NW	0
	3.30 P.M.	30·43	42·4	NW	0
2.	9.30 A.M.	30·53		W	0
	3.30 P.M.	30·50	48·6	SW	0

Conclusions deduced for this Station.

Two Barometrical depressions were observed, and two storms experienced.
First depression on Sept. 27, at Noon.
Whole fall observed = 0·49 inch.
Interval for that fall = 50 hours.

Second depression on Sept. 29th, at 3 P.M.
Whole fall observed = 0·51 inch, in interval of 24 hours.
Whole subsequent rise = 0·90 inch, in interval of 66 hours.

A large fall of temperature is observable over the period of both barometrical depressions.

The Wind was generally Westerly in both storms, but was too coarsely observed to be of any use. The velocity was instrumentally observed, probably well, and is entered in the original record to three places of decimals of a mile.

(4.) HALIFAX, NOVA SCOTIA.

Colonel NELSON, R.E.

Lat. = 44° 39′ N. Long. = 63° 37′ W. Height = 8 feet.

Date.		Barometer at 68° F. and Sea-level, approx.	Temp. of Air.	Temp. of Evap.	Wind.	
					Direction.	Velocity in Miles per Hour
1860		British Inches.	° F.	° F.		
Sept. 25.	9.30 A.M.	30·10			S	16
	3.30 P.M.	29·99	63·6	59·4	SSW	19
26.	9.30 A.M.	30·07			WSW	19
	3.30 P.M.	29·71	60·4	53·7	WSW	51
⊙ 27.	9.30 A.M.	30·06			NNW	41
	3.30 P.M.	30·08	54·4	49·4	W	42
28.	9.30 A.M.	30·13			W	10
⊙	3.30 P.M.	29·96	54·4	49·4	SW	27
29.	9.30 A.M.	30·11			NW	24
	3.30 P.M.	30·13	44·4	40·0	NW	27
30.	9.30 A.M.	30·32			NW	25
	3.30 P.M.	30·39	42·9	39·5	NW	27
Oct. 1.	9.30 A.M.	30·48			NW	16
	3.30 P.M.	30·49	48·6	44·4	SW	19

Conclusions deduced for this Station.

Two Barometric depressions were observed, and two storms experienced.
First depression on Sept. 26, at 10 P.M.
Whole fall observed = 0·39 inch, in interval of 30 hours.
Second depression on Sept. 28, at 3·30 P.M.
Whole fall observed = 0·17 inch, in interval of 6 hours.
Whole subsequent rise = 0·52 inch, in 66 hours.
The second half of this second depression brought in very low temperature.
Wind veered from WSW, through West probably to NNW, in first storm; and from SW, through West probably to NW, in second storm.
Therefore Station was South of both whirl centres, and they were both moving from W to E.

(5.) BERMUDA.

Lieut. SANDFORD, R.E.

Lat. 32° 23′ N. Long. = 64° 40′ W, and Height = 123 feet.

Date.		Barometer at 68° F. and Sea-level, approx.	Temp. of Air.	Temp. of Evap.	Wind.	
					Direction.	Velocity in Miles per hour.
1860		British Inches.	° F.	° F.		
Sept. 24.	3.30 A.M.	30·14			SSW	26
	9.30 A.M.	30·08			SE	10
	3.30 P.M.	30·04	72·7	71·0	SSE	28
	9.30 P.M.	30·06			S	24
25.	3.30 A.M.	30·09			SE	10
	9.30 A.M.	30·02			S by E	28
	⊙ 3.30 P.M.	30·00	77·5	74·5	WSW	22
	9.30 P.M.	30·06			W by S	20
26.	3.30 A.M.	30·03			S by E	24
	9.30 A.M.	30·18			N	7
	3.30 P.M.	30·19	78·0	73·0	NNW	10
	9.30 P.M.	30·21			N	7
27.	⊙ 3.30 A.M.	30·10			N	17
	9.30 A.M.	30·32			NE	24
	3.30 P.M.	30·28	78·0	73·0	E by N	17
	9.30 P.M.	30·32			E by N	14
28.	3.30 A.M.	30·28			N by E	7
	9.30 A.M.	30·30			E	7
	3.30 P.M.	30·22	79·5	75·0	ESE	7
	⊙ 9.30 P.M.	30·21			E	7
29.	3.30 A.M.	30·31			E	7
	9.30 A.M.	30·24			N	7
	3.30 P.M.	30·18	75·0	71·0	NNE	7
	9.30 P.M.	30·22			ENE	7
30.	3.30 A.M.	30·23			N	7
	9.30 A.M.	30·25			E by N	7
	3.30 P.M.	30·25	75·0	69·0	NE	22
	9.30 P.M.	30·29			E	28

Conclusions deduced for this Station.

There were three Barometric depressions and gales accompanying, but they were insignificant in amount and force.

The first Barometric depression and storm occurred on Sept. 25, at 3.30 P.M.

The second, a very short period one, on Sept. 27, at 3.30 A.M.; and the third, on the 28th, at 9.30 P.M.

(6.) BARQUE "ELBE."

Capt. BALL.

Lat. = 40° 58′ N. Long. = 69° 0′ W.

Date.	Lat. N.	Long. W.	Barom. at or near 68° F.	Temp. of Air.	Temp. of Sea Water.	Wind.	
						Direction.	Force.
1860			Brit. In.	° F.	° F.		
Sept. 24. 4 A.M.			29·96				
9 A.M.	. .	. .	29·95				
Noon.	39 47	66 46	29·94	75	75	NNE	3
3 P.M.			29·90				
8 P.M.			29·89			NE	5
25. 4 A.M.			29·84			SE	1
9 A.M.			29·82				
Noon.	40 58	68 16	29·74	74	70	SSW	5
3 P.M.			29·68				
8 P.M.			29·60			SSW	6
⊙ 26. 4 A.M.			29·61			NW	8
9 A.M.			29·62				
Noon.	40 58	69 40	29·72	59	58	W	6
3 P.M.			29·72			WNW	8
8 P.M.			29·88			NWbyW	5
27. 4 A.M.			29·96			NNW	3
9 A.M.			30·04	62	64		
Noon.	40 1	70 50	30·00			WNW	2

Conclusions deduced for this Station.

The first only of the two American Barometrical depressions is contained in the portion of the log of this ship as furnished.

The depression occurred on Sept. 25 at 10h. P.M.

Whole fall observed = 0·36 inch, interval = 42 hours.

Wind veered from SSW probably through West to NW.

The second portion of the storm was accompanied with great lowering of temperature.

(7.) QUEBEC, CANADA EAST.

Lieut.-Col. MENZIES, R.E.

Lat. = 46° 49′ N. Long. = 71° 12′ W, and height 230 feet.

Date.	Barometer at 68° F. and Sea-level, approx.	Temp. of Air.	Temp. of Evap.	Wind.	
				Direction.	Velocity in Miles p. hour.
	British Inches.	° F	F		
Sept. 24. 9.30 A.M.	29·84			E	0
3.30 P.M.	29·80	73·0	57·0	E	7
25. 9.30 A.M.	29·58			SE	0
⊙ 3.30 P.M.	29·47	60·0	55·0	E	9
26. 9·30 A.M.	29·58			W	0
3.30 P.M.	29·66	56·0	50·0	W	35

(7.) QUEBEC, CANADA EAST—*Continued.*

Date.		Barometer at 68° F. and Sea-level, approx.	Temp. of Air.	Temp. of Evap.	Wind.	
					Direction.	Velocity in miles p. hour.
1860		British Inches.	° F.	° F.		
Sept. 27.	9.30 A.M.	30·04			W	0
	3.30 P.M.	29·97	55·0	54·0	W	17
28.	9.30 A.M.	29·78			NE	9
⊙	3.30 P.M.	29·77	45·0	41·0	W	0
29.	9.30 A.M.	30·15			W	0
	3.30 P.M.	30·07	44·0	40·0	W	0
30.	9.30 A.M.	Not taken.				
	3.30 P.M.	Not taken.				
Oct. 1.	9.30 A.M.	30.21			SW	0

Conclusions deduced for this Station.

There were two Barometrical depressions and two accompanying gales, but they were not very important.

The first depression occurred on Sept. 25 at 3.30 P.M., with the whole fall observed = 0·37 inch, in interval of 30 hours.

The second depression occurred on Sept. 28th at 3.30 P.M., with the whole fall observed = 0·27 inch in interval of 30 hours, with a subsequent rise of 0·38 inch, in 18 hours.

The winds were generally from the West, but the second barometrical depression was marked with a very low temperature.

(8.) ST. MARTIN, ISLE JESUS, CANADA EAST.

Observatory, Dr SMALLWOOD.

Lat. = 45° 22′ N. Long. = 73° 56′ W. Height 118 feet.

Date.		Barometer at 68° F. and Sea-level, approx.	Temp. of Air in Shade.	Temp. of Evap.	Wind.		Rain Fall in Inches.
					Direction.	Horizontal movement in Miles.	
1860		British Inches.	° F.	° F.			
Sept. 23.	6 A.M.	30·18			SW by W	1	
	2 P.M.	30·24	60·0	50·9	SSW	20	
	10 P.M.	30·22			SE	25	
24.	6 A.M.	29·96			SSE	70	
	2 P.M.	29·83	76·3	67·9	SE	105	
	10 P.M.	29·90			SE by E	27	1·30
25.	6 A.M.	29·69			SSE	3	2·11
	⊙ 2 P.M.	29·60	62·8	59·4	WSW	137	1·06
	10 P.M.	29·66			WSW	124	0·47
26.	6 A.M.	29·80			WSW	170	
	2 P.M.	29·36	52·9	49·0	WSW	129	
	10 P.M.	30·11			W	98	0·40
27.	6 A.M.	30·26			W	214	
	2 P.M.	30·20	49·7	44·3	WSW	59	
	10 P.M.	30·20			SW	65	
28. Not sent ⊙							

Conclusions deduced for this Station.

There were two Barometrical depressions observed here, but the returns for the second one on Sept. 28 are not complete.

First Barometrical depression on Sept. 25th at 2 P.M.

Whole fall observed = 0·64 inch in interval of 48 hours.

Wind veered from SE probably through S to WSW; indicating station to be East of whirl centre; and that to be moving to NNE.

The earlier part of the gale was marked with much rain and high temperature, and the second Barometrical depression indicated the coming in of a lower temperature.

(9.) UP PARK CAMP, JAMAICA.

Lieut.-Col. M'CAUSLAND, R.E.

Lat. = 18° 0′ N. Long. = 76° 57′ E. Height 225 feet.

Date.		Barometer at 68° F. and Sea-level, approx.	Temp. of Air.	Temp. of Evap.	Wind.	
					Direction.	Velocity in Miles per Hour.
1860		British Inches.	° F.	° F.		
Sept. 22.	9.30 A.M.	30·17			NE	0
	3.30 P.M.	30·10	80·6	76·9	ENE	0
23.	9.30 A.M.	30·15			NE	0
	3.30 P.M.	30·06	80·4	77·8	NE	0
24.	9.30 A.M.	30·13			NE by N	0
	3.30 P.M.	30·04	83·8	78·9	NE	0
25.	9.30 A.M.	30·12			NE	0
	3.30 P.M.	30·03	86·0	80·1	SE	12
26.	9.30 A.M.	30·14			N	0
	3.30 P.M.	30·05	88·3	80·3	NW	0
27.	9.30 A.M.	30·11			N	0
	3.30 P.M.	30·05	85·5	80·5	SE	14
28.	9.30 A.M.	30·12			NNE	0
	3.30 P.M.	30·03	80·9	77·1	SE	10
29.	9.30 A.M.	30·09			SE	10
	3.30 P.M.	30·03	82·0	78·0	SE	7
30.	9.30 A.M.	30·10			SSE	10
	3.30 P.M.	30·04	84·5	78·5	SE	10

Conclusions deduced for this Station.

Barometer, wind, and weather were altogether undisturbed here, where the daily barometrical tide may be seen on every successive day, making between morning and afternoon a greater difference than any other source of disturbance.

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(10.) NASSAU, BAHAMAS.

Lat. = 25° 4′ N. Long. – 77° 20′ W. Height = 13 feet.

Date.		Barometer at 68° F. and Sea-level, approx.	Temp. of Air.	Temp. of Evap.	Wind.	
					Direction.	Velocity in Miles per Hour.
1860		British Inches.	° F.	° F.		
Sept. 24.	9.30 A.M.	30·07			NE	0
	3.30 P.M.	30·01	84·0	78·0	NE	10
25.	9.30 A.M.	30·07			NE	0
	3.30 P.M.	30·02	74·0	72·0	NE	10
26.	9.30 A.M.	30·13			NE	14
	3.30 P.M.	30·13	79·0	75·0	E	20
27.	9.30 A.M.	30·15			E	20
	3.30 P.M.	30·10	81·0	77·0	E	17
28.	9.30 A.M.	30·12			NE	22
	3.30 P.M.	30·06	74·0	74·0	N	10
29.	9.30 A.M.	30·05			SE	10
	3.30 P.M.	30·02	76·0	75·0	NE	16

Conclusions deduced for this Station.

The weather at this station has been undisturbed, except in temperature unless the anomaly on Sept. 25 should prove to be an error of observation.

(11.) TORONTO, CANADA WEST.

Lat. = 43° 39′ N. Long. – 79° 0′ W. Height = 342 feet.

Date.		Barometer at 68° F. and Sea-level, approx.	Temp. of Air.	Tension of Vapour.	Wind.		Rain Fall in Inches.
					Direction.	Velocity.	
1860		British Inches.	° F.				
Sept. 23.	6 A.M.	30·20				0	
	8 A.M.					0	
	2 P.M.	30·10	54·4	0·318	N 87 E	8	
	4 P.M.				N 75 E	10	
	10 P.M.				N 58 E	6	
	Midnight.				N 32 E	0	
24.	6 A.M.	29·80			S 38 W	6	
	8 A.M.	29·81			S 35 W	11	
	2 P.M.	29·80	60·1	0·448	S 30 W	9	·130
	4 P.M.	29·77			S 35 W	4	
	10 P.M.	29·75			S 85 W	9	
	Midnight.	29·73			S 78 W	4	
25.	6 A.M.	29·66				0	
	8 A.M.	29·68			S 68 W	7	
	⊙ 2 P.M.	29·64	61·6	0·269	N 87 W	21	·005
	4 P.M.	29·70			N 62 W	26	
	10 P.M.	29·90			N 85 W	14	
	Midnight.	29·93			S 86 W	12	

(11.) TORONTO, CANADA WEST—*Continued.*

Date.		Barometer at 68° F. and Sea-level, approx.	Temp. of Air.	Tension of Vapour.	Wind.		Rain Fall in Inches.
					Direction.	Velocity.	
		British Inches.	° F.				
Sept. 26.	6 A.M.	30·05			S 71 W	2	
	8 A.M.	30·10			N 86 W	15	
	2 P.M.	30·17	56·2	0·169	N 80 W	22	
	4 P.M.	30·20			N 74 W	17	
	10 P.M.	30·30			N 67 W	0	
	Midnight.	30·30			N 70 W	0	
27.	6 A.M.	30·32			N 56 W	2	
	8 A.M.	30·32			N 16 W	2	
	2 P.M.	30·22	49·7	0·235	S 61 E	3	·080
	4 P.M.	30·16			S 43 E	1	
	10 P.M.	30·03				0	
	⊙ Midnight.	30·03			N 73 W	5	
28.	6 A.M.	30·15			N 72 W	7	
	8 A.M.	30·20			N 48 W	14	
	2 P.M.	30·25	47·9	0·183	N 33 W	19	
	4 P.M.	30·29			N 35 W	19	
	10 P.M.	30·45			N 30 W	1	
	Midnight.	30·46				0	
29.	6 A.M.	30·50			N 27 W	1	
	8 A.M.	30·52			N 29 W	1	
	2 P.M.	30·45	43·7	0·147	S 10 W	3	
	4 P.M.	30·43			S 16 W	1	
	10 P.M.	30·45				0	
	Midnight.	30·47			N 20 E	1	

Conclusions deduced for this Station.

There were two Barometrical depressions with accompanying gales at this Station; but of no great force.

The first Barometrical depression was on Sept. 25, at 2 P.M.

Whole fall observed = 0·56 inch in interval of 56 hours; and with a subsequent rise of 0·68 inch in interval of 40 hours.

The second Barometrical depression was on Sept. 27, at 11 P.M.

Whole fall observed = 0·29 inch, interval = 14 hours, and with a subsequent rise = 0·44 inch in 25 hours.

The wind veered in first depression from S 68 W, through West probably to N 87 W, indicating Station to be South of whirl's centre, and the latter to be moving to the NNE.

At the second depression the wind veered but slightly, or from N 73 W to N 45 W, indicating Station to be SW of whirl's centre, and the latter to be moving to the SW. At this second depression there was great lowering of the temperature.

The winds at this Station were very well observed both in direction and velocity, and are entered in the original records of the Observatory for every hour.

GROUP VI. SUMMARISED.

WESTERN AND AMERICAN STATIONS.

LEADING CONCLUSIONS DEDUCED FROM THEM IN ORDER OF LONGITUDE.

No.	Stations.	Lat. N.	Long. W.	Date of Barometrical Depression.		Amount of such Depression.	Interval Corresponding.	Wind Veered			Wind. Force 0 to 12.
								From	Through	To	
	Last British Station, .	57 45	8 40	Oct. 3.	3 A.M.	Inch. 1·35	Hour. 19	SW	Calm.	NW	12
1	Reykjavik, Iceland, .	64 8	21 55	Oct. 1.	Midnight.	0·62	24				
2	**Off Greenland,** .	**60 0**	**47 30**	**Sept. 28.**	**Noon.**	**0·65**	**48**	**SE**	**S**	**SSW**	**9**
				Sept. 30.	**8 A.M.**	**0·26**	**24**	**WSW**	**W**	**WWW**	**3**
3	Newfoundland, . .	47 35	52 42	Sept. 27.	Noon.	0·49	50		W		6
				Sept. 29.	3 P.M.	0·51	24		W		6
4	Halifax, . . .	44 39	63 37	Sept. 26.	10 P.M.	0·39	30	WSW	W	NNW	8
				Sept. 28.	3.30 P.M.	0·17	6	SW	W	NW	6
5	Bermuda, . .	32 23	64 40	Sept. 25.	3.30 P.M.	0·14	36		WSW		5
				Sept. 27.	3.30 A.M.	0·12	6		NE		3
				Sept. 28.	9·30 P.M.	0·10	6		E		2
6	Barque "Elbe," .	40 58	69 0	Sept. 25.	10 P.M.	0·36	42	SSW	W	NW	6
				Sept. 28.	?						
7	Quebec, . .	46 49	71 12	Sept. 25.	3.30 P.M.	0·37	30	W	W	W	2
				Sept. 28.	3.30 P.M.	0·27	30				
8	St. Martin, Canada East,	45 22	73 56	Sept. 25.	2 P.M.	0·64	48	SE	S	WSW	7
				Sept. 28.	?						
9	Jamaica, . . .	18 0	76 57	....							
10	Bahamas, . . .	25 4	77 20	Sept. 25.	3.30 P.M.	0·07	192				2
11	**Toronto,** . . .	**43 30**	**79 0**			0·08	10	NE	NE	NE	3
				Sept. 25.	**2 P.M.**	**0·56**	**56**	**S 68 W**	**W**	**N 87 W**	**5**
				Sept. 27.	**11 P.M.**	**0·29**	**14**	**N 73 W**	**?**	**N 45 W**	**3**

GENERAL SUMMATION OF, AND CONCLUSIONS DEDUCED ABOUT, THE HYPERBOREAN STORM OF OCTOBER 1860.

Name of the Storm.

At the same time that this storm was endued both with a revolution in the reverse direction from that of the hands of a watch, and with a locomotion of the whole whirl from West to East,—in so far like the latter part of the course of a West Indian hurricane,—it was not one of those Meteors. It was not brewed or prepared in the South. Its course was always in high Latitudes; and in every Longitude its force decreased so rapidly Southwards that both the Tropical and sub-Tropical barometers in the same Meridian, when the storm was at its worst Northwards, and for several days before also, showed no movements other than the minute, regular tidal action twice a day: proving, together with the daily record of the weather, an otherwise totally undisturbed atmosphere there. (See especially Group 6, Station 9.)

Hence, to prevent confusion with "West Indian and Tropical hurricanes," I have ventured to term this storm "Hyperborean."

Convertibility of Barometric Falls and Wind Strengths.

In the latter part of the above larger paragraph I have been drawn insensibly, at the vanishing side of the storm, to seek for one of its leading data in what is an instrumental accompaniment only, viz., the fall of the Barometer. The one thing is with little doubt a function of the other, though with some residual peculiarities not yet fully understood, and with a loss of certain other features. Hence it would be highly desirable, did our materials allow of it, to trace the storm by itself and in itself first, and afterwards to ascertain in how far it was faithfully reflected, or indicated, whether simultaneously or beforehand, in the readings of Barometer, Thermometer, or any other scientific instrument.

But unhappily the wind is rarely observed anywhere sufficiently instrumentally and accurately to enable the storm to be described in anything approaching to absolute

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terms; while on the other hand, the Barometer, if noted with the least skill or method at all, cannot fail to afford results comparable for all stations all the world over. I proceed therefore, for some of the earlier results, to profit by a combined use of both Barometer and wind observations.

STORM'S FORCE ACCORDING TO LATITUDE.

In the following table there have been entered from curves deduced from all 6 groups of stations, both the amount, and the converse of the intensity of, (or the time occupied by) the Barometric falls, with every degree of Latitude, so far as observed, and successively for five different Meridians. While in the third column of each Meridian collection the force of the wind, on a scale of 1—12, is also introduced.

Latitude North.	Long. 66° West.			Long. 2° West.			Long. 12° East.			Long. 38° East.			Long. 64° East.		
	Amount of Bar. Fall.	Duration of that Fall.	Strength of the Wind.	Amount of Bar. Fall.	Duration of that Fall.	Strength of the Wind.	Amount of Bar. Fall.	Duration of that Fall.	Strength of the Wind.	Amount of Bar. Fall.	Duration of that Fall.	Strength of the Wind.	Amount of Bar. Fall.	Duration of that Fall.	Strength of the Wind.
° ′	Inches.	Hours.	1-12.	Inches.	Hours.	1-12.	Inches.	Hours.	1-12.	Inches.	Hours.	1-12.	Inches.	Hours.	1-12.
65 30							1·02	86·	8						
64 30															
63 30															
62 30															
61 30															
60 30				0·94	48·	7	1·52	74·	10						
59 30	0·65	48·	9	1·23	45·	10	1·27	55·	10	1·44	85·	10			
58 30				1·32	33·	11	1·32	50·	11						
57 30				1·44	23·	12	1·37	66·	10				0·28	50·	3
56 30				0·89	23·	12	1·17	70·	7						
55 30				0·48	18·	10									
54 30										0·53	28·	9			
53 30							0·35	19·	9						
52 30							0·30	19·	9						
51 30				0·21	18·	6	0·20	25·	8	0·33	37·	8			
50 30							0·21	18·	7						
49 30							0·18	20·	6						
48 30				0·16	21·	4									
47 30	0·50	40·	7												
46 30	0·49	40·	6	0·16	24·	3				0·22	32·	4			
45 30	0·56	45·	6												
44 30	0·52	40·	7												
43 30	0·48	43·	5	?	?	4									
42 30															
41 30	0·46	42·	6							0·20	28·	6			
40 30															
39 30															
38 30															
37 30															
36 30				0·00	0·	4									
35 30															
32 30	0·14	36·	5												
30 30															
25 30	0·08	40·	3												
20 30															
18 30	0·07	200·	2												

In each and everyone of the 5 Meridians tabulated above, it will be at once perceived, that wherever the observations are sufficiently numerous to prove anything, the amount of Barometric fall is greatest from 60° to 56° N. Latitude, reaching there to close on an inch and a half; while it thins away rapidly to two or three tenths only, in Latitudes but a few degrees South of these Limits.

Comparing the second column, however, of each Meridian subdivision with the first, we find that the manner of the Barometric fall was very different in the Northern half of these limits to what it was in the Southern, being much slower, or occupying a larger time, in the former. That same feature of slowness will also be perceived to manifest itself more and more and for all Latitudes the further that we depart in Longitude either Eastward or Westward, from one of the given Meridians, viz. that of 2° West.

Now, the force and grandeur of a storm, viewed Barometrically, depends on two things, *first*, the amount of Barometric fall, and *second* the quickness of it; the latter indicating the Barometric gradient, as Mr T. Stevenson, C.E., has recently most characteristically termed it. On this principle then there can be no doubt, that out of all the fully observed Meridians tabulated above the storm was Barometrically greatest and most intense in 2° West Longitude, and in that Meridian, chiefly between the Latitudes of 58° 0′ and 56° 30′ N. This follows from the fact, that North of such limits, though the Barometric fall was often as great, it occupied 2 or 3 times as long to accomplish itself, and South of such limits, though the time remained short, the amount of fall decreased so rapidly as to be incapable of much mischief.

Hence 57° 30′ N. Lat., in Long. 2° West (or strictly perhaps some 5° or 6° further West still) where a fall of 1·44 inch in 23 hours took place, and a rise of 0·298 inch in half an hour has been recorded, was Barometrically the severest part of the storm; and the numbers independently derived in the 3rd column for the strength of the wind, admirably confirm the Barometric conclusions; for only in the Meridian of 2° West (as there entered, and not in so far denying it to 7° or 8° West Long. also), is 12, the full number for hurricane strength ever reached; and in that Meridian again, it appears only from 57° 30′ to 56° 30′ North Latitude, *i.e.* in the North of Scotland.

The above numbers, however, by no means settle, that the centre of the whirl of the storm was between these parallels, when in that Meridian. They only show that so far as strength of wind was concerned it was chiefly felt there, even to the extent of constituting it the storm of that particular region rather than of any other. But this point may be further inquired into through means of the following very different data.

RATE OF MOVEMENT OF THE STORM IN LONGITUDE.

The terminal tables at the end of each group of stations, being already arranged in order of Longitude, the "date" column will show at once the progress of the storm from West to East with time. Some few anomalies occur from the imperfections of certain

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of the observations; and others appear, rather than really exist, owing to the varying Latitudes of the stations which are otherwise set down in Longitude order only. For we find

In Long. 65° West, Southern stations nearly coincident in date with Northern ones.
In Long. 1° West, Lat. 51° 37′ has the storm 58 min. earlier than Lat. 60° 31′.
In Long. 15° East, Lat. 51° 18′ has the storm 4h. 6m. earlier than Lat. 58° 4′.
In Long. 30° East, Lat. 46° 30′ has the storm 6h. 0m. *later* than Lat. 59° 56′. And
In Long. 43° East, Lat. 41° 42′ has the storm 8h. 30m. *later* than Lat. 54° 50′.

Correcting then for these quantities, or choosing our stations nearly on a parallel so as to avoid their effects, we then find, subject only to an indistinctness in the far West, owing to a species of *duplicity* in the storm when there (a feature to be discussed presently), the following remarkable data :—

From	47° 30′	West Long.	to 21° 55′	W.,	the storm travelled	Eastward	at the rate of	11	Nautical miles per hour.
,,	21 55	,,	to 8 40	,,	,,	,,	,,	19	,, ,,
,,	8 40	,,	to 4 7	,,	,,	,,	,,	42	,, ,,
,,	4 7	,,	to 2 6	,,	,,	,,	,,	39	,, ,,
,,	2 6	,,	to 4 35	East,	,,	,,	,,	32	,, ,,
,,	4 35	East Long.	to 8 30	,,	,,	,,	,,	25	,, ,,
,,	8 30	,,	to 17 30	,,	,,	,,	,,	27	,, ,,
,,	17 30	,,	to 24 45	,,	,,	,,	,,	26	,, ,,
,,	24 45	,,	to 30 17	,,	,,	,,	,,	20	,, ,,
,,	30 17	,,	to 60 40	,,	,,	,,	,,	16	,, ,,

Hence the storm's locomotion Eastward began slowly in the far West, or at the rate of only 11 Nautical miles per hour, but continually accelerated until it surpassed 40 miles per hour in the Scottish Longitude of 6° West, and then continually declined until at 55° of Longitude East of that Meridian it had sunk to 16 miles per hour. Applying which data to what has already been ascertained touching the force of the wind, we gather that with this Hyperborean storm, its destructive strength and violence were direct functions of its rate of locomotion, a feature rather the reverse of West Indian hurricanes.

DUPLICITY OF THE EARLIER PART OF THE STORM.

But why had a Hyperborean storm to travel so far from West to East, or through more than 40° of Longitude, before it reached its full velocity of translation?

I have already alluded to there having been two storms in Western regions. Now they were both of them apparently cyclonic in the same direction, as well as locomotive. They followed each other moreover after an interval of two or three days in these Longitudes, but travelling at different rates their distance asunder was thereby altered from day to day, and place to place; or thus,—

						Days.	Hours.
In Long.	79	West,	interval between	dates of passage	=	2	9
,,	71	,,	,,	,,	=	3	0
,,	64	,,	,,	,,		1	18
,,	53	,,	,,	,,		2	3
,,	48	,,	,,	,,	=	1	16

The above observations are evidently very rough, but yet sufficient to show a decided *tendency* in the two storms to approach each other; and such as perhaps, during the forty degrees of Longitude still to be traversed before the Meridian of St Kilda was reached, to produce a junction of the two Meteors. Then, no doubt, the extravagant violence and velocity of the storm observed in N.W. Scotland were produced.

These coalescing storms too, being in effect mainly up-rushes of air, as shown by the decrease of Barometric pressure within their range, they must produce to an observer, could he be planted say on the Moon, the same sort of temporary excrescences on the outline of the Earth and its atmosphere, *mutatis mutandis*, that the red prominences are to the Sun and its gaseous envelope: the junction of the two Western storms forming at last one of the wildest and most positive "Palm-tree" uprushes seen for years, but lasting only for a very short time.

OF THE CYCLONIC WHIRL.

But did the air thus rushing upward, as well as progressing Eastward, rotate round its own vertical axis at the same time?

In the very beginning of the investigation I assumed that it did, and in a direction contrary to that of the hands of a watch. But where is now the proof?

We have already shown beyond all doubt that the whole storm moved bodily from W. to East; that motion therefore when combined with a watch-reverse rotation must necessarily make the storm begin more or less from S.W. and end N.W. for all stations South of the storm centre: the variation Southward from West at the beginning and Northward therefrom at the end of the storm, increasing as the centre of rotation passes nearer to the latitude of any given station.

Now these principles are admirably borne out by nearly nine-tenths of all the stations; for their winds invariably begin from W.S.W. to S.S.W. and after passing through West, terminate at W.N.W. to N.N.W. While both Captain Otter's observations at St Kilda and those of Mr Forbes at Culloden, in the latitudes of 57° 45′ and 57° 30′ N. respectively, have the further interesting proof that they were so near the centre of rotation of the storm, as to have come within the region of its central lull or calm.

Still I must say that in the earlier part of my investigation, before all the documents had been received, it was a little disappointing to find every station up to that time examined, testifying merely to S. Westerly, West, and N. Westerly winds; or indicating only half a rotation and pointing to the real storm-centre being further North and

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always North. At last however, in some Ships' logs kindly procured by my friend Mr R. M. Smith, was a Norwegian schooner the "Elise" which on the eventful October 3, had passed through a terrific tempest beginning at S.S.E., veering then through East and finally ending at N.N.E.

Why here at last is a station which must have been on the North of the storm-centre, was the immediate remark. What then was its Latitude?

60° 48′ N. was the answer; and a most satisfactory one, because that parallel was further North than the Latitude of any station I had at that time been favoured with accounts from. Since then, and chiefly from the Lighthouses of the Board of Northern Lights, and the stations of the Scottish Meteorological Society, several other returns from places as far, or even further, North have been received and fully confirm the "Elise" as to the storm having rotated regularly through the whole 360° though not with altogether the same velocity in the Northern, as in the Southern half of the whirl, for Barometrical, as well as dynamical, reasons already indicated.

If our plate 56, at the end of the volume be now referred to, the general bearing of all the stations on the rotation question at the epoch of Oct. 3, 9 h. A.M. Greenwich Mean Time will be easily seen. There is a preponderance perhaps of N.W. wind, but mainly because that part of the storm was then over the region of Scotland most thickly studded with stations. The Westerly winds required for stations south of the storm-centre are admirably borne out by the English observations. The S. West and the South winds for stations S. East and East of the centre are testified to by the excellent logs of the "Concordia" and the s.s. "Stirling" as well as by Scandinavian stations; and the Eastern, North Eastern, and Northern are equally shown to have been realities by the returns of stations North of the storm-centre and to have been somewhat spirally inclined inwards rather than to form a continuous circle.

The whole breadth of the portion of atmosphere feeding, so to speak, the central whirl and uprush, would appear to have been nearly 700 miles across, though the great strength and fury of the wind were confined to less than half that space, and chiefly to the South of the storm-centre. That centre or the central lull region, about 70 miles in length from N. to S. and 45 from East to West, at the Epoch of our map, had already passed across and far beyond the mainland of Scotland carrying with it all its steepest Barometric gradients; yet even then, as Mr Buchan well remarks in a letter from the Scottish Meteorological Society of date Nov. 23, 1871, "while the "distance between the stations of Tongue and Sandwick scarcely exceeds 50 "Nautical miles, the difference of Barometric pressure is 0·409 inch, one of the "most remarkably steep gradients ever recorded by our observers." Admirably confirming however the unprecedented rise of 0·298 inch in half an hour observed by Lieut. now Capt. Thomas, R.N., at Loch Finsbay nearer the storm-centre: because that half hour then and there, corresponded to a distance of 21 miles according to the rate of the storm's progression already set forth; and was accompanied by a velocity of the wind in the whirl of not less than 80 miles per hour. Altogether producing a

storm which gave barely any Barometric warning beforehand, but excessive Barometric confirmation while it lasted, and that for a few hours only.

OF THE WHOLE PATH OF THE STORM, AND ITS NOISE.

In the small range of our map the progress of the storm is represented as sensibly coinciding with a parallel of Latitude, but there is no reason that it should necessarily be so. Indeed the retardation of from half an hour to an hour usually observed at the best stations between the dates of the Barometer reaching its lowest point, and the wind being at West or the storm-centre being exactly North of that station, points to a probability of the motion of the whole whirl being a few degrees North of due East. And on looking over all the stations, I suspect that the storm's march was a curve concave to the Polar circle and somewhat spirally inclined thereto; but the exact determination of this feature is rather beyond the sufficiency of our data.

And now my task of describing the general character of the Meteor from observation is finished, except in one particular; and there, the circumstance may be mentioned, though the explanation must be left to others, unless indeed the upward rushing of the air in a narrow vibrating and rotating column, as contrasted to an ordinary wind blowing along the surface of the earth, may be accepted as at least a probable suggestion.

This particular feature which I allude to, observed equally at sea and on shore, is, that the storm was such a noisy one. Even on its outskirts the Rev. Dr Robinson at Armagh Observatory remarked that the wind "is accompanied by *a roar* out of proportion to its speed;" and the Glasgow papers, though not much further within range, yet speak of the wind *howling* tremendously. But at St Kilda, almost in the centre of the storm, Capt. Otter, R.N., a gallant and experienced officer, declares that "the howling and screaming of the wind were terrific;" while Capt. Thomas, R.N., in almost as favourable a place for observation, says—

"The roar of the wind was so great that you could only be heard by bawling into the ear of another. But the wind made every imaginable sort of noise, roaring, screeching, hissing, whistling, &c."

At the Butt of Lewis Lighthouse, the intelligent keeper declares that he could compare the noise of the wind to nothing but distant *thunder;* and this most stentorian characteristic was kept up during the storm's passage through at least 11° of Longitude; for in 4° 45′ E. Longitude we find Capt. Clarke of s.s. "Stirling" chronicling in his log-book.—

"There was no lightning or thunder that I saw or heard, but my chief officer thinks he heard two peals of thunder at 5 P.M. The wind however at this time was so very violent, and *making such an awful noise of its own*, that very loud thunder might not have been heard."

APPENDIX I.

ON THE PRACTICAL LESSONS TO BE DEDUCED.

So eventful a storm-history ought not to be passed over in the present utilitarian age without attempting to derive some benefit from it for future life and work. Indeed ideas of that kind predominated, I believe, with several of the gentlemen who first asked me to undertake the present investigation.

Firstly, then, of Storm-warning on the Fitzroy method.

The storm of October 1860 gave too little Barometric notice and was too local, as well as too quick in its movements, for that method to be of service. Even if it could have been telegraphed, at the instant of its first severity, from St Kilda, our most westerly station, men were everywhere sound asleep, and within three short hours the storm had passed all across the country and done its worst.

Were there a telegraph cable to Iceland, something remarkable might have been sent from there, and a sufficient length of time beforehand to warn all the Ports of Scotland the previous day to the storm's arriving there. But there is no such cable. During the last summer proposals have been renewed both abroad and at home to lay a cable from Portugal to the Azores, specially to assist storm warnings; and if carried out it might answer well with many South-western gales, though chiefly as they concern or affect Portugal, Spain, and France; but it would be of no sort of service against a Hyperborean storm such as that of October 1860.

An enthusiast in Meteorology has recently written to the Press, proposing that a vessel with a telegraph cable should be anchored 200 miles S.W. of Ireland, to give England storm-warnings; and if that *could* be managed, another ship anchored 3 or 400 miles due West of St Kilda, would give invaluable information to Scotland. But it is doubtful whether all the revenue of the nation could maintain ship and cable in such a position. At present, therefore, I fear that there is nothing but the cold comfort to all men, that if another such storm takes place, they must bear it as their fathers did, and with no other resources than what they have in themselves or *in situ*.

Secondly, of dealing with the Storm when it arrives.

For those on land, little can be advised; and country gentlemen must be content to see their trees blown down, and farmers to have their stooks in the fields blown right away and scattered far and wide. But for those at sea, some few useful words may be ventured.

Captain Otter's example.

Thus take Capt. Otter's graphic account of the storm at St Kilda. So far as the actual words go, they describe him, when the wind began blowing from the South, to have gone round to the North side of the Island; to have staid there while the first or S.W. half of the cyclone was blowing itself out, to have lagged there still during the central

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lull and the Barometrical lowest height ; and after that to have been utterly astonished at the wind presently coming on him again and from the N.N.W. of all quarters ; horrified too at its almost blowing him right against the cliffs of St Kilda, to have perished miserably with all his crew. Yet with the barometer going down as it did, and the wind veering (as he has recorded himself) from S.S.W. to S.W. and to W. nothing on earth was more certain than that he would presently after the lull have the wind of the second half of the storm, or from N.W. and N.N.W. Wherefore, though it was well enough in any one at first with a South wind to go to the North of the Island, yet when for the next three hours the wind blew from S.S.W., he should then have shifted to the N.N.E. of his protecting rock ; and when for the next three hours it blew from the S.W., he should have further gone round to the N.E. ; and when the wind at last became West, he should have gone round to the East as he could so easily have done in a steamer ; and during the central calm he might have been creeping round to the South East, in certain anticipation of the N.W. wind presently coming. In fact the Captain might thus have cleverly dodged the wind all round that interesting little Island, always have kept a rampart of protection between himself and the tempest, always had smooth water, and the ship's head to wind ; wherewith and profiting also by some additional protection that the carpenter might have been instructed to erect on deck, neither the binnacle lights need have been blown out, nor any wreck on the "bird-catcher's cliff" have appeared in the remotest degree possible.

Captain Clarke's Example.

Far otherwise was the action of Capt. Clarke of the s.s. "Stirling," a sister vessel to the unfortunate "Edinburgh," belonging to the same owners, and on a similar voyage, but farther advanced upon it and with ample sea range.

When Capt. Clarke then, at 8 A.M. on October 3,* saw the strength of the south wind, and noted the rapid fall of the barometer, knowing the weakness of his vessel for taking in seas astern and flooding the engine room, he turned her round, head to wind, and kept her so all day. During that time he carefully watched the veering of the wind through the S.W. to W. and then to N.W., with the simultaneous descent of the barometer to its lowest and then its beginning to rise again, when he instantly announced to his men that the centre of the storm was passed, turned the ship's head eastward once more, and sped on his way to Cronstadt at a glorious rate impelled by the N.W. tail of the great storm going the same way.

To that example I cannot presume to offer any correction, but only all commendation.

Thirdly, Of Storm Tracing.

But though the best future Observatories and most rapid telegraphy within our given geographical range, would little to assist the prediction of such a storm as that of October 1860, they would enable it afterwards to be tracked, measured, and described, far more accurately than has been done in this paper.

* Printed erroneously, October 2, on p. T 97.

When the greater part of the existing stations observe only twice a day, or at 12 hour intervals, how can a net with so wide meshes be certain to catch a storm that lasts only 6 hours. And a future storm may again, as the last storm did, happen at so unfortunate an epoch, as to go through just the middle of the vacant space separating two bi-diurnal observations and not influence either of them sensibly; or like the still more unlucky Copenhagen example, where three observations daily are taken; and where the storm, refusing to come by day when the said three observations are all taken within 7 hours, perversely chose to pass at night when 17 hours are left in one bulk, totally unobserved, untended and uncared for.

Hence no Meteorological station can be trusted for storm tracing, whose observations are not taken without fail at every hour of the 24, whether by hand and eye or by self-recording instruments; and five such stations through Scotland would be worth far more than 100 of the bi-diurnal kind.

In good Observatories, the barometric observations could only be slightly improved above what they are at present; but their returns would be sensibly better or more suitable for our purpose if in place of being reduced to temperatures of 32° F., where barometers are never observed, they were reduced to 68° F., the mean of all the observation temperatures over the whole earth: and besides being corrected for instrumental errors and the height above the sea, they should be corrected for the daily double tide or cycle of diurnal changes wholly independent of storm movements.

Similarly the thermometric observations, besides being of course given as read off, should be reduced to the sea-level and be corrected for the daily temperature cycle, which is usually so large as to mask whatever heat effects may be produced by an approaching storm. And finally, the wind should be observed by self-recording anemometers, placed very securely above all surrounding objects, and capable of giving forth accurately cumulative or mean results. This is more particularly important for the direction of the wind, a feature not given by the barometer, but one of the utmost importance for understanding the Nature of any particular tempest; and capable too of the most surprising accuracy when noted by one of those instruments which give, not the direction of every little varying gust but the mean of all the gusts during three, five, or more minutes.

When the direction of the wind is thus obtained accurately, a very moderate approximation to the force or velocity is sufficient to show the character of a storm; even as the late Sir John Herschel obtained double star orbits most successfully from angles of position only, and used distance observations merely for occasional reference.

But all such Observatories, if they are to do full justice to the Meteorology of Scotland, must not only make their observations in Scotland, but must reduce and publish them there also. They must, in fact, be entirely Scottish Institutions under Home Rule, or otherwise the same calamities will occur which have already befallen this same Scottish storm of October 1860, when reported on, not from any part of Scotland, but from the great centralised office of the Board of Trade in London.

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The Board of Trade return of Wrecks for 1860.

The annual Board of Trade blue book setting forth the number and circumstances of the Wrecks and Casualties which occur within each year on and near the Coasts of the United Kingdom is, generally speaking, an extraordinarily valuable as well as admirable document; a volume wherein verbal descriptions, numerical tables, and coloured plates, all vie with each other in setting forth in the clearest and most easily comprehensible manner every casualty that has befallen any and every vessel, foreign as well as home, on or near the shores of our country; and this watchful care is extended from grand particular storms and the largest ships, down to ordinary bad weather and to "sloops, smacks, luggers, pilot-boats, keels, and yawls."

So far as the returns for England are concerned nothing fuller or more accurate could apparently be desired, as witness the accounts, both scientific and commercial touching the storm of the "Royal Charter" in the volume for 1859.

But if we take up the next year's return or that for 1860, how very differently does the Scottish storm of the "Edinburgh," i.e., the storm of October 1860, fare. Even in a further Return too, many years afterwards, or in 1870, where a retrospect is taken of all the storms for the previous ten years, and a little more also, for the storm of the "R. Charter" in 1859 and the number of ships then wrecked are mentioned, yet the whole year 1860 is passed over ingloriously as having been unmarked by any special storm or disaster; while the Reporter goes on to particularise storms and their effects in 1861, 62, 63, 64, 65, 66, 67, 68, 69, and 70. Surely I thought the blue book for 1860 itself will contain something more; but on obtaining the loan of it from my friend Mr T. Stevenson, C.E. of the Board of Northern Lights, I found it merely to set forth the bald Meteorological and shipping statement that "the year 1860 has been almost unprecedented for "a continued succession of bad weather; and the number of wrecks and casualties "from causes other than collision is, as might be expected, greater than the number "recorded during either of the preceding years." And there is no allusion to any one storm, much less that of Oct. 2 and 3, 1860, as having had any well marked scientific features, or having been accompanied by any particular destructive effects.

In the large chronological Table of wrecks, No. 22, there could hardly fail to be something entered under the head of Oct. 3, and there are indeed 23 casualties noted there, but generally for small vessels, and all of them of the sailing order; not one steamer appears there, neither on that day nor throughout even the whole month of October 1860!

The extensively arranged Geographical Table too, Table 8, is similarly silent as to any steamer having suffered on Oct. 3 either on or near any of the coasts of Great Britain, or even in the terms of the Table's last section "at sea."

Now it may be true that Scottish affairs are on such a small scale that the great central offices in London do not care to be troubled about them; and as no storm was experienced in London on Oct. 3, but only a pleasant Westerly breeze with a fine day and a mere microscopic fall of the barometer, no attention was paid to the accounts of

a terrible tempest having ravaged the North of Scotland. But how can the total omission of all the large steamers lost on the occasion be explained?

Being mainly Scottish or North English they were no doubt very few as compared with the summation at the end of a year of Southern English losses, which amount now to hundreds; but they were most important as a per-centage on Scottish shipping, and were also absolutely far more valuable than most or all of the wretched little sailing craft which *are* reported whether as "stranded, capsized, abandoned, or foundered" on or off the coast of Scotland on the memorable 3d of October.

Whatever the reason however of the omission in the Board of Trade Return both of the storm and all the *principal* wrecks it occasioned,—there can be no doubt that had there been an independent Scottish office, located in Scotland, to report on Scottish wrecks, such a gross omission would have been simply and absolutely impossible.

We have already shown at length and chiefly from Scottish data how, besides its destructive power, the storm of October 1860 was a phenomenon, a meteor, so remarkably *in seipso totus, teres, atque rotundus* that of all known storms it most merited a separation from ordinary "bad weather," and deserved a special and particular description. While as to the loss of large steamers being a fact, could any one, living in Scotland and charged with the duty of reporting wrecks, could he possibly have returned "no steamers lost," when the daily papers round about him during the middle and latter part of October 1860 teemed with such paragraphs as these,—"The 'Ivanhoe' steamer returned to "Leith yesterday morning, after having been out since Saturday in search of the screw "steam-ship 'Edinburgh,' which has not been heard of since the second instant, the "day on which she left Leith for Cronstadt. The 'Ivanhoe' traversed the parts of the "North Sea where it was most likely that tidings of the missing steamer could be "obtained, going on her search to the coast of Jutland. We regret to say, however, "that no tidings of the 'Edinburgh' have been obtained. Nearly all hope of the "safety of the vessel and her passengers and crew has now been abandoned. The "return of the 'Ivanhoe' without making any discovery has struck deep grief into the "hearts of those who had friends on board the missing steamer. Twenty-five of the crew, "including Capt. Steele, have left wives and families. The Captain was beyond doubt "a careful and skilful mariner, and the mates, engineers, and other members of the "crew were picked men."

Or again this example,—

"It is too much to be feared that the 'Edinburgh' in common with the four other "steamers—the 'Moscow,' 'Viscount Lambton,' 'Pacific,' and 'Thor,' which have "been amissing since the frightful hurricane of the 3d inst., has shared the fate of the "'Arctic' lost in the same gale. A subscription for the widows and children of the "poor fellows who are supposed to have perished in the 'Edinburgh' has been com- "menced in Leith. It is stated that the owners of the steamer have commenced the "subscription by contributing 300 guineas; and that a subscription will be opened "in St Petersburg as well as Leith."

APPENDIX II.

The Court of Enquiry residuum of the Storm.

Part III. of the Board of Trade Wreck Return for 1860, contains a Précis of Special Enquiries into casualties ordered by the Board of Trade during that year; and therein, amongst cases derived from all parts of the world, appears the name of one of the vessels mentioned above, viz, the s.s. "Arctic."

It is announced as having been wrecked off Harbooere on the West coast of Jutland on the 4th of October 1860.

This vessel which had sailed from Grimsby at 6 P.M. on Oct. 2, was evidently, as the Scottish daily papers had speedily concluded, a victim to what they truly called "the "frightful hurricane of the 3d inst.;" the date of the 4th, or a day later, merely implying that the calamity took place far in East Longitude or on the Jutland coast. But it was not a case of sudden and complete loss as with all the other unfortunate steamers enumerated, it was a long contest with the storm, a slow driving head to wind until soundings were reached, then an anchoring but the anchors dragging, until the ship sank amongst the rollers close in shore. Those on board then took to the rigging and were presently rescued by the gallant Harbooere life boat, all except 4 passengers and 5 of the crew washed overboard.

On this case the court of enquiry sat at Hull, date not stated, and proceeded to try the captain of the "Arctic," on the count, apparently, of having lost his vessel in simple and ordinary bad weather which had not done any particular mischief anywhere else; for there is not a single reference to what "a frightful hurricane" the acting storm was, and how many other steamers, some of them larger than the "Arctic," had gone down before it helplessly with all hands.

Begun on such a footing, there need be no surprise that the result of the trial went against the captain, and announced that "the 'Arctic' was lost by his default;" but some of the special allegations against him are of very general interest, as touching the safety of steam navigation to other seas as well as the Baltic. It thus appears that the "Arctic," registering 559 tons, sailed from Grimsby for St Petersburg on the date already given, with no less than 822 tons of cargo, of which 100 were on deck, and the whole amount so overweighty that "the draft of the vessel was not in accordance with the intention of the builder." The deck cargo consisted partly of coal, partly of bales of cotton, heaping up to such an extent as to cover over the open bunker lids, &c., and make it impossible to get at either them or some of the pumps when the storm came on.

All this is, of course, very bad in seamanship; but whose work was it to overload the vessel and hamper the decks with so much as 100 tons of coal, cotton bales, and, most probably, one or more big iron boilers for steam-engines in Russia?

The owner's, of course.

Were they therefore immediately put on *their* trial, or animadverted on for *their* conduct?

Apparently not at all; but in place of that, one of the chief accusations brought up against the poor captain is, "that he offered no remonstrance against the orders of his owner as to a deck cargo."

Now what peculiar cruelty, if not positive injustice, is here. Even from my own limited knowledge of voyaging both in the Baltic and Mediterranean, I know that there is no class of men who hate the very idea of deck cargo, especially in bulk too big and heavy to be thrown overboard in distress, more than captains of these steamers; and they *do*, not unfrequently, both remonstrate with the owners and get discharged for their pains, as well as marked for black sheep in the ports they belong to.

But a merchant captain has no half-pay, as in Army or Navy, to retire on, if he does anything to lose active employment; so that, "making a remonstrance to the orders of his owner" (how expressive that latter phrase), means generally beggary, for a time at least, both to himself and perhaps a helpless family also.

Now no man can afford to be *always* making a martyr of himself; and these poor merchant captains ought to be aided in, if not relieved from, their thankless and self-sacrificing duties of "remonstrating with their owners" on each and every frequently recurring voyage, by some party wholly out of the reach of those personages to injure.

Wherefore I cannot but believe, that Board of Trade officers might be much more usefully employed, if, instead of holding expensive courts of enquiry on merely the captain and officers *after* a disaster has taken place, they were themselves to look to ships not leaving port either with heavy deck cargoes or in an unseamanlike condition, unready to meet and fight if necessary against the severest storm not only when far advanced on a long voyage but also perchance close outside the harbour's mouth, or at least within no more than two or three hours perhaps of their leaving the quiet quay-side. And if, on examination, they should find a ship that has been so overloaded, to be also insured by the owners up to the full cost of a new and larger vessel, and the extra cargo to belong to outsiders, but to be placed there for transport by the owners' orders, so that extra freight may be reaped from a small vessel if it survives, and themselves not lose if it is wrecked, why, then, the Board of Trade officers might fitly be entitled to haul up the owners just as unceremoniously as they now do those gentlemen's meek and humble servants, viz., the ship-officers; men, who themselves derive no profit from the overloading, and know far too well in their inmost minds, though they seldom care to speak it out, that, in consequence of those detestable deck-loads put upon them by force or fraud, they set out too often on their voyages as helplessly "as an ox goeth to slaughter;" while the owners, on the other hand, run no such bodily risks, and make money equally whether their ship sinks or floats: *i.e.*, owners such as those described, for there are happily others who may worthily compete with the best citizens in the land for all true charity and nobility of soul.

But confining ourselves now solely to the particulars brought up by the Board of

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Trade's précis of their own trial of the "Arctic's" captain, I feel confident that, if such examinations of the ships *before* sailing, as just hinted at, had been made in the case of the "Edinburgh," the "Moscow," the "Viscount Lambton," the "Pacific," and the "Thor," not every one of all those noble vessels would have been lost on the night of 2d and 3d of October 1860. Wherefore many gallant officers and seamen would have also survived, and been able to relate to their friends and families in after years, how, on that awful night, the most fearful tempest they had ever known in their lives rose suddenly upon them, only just after they had left port too, and with a noise like that of bellowing thunder as well as the whirling violence of a terrific hurricane, but had not been able to prevail against them.

Or in other words, those then happy men would have been able to describe to attentive ears, how they had passed unscathed through this, our most unique, and memorable, Hyperborean storm of October 1860; a storm which I now beg leave to consign into the hands of those of the public, who have so often asked me, during the ten past years, to prepare them such an account of it.

C. PIAZZI SMYTH.

THE GREAT PYRAMID IN EGYPT;

PART I.—ORIGINAL OBSERVATIONS.

PART II.—RECOVERY OF THE ANCIENT, FROM THE MODERN, DIMENSIONS.

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THE GREAT PYRAMID IN EGYPT.

PART I.—ORIGINAL OBSERVATIONS.

(1.) Introduction.

The following observations, having been made by me when occupying the post of Astronomer Royal for Scotland, may be claimed by Government as appertaining to the Royal Observatory, Edinburgh,—and I have no objection to give them up, though all the expense of the expedition to obtain them was defrayed by myself, and the whole proceeding originated out of my own private appreciation of both the importance of the object and a feeling of national and historic responsibility that some records of the kind should be obtained, though even by a single hand, before any more time passed by.

I would not by any means lead the reader to imagine that I succeeded, alone (or unaccompanied by any one else than my Wife), in doing all that a proper Government expedition ought to, and probably would, have done; but I was enabled to accomplish some things which had not been attained before, to record others before they were entirely obliterated, and to show by what necessary steps certain others still might be procured by a stronger party coming after me.

To subserve therefore the ends of such possible future expedition and to help on its further attainment of the knowledge which our latter times ought to possess touching the grandest, oldest, highest, best built, most scientifically designed, and most remarkably placed stone building in the whole world—both chorographically and geographically, and of all the human period on earth,—I submit the details of my measures in the 100 pages or so following, and very nearly in the order that I have already given them to the world at my own expense in an octavo publication, but more effectively and conveniently on these larger pages. Especially indeed with more convenience as regards the plates, which are here arranged in one continuous series, and are never folding,—allowing them to be used as an easy index to, and running commentary on, the whole work. Excepting about half a dozen, all the plates now presented are the old ones of my private book, lithographed originally at my own expense, and costing the Government now only the paper and press work.

(2.) THE PYRAMIDS OF EGYPT GENERALLY.

Before introducing the subject of the Great Pyramid of Jeezeh,* a few lines may be usefully occupied in setting forth without any doubt, that among all the other Pyramids of Egypt, there is not any one example which anywhere interferes with the undoubted pre-eminence and uniqueness of the one known as "the Great Pyramid." So that although none of them are yet perfectly measured, yet the amount by which any and every one of them falls below the Great Pyramid in size, or differs in shape, or contrasts in internal arrangements,—vastly exceeds the probable errors of the observations by which our approximate knowledge of them has been obtained.

That knowledge, especially in its numerical particulars, has been taken almost entirely from the works of the late Col. Howard Vyse and his engineer Mr Perring. Where I have had opportunity of testing their measures, as at all nine of the Jeezeh Pyramids, I have invariably found them to be fairly close, worthy of being described as good, honest, working measures, and made by men who had become at last extremely well acquainted with the methods of construction adopted by the old Pyramid builders. They are therefore quite sufficient for this purpose,—and there is no other set of original Pyramid measures of anything like the extent of what these two laborious explorers have published, to be found in the literature of any known nation. Our employment of them is therefore absolutely compulsory in the present age.

For particulars of Latitude, *i.e. position*; of angle of slope of sides to horizon, *i.e. form*; and either vertical height, or length of side of the always approximately *square* base, as representing *size*,—the numerical tables which follow here may be consulted with most advantage. But for the more compound nature of the internal arrangements of passages, chambers, &c., our Plates XVI. and XVII. should be referred to, as well as the map or Plate XVIII., giving the appearance of these square based Egyptian Pyramids in plan.

Both in Tables and Plates attempts are made to give, wherever the data are sufficient, both the present ruined condition, and the probable ancient size and character of each monument. In the vertical sections these pyramids are always given in a plane passing through the vertical axis at right angles to a base-side and parallel with the internal passages. This coincides also, by reason of the astronomical orientation of all the Pyramids with their Meridian plane, and represents them at their steepest elevation; whereas, had their vertical sections been diagonal, they would have made the Pyramids look much more obtuse angled. This is however a general principle connected with Pyramids, the laws of which the reader will easily make out for himself.

* A modern Egypto-Arabic name, and variously spelt Djizeh, Dschoezeh, Dschizeh, Gizeh, Ghizeh, Gheezeh, Jizeh, and in many other forms, but perhaps most phonetically for British ears and tongues as above.

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TABLE OF THE PYRAMIDS OF EGYPT;

ALL STANDING IN THE LIBYAN DESERT, BUT BORDERING CLOSE ON THE WESTERN SIDE OF THE NILE VALLEY.

Approximate Measures chiefly from Howard Vyse.

Number.	NAME OF PYRAMID.	Latitude North.	Angle of rise of the faces to horizon.	Length of side of base (always 4-sided).		Central axis, or vertical height.		Deviation of sides of base from cardinal points.	Rude approximation to the absolute dates of erection.
				Present.	Ancient.	Present.	Ancient.		
		° '	° ' "	Brit. Inch.	Br. Inches.	Inches.	Inches.		Years.
1	Great Pyramid of Jeezeh,	29 59	51 51 14	8950	9155±13	5410	5827±9	0 4 35	2170 B.C.
2	Second Pyramid of do.	29 59	52 20 0	8290	8493	5370	5451	supposed small	2130
3	Third Pyramid of do.	29 58	51 0 0	4200	4254	2436	2616	do.	2100
4	Fourth Pyramid of do.	29 58	in steps	1230	2200	834	1440	do.	2130
5	Fifth Pyramid of do.	29 58	52 15 0	1656	1749	1000	1119	do.	
6	Sixth Pyramid of do.	29 58	in steps	1230	2200	834	1440	do.	
7	Seventh Pyramid of do.	29 59	52 10 0	1500	2070	540	1332	do.	
8	Eighth Pyramid of do.	29 59	52 10 0	1500	2070	660	1332	do.	
9	Ninth Pyramid of do.	29 59	52 10 0	1440	1920	960	1221	do.	2100
10	Pyramid of Aboo Roash, a ruined commencement only	30 4	no casing	3840	x	480	x	do.	x
11	Pyramid of Zowyat El Arrian	29 57	ruins only	3600	x	730	x	do.	2100
12	Pyramid of Reegah, with two successive slopes	29 56	75 20 0 50 0 0	1200	1480	500	1150	do.	
13	Northern Pyramid of Abooseir	29 54	51 42 35	2600	3084	1400	1953	do.	
14	Middle Pyramid of do.	29 54	51 (?)	2560	3288	1284	2056	do.	
15	Great Pyramid of do.	29 54	52 (?)	3900	4317	1970	2734	do.	
16	Small Pyramid of do.	29 54	50 (?)	650	905	216	564	do.	2050
17	Pyramid 1 at Saccara	29 53	rubbish only	2500	x	700	x	do.	2000
18	Pyramid 2 at do.	29 53	52 (?)	2150	2775	1300	1758	do.	
19	Great Pyramid, or Pyramid 3, at Saccara	29 53	73 30 0 in steps	3700 4200	4214 N. to S. 4727 E. to W.	2200	2405	4 35 [illegible]	2050
20	Pyramid 4 at Saccara	29 53	ruined	2640	x	740	x	supposed small	
21	Pyramid 5 at do.	29 53	ruined	3000	x	480	x	do.	
22	Pyramid 6 at do.	29 53	ruined	3240	x	960	x	do.	
23	Pyramid 7 at do.	29 53	ruined	1680	x	330	x	do.	
24	Pyramid 8 at do.	29 53	ruined	2880	x	1044	x	do.	
25	Pyramid 9 at do.	29 53	ruined	2940	x	900	x	do.	2000
26	Pyramid Base, or mere Pyramidal platform, of Mustabet El Faraoon	29 53	in steps	3500 2300	3708 N. to S. 2604 E. to W.	650	720	do.	1950
27	Northern Brick Pyramid of Dashoor	29 49	51 20 25	4500	4200	980	2586	do.	1950
28	Northern Stone Pyramid of Dashoor	29 49	43 36 11	8400	8633	3918	4111	do.	
29	Southern Stone Pyramid of Dashoor, with two successive slopes	29 48	54 14 46 42 59 26	7400	7400	3834	4029	do.	
30	The Small Pyramid of Dashoor	29 48	50 11 41	1700	2172	816	1281	do.	
31	The Southern Brick Pyramid of Dashoor	29 48	57 20 2	4800	4110	1872	3208	do.	1900

Number.	NAME OF PYRAMID.	Latitude North.	Angles of rise of the faces to horizon.	Length of side of base (always 4-sided).		Central or vertical height.		Deviation of sides of base from cardinal points.	Rude approximation to the absolute date of erection.
				Present.	Ancient.	Present.	Ancient.		
		° ′	° ′ ″	Brit. Inch.	Inches.	Inches.	Inches.	° ′ ″	Years.
32	Northern Pyramid of Lisht	29 38	ruinous	4320	x	1080	x	supposed small	1900 B.C.
33	Southern Pyramid of Lisht	29 37	ruinous	5400	x	822	x	do.	
34	The False Pyramid, or that of Meydoom, flat topped and in steps	29 27	74 10 0	2388	x	1494	x	do.	1850
35	Pyramid of Illahoon	29 17	ruinous	4320	x	1580	x	do.	
36	Pyramid of Howara	29 18	ruinous	3600	x	1270	x	do.	
37	Pyramid 1 of Biahmoo, with two successive slopes	29 26	63 30 0 50 (?)	360	1440	360	x	do.	
38	Pyramid 2 of Biahmoo, with two successive slopes	29 26	63 30 0 50 (?)	360	1440	360	x	do.	1800
	(See Plates XVI. to XVII.)								

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CONTENTS OF PART I.

NUMERICAL OBSERVATIONS IN THE GREAT PYRAMID.

SECTION I.

LINEAR MEASURES.

SECTION II.

ANGULAR MEASURES, GEOMETRICAL.

SECTION III.

ANGULAR MEASURES, ASTRONOMICAL.

SECTION IV.

HEAT MEASURES.

SECTION V.

MISCELLANEOUS AND COMMUNICATED MEASURES.

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CONTENTS OF PART II.

LIST OF PYRAMID PLATES.

(The following Plates, being mostly on very small scales, are capable of little more than giving first approximate ideas of the general nature of the subjects observed and measured. It is particularly requested, therefore, that no "Pyramid measures" be taken from the Drawings; but that the numerical entries of the original measures, contained in this Volume, be always referred to, when exactness is required.)

ERRATA.

On page P 21, *for* Plate V., *read* Plate 26.

" P 61, foot of right hand column, *for* 5·4, *read* 54·

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SECTION I.—LINEAR MEASURES.

INTRODUCTION.

These linear measures are expressed throughout in terms of British inches and decimals of an inch; no other name of linear measure having been employed; and every measuring rod, bar, scale, or line having been specially prepared for this work, and graduated to show inches only, in numbers of either 5, or some multiple of 5. For coarse work, the rods had their inches painted alternately black and white, fractions being then read off by estimation, or by a portable inch-scale finely divided; while for closer work the bevelled edge of each scale was subdivided into tenths, and half-tenths,—which allowed a reading off with certainty to the nearest hundredth of an inch, even under the necessarily imperfect candle illumination of the interior of the Pyramid; the readings being always taken in terms of decimal fractions of the whole inch, and never in tenths of the smallest divisional space on the scale when that was other than a tenth, or hundredth of an inch. One of the five-inch scales, by Mr T. Cooke and Sons of York, was subdivided, and with great neatness, to every hundredth of an inch; allowing readings to be taken with a hand-magnifier to ·001 or ·002 of an inch. But this was found to be beyond the requirements of the Pyramid in its present state, and was only employed in the operations for comparing the lengths of the several bars or scales, actually employed in the measuring,—with a standard of acknowledged authority; and deducing thence the corrections to be employed, to reduce whatever lengths had been observed in terms of inches of the rods,—into true British standard inches; which are accordingly the inches in which all the following observations are, or are intended to be, expressed when not otherwise specially noted.

The rods or scales employed were as follows, for any outside work or forms :—

Name of Scale.	Material—when of wood, tipped with brass at each end.	Nominal			Edges bevelled.	Divided to, on			True length in British inches when in Egypt.
		Length.	Breadth.	Thickness.		Fine edge.	Middle.	Thick edge.	
		in.	in.	in.		in.	in.	in.	
Cooke, 5	Ivory, . . .	5	1·6	·13	one	·01	1·	·0	4·996
Adie, 5	Ivory, . .	5	1·2	1	two	·05	1·	·05	4·994
" 12	Box-wood, .	12	1·6	[illegible]	one	·05	1·	·1	11·994
" 25	Box-wood, .	25	...	...	one	·05	1·	·1	24·997
" 50	Maple-wood,	50	...	...	one	·05	1	·1	49·987
50 A	Fir, painted,	50	2·3	·7	one	1·	1·	1·	50·005
50 B	Fir, painted,	50	2·3	·7	one	1·	1·	1·	49·995
100 A	Fir, painted,	100	3·0	·9	one	1·	1·	1·	100·016
100 B	Fir, painted,	100	3·0	·9	one	1·	1·	1	100·031
500 tape	Steel tape, .	500	...	...	0	1·	1·	1·	......

For inside measures, as inside the coffer and inside the passages or rooms, for their breadth or height, a set of slider scales was employed; made of mahogany, ended with brass, and the brass tipped with steel, shaved or bevelled off on every side to an acute angle, so as to offer no impediment to measuring diagonals inside a cube; and appearing generally of this figure :—

The thicker part of the arrangement is a hollow square tube, 1·25 inch square outside in cross section; in which slides the thinner part,—which is a solid mahogany rod, ·75 inch square in cross section, and can be clamped at any point by an appropriate screw. The slider alone is divided, so that it measures only the excess beyond the closed length, whence the name of each slider is derived. The divisions merely consist of whole inches, painted alternately black and white, and numbered. The sliding rod was made in every case as long as the hollow trunk permitted; but if the subject allowed, no slider was used with its sliding rod projecting very far. The lengths, however, of each slider, were taken at many different inches of protrusion of its inside sliding rod, as thus :—

Slider 25.

(Used chiefly for internal breadths, and depths of coffer.)

Nominal Lengths, inches.		Real Lengths in British inches.	Nominal Lengths, inches.		Real Lengths in British inches.
25	=	24·965	34	=	33·993
26	=	25·949	35	=	34·998
27	=	26·981	36	=	35·998
31	=	30·975	41	=	41·003

Slider 35.

(Used chiefly for the breadths and heights of passages, doorways, and ramp intervals; and its correction, for reducing a length given by its divisions to true British inches, has been considered = — ·152 inch.)

Nominal Length.		Real Length.	Nominal Length.		Real Length.
35	=	34·853	48	=	47·862
36	=	35·868	49	=	48·821
40	=	39·866	50	=	49·855
41	=	40·856	51	=	50·837
42	=	41·860	52	=	51·858
43	=	42·858	53	=	52·849
44	=	43·864	[illegible]	=	53·858
45	=	44·871	55	=	54·859
46	=	45·869	56	=	55·875
47	=	46·855	61	=	60·865

SLIDER 50.

(Correction to reduce a measure in its nominal inches to true British inches = + ·060 inch.)

Nominal Length		True Length	Nominal Length		True Length
50	=	50·044	61	=	61·060
51	=	51·068	66	=	66·065
52	=	52·067	71	=	71·066
53	=	53·072	76	=	76·055
54	=	54·048	81	=	81·055
55	=	55·077	86	=	86·045
56	=	56·060	91	=	91·068

SLIDER 70.

(Correction to reduce a measure in its nominal inches to true British inches = + ·130 inch, nearly.)

Nominal Length		True Length
70	=	70·057
71	=	71·107
76	=	76·121
77	=	77·135
78	=	78·127
81	=	81·123
86	=	86·120
91	=	91·123
96	=	96·121
And 60 inches of its slider alone	=	60·068

SLIDER 100.

Nominal Length		True Length
100	=	100·039
And 90 inches of its slider alone	=	90·068

SLIDER 400.

This was a variation on all the former sliders; and was composed of three hollow trunks of mahogany, sliding one within the other, and fixable at one point only by a stout brass pin; in the brass plate forming the base of the lower and thicker trunk, a strong steel peg was screwed (so that vertical heights might be measured truly on sloping floors); and from the top of the uppermost trunk there could be drawn forth,—by a string passing over a pulley, and capable of being either pulled from, or clamped, below,—a solid rod, marked with inches, and pointed at the end. After a particular measure on one occasion in the grand gallery, this rod was laid down on a level floor, and tested by 100 B, with the following result:—

Nominal Length of Slider 400 at a particular point of its Slider part.		Inches.	Tested Length in terms of 100 B.	Real Length in British inches.
Steel peg	=	10·00		
First trunk	=	100·00	......	......
Second ,,	=	99·92	......	......
Third ,,	=	99·95	......	..
Sliding part at	=	40·3	......	......
			......	......
		350·17	350·2	350·3

This, and the other smaller sliding scales, were all made by Mr T. Cooke and Sons of York, and gave great satisfaction; if too, there is a large constant error about some of them, as slider 35, it had been intimated to Mr Cooke, that these rods were only intended to carry a measured length from the thing measured to a certain reference scale of higher order, which was alone to be held answerable for the truth of its figures.

REFERENCE SCALE.

The reference scale was itself, however, only an intermediary between the practical bars employed in measuring, and the standard scale (of which presently), and was thus composed:—

A flat bar, 105 inches long, 5 broad, and 0·5 thick, laid flat on the shallow floor of a very stout box, 115 inches long, 8 inches square at the ends, and composed of wood 1·3 inch thick, with deep joist-like sides, to prevent gravity-flexure, and armed with thermometers at either end to show the temperature; the divisions were at every 5 inches; and there were gun-metal rectangles provided, one of which was fixed over the commencing division, and the other brought to touch one end of any rod, whose other end was touching the fixed metal surface; the excess of the place of the second rectangle beyond the last 5-inch division of the reference scale was then read off by means of the small ivory scale, divided to ·01 inch; and, by a magnifier, determined to ·001.

But the flat bar of the reference scale, which had been made out of an organ-pipe of the date of Queen Anne's reign, kindly procured for me by my friend Mr Joseph Sidebotham, of Manchester, and reported by several of his friends to be almost matchless, when coated with copal varnish, for the construction of measuring-rods of invariable length,—had been unhappily treated to linseed-oil instead, by the optician into whose hands I had intrusted it; and this circumstance, joined perhaps to its having been cut out in the direction of a radial plane of the original tree, and to the heat and drought of Egypt,—set the bar twisting at such a rate *in the plane of its breadth*, great as that was, that in a short time it would no longer go into its box, and had to be discarded. In its place, however, I pencilled a scale on the inside bottom of the box, put in every fifth inch by means of a fine cut with a penknife, and used these divisions ever afterwards as a reference scale; employing for the time an estimated value of their proportion to British inches.

Now, the 5-inch spaces of the reference scale had been intended, in any case, to be compared with a 5-inch stone standard, by means of a micrometer-microscope beam-compass; which, together with the said standard, had been prepared for me before leaving England by an optician there. But when he brought the combined apparatus to me in Liverpool, only on the eve of embarking, and it appeared made quite contrary to instructions, and very ineffective,—I handed it back to him to alter; and he promised so to alter it and send it out after me to Egypt within one month, on

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pain of paying a penalty of 10s. per day for every day's delay beyond the month; but I have not seen it from that time to this, though he states that he sent it to Alexandria three months after the appointed time.

Being driven, therefore, to make some extempore apology for a length-carrier when engaged at the Pyramid, I prepared a piece of ancient basalt; scratched with a diamond ring an approximate 5-inch length thereon; and compared every 5-inch space of the reference scale with this basalt standard, through means of the ivory scale divided to ·01 of an inch. In this manner the lengths of all the measures used about the Pyramid became known, in terms of the basalt standard; and were so determined three times, on February 20, March 22, and March 28, at temperatures varying from 64° to 75°.

BASALT STANDARD.

The basalt standard having been safely brought home, was compared, at the Royal Observatory, Edinburgh, on September 7, 22, and 23,—at mean temperatures of 59° and 60°,—with a standard yard measure, constructed by Captain Kater in the year 1824, and presented by the Imperial Government to the Magistrates of Edinburgh; who kindly lent it to me for the purpose of making so necessary a comparison. This yard-standard had hitherto apparently never been used, being kept only as a reserve, and consists of a bar of brass, 1 inch square in cross section, with raised steel ends, 0·5 inch thick, and 1 inch broad and high; the distance between the inner surfaces of these raised ends being the standard 36 inches required. For the purposes of comparison, the Kater standard was not taken out of its box; but as it lay there, the length inside its uprights was taken off by one of the Pyramid slider scales, and by that transferred to the reference scale; whose values were in that manner ascertained, in terms of the inches of the Kater standard yard; and immediately afterwards by another operation, in terms of the inches of the reputed 5-inch basalt standard.

The inches of the basalt standard being thus compared with those of the Kater standard, were found too short; or that the basalt reputed 5 inches were really only of the value of 4·994 inches of the Kater standard.

Now in the comparisons made at the Pyramid, I had suspected the basalt standard to be rather small, and had assumed its nominal length at 4·996; but after the above determination with the Kater yard, the values obtained at the Pyramid were all altered to a value of the basalt = 4·994; and these are the numbers which are given in preceding pages as the true length in British inches of the several scales employed at the Pyramid.

When all four sides of the base of the Pyramid shall be opened up at some future day, more accurate means of mensuration than the above, will have to be employed.

ENTRANCE PASSAGE OF GREAT PYRAMID.

JANUARY 28—FEBRUARY 11, 1865

ENTRANCE PASSAGE.—(See Plates 23, 24, and 26.)

West side of the floor; measures of the joints there, from beginning, or top or north, end of said floor; and then from joint to joint.

Number of Joint from top, or N.	Jan. 27, measured N. to S.	Jan. 27, measured S. to N.	Jan. 28, N. to S.	Jan. 29, N. to S.	Concluded Mean, from Joint to Joint.	Whole Distance from beginning of Passage-floor.	Character of Joint, etc.
	in.	in.	in.	in.	in.	in.	
0	0·0	0·0	0·0	...	0·0	0·0	Present beginning of basement sheet or floor is short of its original beginning.
1	54·2	54·0	54·2	...	54·1	54·1	Fair; i.e., fairly close and fine.
2	47·9	48·0	48·0	...	48·0	102·1	Good.
3	58·9	59·0	58·9	...	58·9	161·0	Very good and close.
4	55·3	55·2	55·8	...	55·4	216·4	Very good and close.
5	65·7	65·8	65·7	...	65·7	282·1	Indifferent.
6	59·2	59·0	59·4	...	59·2	341·3	Long holes hereabout cut in middle of floor, and of a breadth to reach within six or eight inches of sides of passage.
7	66·0	66·3	66·2	...	66·2	407·5	Bad, and do. as to holes.
8	52·5	52·2	52·4	...	52·4	459·9	Bad, and do.
9	62·1	62·5	62·8	...	62·5	522·4	Bad, and do.
10	51·1	53·1	52·7	...	51·1	573·5	Bad, and do.
11	38·1	38·3	38·0	...	38·1	611·6	Bad, and do.
12	39·6	39·2	39·7	...	39·5	651·1	Bad, and do.
13	51·4	51·5	51·4	...	51·4	702·5	Bad, and do.
14	51·6	51·7	51·6	...	51·6	754·1	Bad, and do.
15	36·5	36·4	36·5	36·6	36·5	790·6	Hole 31 inches deep begins here and shows floor-joints rectangularly transverse to axis of passage, through whole depth.
16	48·4	49·6	48·7	48·4	48·5	839·1	Bad.
17	40·2	39·9	40·0	40·0	40·0	879·1	Bad, as being broken.
18	24·7	...	24·8	24·5	24·8	903·9	Bad, and do.
19	35·1	60·9	35·2	35·2	35·2	939·1	Better.
20	...	...	63·7	63·6	63·6	1002·7	Diagonal close, but with neighbouring cracks.
21	...	...	46·3	46·9	46·6	1049·3	Diagonal and close.
21'	133·2	...	21·±	20·±	21·±	1070·±	Sand-heap.
21''	44·±	...	48·±	50·±	49·±	1119·±	Al Mamoon's hole in west wall begins about this place.

ENTRANCE PASSAGE.

East side of the Floor; measures of the joints there, from beginning, or top, or north end of said floor, and then from joint to joint.

No. of Joint from Top or North.	Measured on January 28th.	January 29th.	Concluded Mean, from Joint to Joint.	Whole Distance from beginning of Passage Floor.	Character of Joint, &c.
0	0·0	0·0	0·0	0·0	
1	54·6	54·6	54·6	54·6	Indifferent.
2	47·7	47·6	47·6	102·2	Better.
3	57·8	58·1	58·0	160·2	Good and fine, i.e., thin.
4	53·0	54·9	53·0	213·2	Thin and fine, but partly concealed in a hole.
5	69·5	69·4	69·4	283·6	Indifferent.
6	59·0	58·8	58·9	341·5	Bad.
7	66·2	66·3	66·2	407·7	Bad and broken.
8	51·7	51·8	51·8	459·5	Much broken.
9	59·6	59·0	59·2	518·7	Broken, and not square across floor.
10	53·2	52·8	53·0	571·7	Broken, and not square across floor.
11	38·9	38·9	38·8	611·5	Very bad and broken.
12	40·4	40·3	40·4	651·9	Bad and broken.

ENTRANCE PASSAGE—*Continued.*

No. of Joint from Top or North.	Measured on January 20th.	January 29th.	Concluded Mean from Joint to Joint.	Whole Distance from beginning of Passage Floor	Character of Joint, &c.
13	50·8	51·0	50·9	702·8	Bad and broken
14	53·0	52·5	52·8	755·6	Very bad, broken, and wide.
15	36·3	36·6	36·4	792·0	Better
16	48·5	48·7	48·6	840·6	Very much broken.
17	40·0	40·1	40·0	880·6	Very broken.
18	24·7	24·6	24·6	905·2	Good originally, but since broken at edges.
19	35·1	35·4	35·2	940·4	Good; very hard stone between this and last joint.
20	57·0	57·0	57·0	997·4	*Diagonal*; good, and in very hard stone, but with many neighbouring cracks.
21	36·0	36·4	36·2	1033·6	Diagonal, and do. do.
21'	35·±	30·	33·±	1066·±	Sand heap, adventitious, mixed with broken stones, blocks up entrance passage beyond and below this point.

ENTRANCE PASSAGE.

FLOOR OF.

West Side compared with *East Side*.

Number of joint from Top or North.	Joint to joint on West side.	Do. on East side.	Whole distance from beginning of Passage Floor on West side.	Do. on East side.	Error of Rectangularity.
0	0·0	0·0	0·0	0·0	...
1	54·1	54·6	54·1	54·6	+ 0·5
2	48·0	47·6	102·1	102·2	+ 0·1
3	58·9	58·0	161·0	160·2	− 0·8
4	55·4	55·0	216·4	215·2	− 1·2
5	65·7	48·4	282·1	263·6	+ 1·5
6	59·2	58·9	341·3	342·5	+ 1·2
7	66·2	63·2	407·5	405·7	+ 1·2
8	52·4	51·8	459·9	460·5	+ 0·6
9	62·5	59·2	522·4	519·7	− 2·7
10	53·1	53·0	575·5	572·7	− 2·8
11	36·1	39·5	611·6	611·5	− 0·1
12	39·5	40·4	651·1	651·9	+ 0·8
13	51·4	50·9	702·5	702·8	+ 0·3
14	51·6	52·8	754·1	755·6	+ 1·6
15	36·3	36·4	790·6	792·0	+ 1·4
16	48·5	48·6	839·1	840·6	+ 1·5
17	40·0	40·0	879·1	880·6	+ 1·5
18	24·8	24·6	903·9	905·2	+ 1·3
19	35·2	35·2	939·1	940·4	+ 1·3
20	63·6	57·0	1002·7	997·4	− 5·3
21	46·6	36·2	1049·3	1033·6	− 15·7
21'	21·±	33·±	1070·±	1066·±	− 4·±
21''	49·±	...	1119·±	...	...

NOTES ON FLOOR OF ENTRANCE PASSAGE, TO ACCOMPANY THE MEASURES.

This floor is all in a limestone, close, compact, more or less hard in places, abrading a fine white dust, which rises in smoke-like clouds under the feet from holes where it has accumulated. In parts *not* exposed to friction, this limestone has a tendency to decay into or acquire a rough coarse surface, something like what granite might present, if coated over with thin, yellowish, lime-wash; but where under friction, as from the feet of countless travellers, it has approached a smooth, glossy, and marble-like appearance. There has been a slight wearing down of the floor over its whole breadth, as evident by its present level compared with the side joints.

To assist men, apparently, to ascend and descend on the originally smooth, sloping surface, occasional shallow, transverse holes or notches have been rudely cut in the floor at moderate distances apart. But much more rudely still, has the operation been performed towards the middle and lower end (of the here measured portion) of the passage, where the floor-stone is not so hard as near the beginning. For in such parts, these transverse holes, usually about two-thirds the breadth of the passage, have been lengthened out, preserving their breadth, until they meet and join each other longitudinally; and have then been deepened so as almost to form a sort of ditch, running along or through the central line of the passage floor; very rough and broken, but yet enabling the ascent and descent to be made with only little stooping. These floor-holes have attained the following vertical depths at the given distances from the North beginning of floor, viz.:—

At and about distance,	200,	depth of holes	=	4	more or less.
"	300,	"	=	8	"
"	400,	"	=	10	"
"	450,	"	=	14	"
"	600,	"	=	16	"
"	700,	"	=	18	"
"	800,	"	=	31	"
"	1000,	"	=	0	"

At the distance of about 1000 inches, the holes in the floor cease; and apparently because there, a very much harder stone is employed; so hard as to have defied both men and nature to injure it, and to have left for a short space the original floor surface almost unabraded and uninjured. Below, or beyond about 1100 inches of distance, the further floor is encumbered, and the whole passage down to the subterranean room of the Pyramid is stopped up by heaps of stones and sand, adventitiously or mischievously introduced by the Arabs in the course of the last few years; and effectively limiting now the amount of 'entrance passage' that can be carefully examined.

Only on the third occasion of measuring, did I perceive, that the piece of uninjured flooring, extending from 940· to 1065· of distance, is crossed by two joints. Rather obscured they are by neighbouring and parallel crackings, but true masonry joints nevertheless; very fine and thin, and placed notably diagonal to the axis of the passage. This position is such an anomaly to the other joints of the floor, and has been so very carefully and exactly performed,—made so close as not to catch a careless eye, and yet so certainly as not to escape a scrutinizing one,—and constructed in such excessively hard stone, that, whatever was intended, it *has* lasted to the present time untouched, and uninjured,—that some-

thing must have been purposed to have been marked thereby. What could it be? By referring to the plan of the passage, Plate 23, it will be seen that the lower butt-end of the granite portcullis leading to the upper parts of the Pyramid is just above the place; or rather the hole belonging to the said lower butt-end of it, is; viz., that hole in the ceiling, out of which the so-called 'triangular' or prismoidal stone had dropped when Khaliph Al Mamoon was forcing his way into the Pyramid,—and disclosed to him, what Herodotus had never suspected, that there was an upper system of chambers and passages in this one Great Pyramid, besides its subterranean arrangement.

The long and large holes in the entrance passage floor, though passed over by many describers, are thought by Perring and others,—to have been effected at a very early day, in order to let men get under the blocks of stone—with which they suppose the passage to have been filled up to its mouth by the original builders,—and so by getting under them, to be able to break them up and then drag them out piecemeal.

ENTRANCE PASSAGE,

Roof of.

West Side.

No. of joint.	First measure from joint to joint.	Second measure do.	Mean.	Whole distance from beginning of floor, produced up to roof level—continued.	Character of joint, etc., January 30, 1865.
0	0·0	0·0	0·0	162·2	Front surface of first roof stone is rather wavy and uncertain in [illegible]
1	39·2	[illegible]	39·2	200·4	Indifferently good.
2	40·7	40·8	40·5	241·2	Do. [illegible] pulverulent surface, and are 0·3 higher than joint [illegible]
3	42·7	42·8	42·8	284·0	Bad
4	66·5	66·4	66·4	350·4	Bad.
5	30·6	[illegible]	30·7	381·1	Bad
6	39·0	39·2	39·1	420·2	[illegible]
7	35·3	35·3	35·3	455·5	Indifferent
8	35·4	35·4	35·4	490·9	Bad, stone showing a honey-comb surface-roughness
9	61·9	62·0	61·9	552·8	Indifferent
10	36·6	36·6	36·6	589·4	Fair.
11	36·6	36·6	36·6	626·0	Much broken on under side.
12	36·7	37·0	36·6	662·6	Bad.
13	55·4	55·4	55·4	718·2	Indifferent, stones rough-surfaced
14	55·4	55·2	55·4	773·6	Fair and do.
15	54·6	54·7	54·6	828·2	Broken at under side.
16	[illegible]	35·6	35·6	863·8	
17	34·3	34·3	34·3	918·1	
18	59·0	59·1	59·0	977·1	Visible only in a hole in roof, in continuation of portcullis blocks of first ascending passage
19	46·7	46·6	46·6	1023·7	At 5·7 preceding is a parallel crack. This, the nineteenth joint produced upwards, hits lower end of granite portcullis
20	40·2	[illegible]	40·2	1063·9	Indifferent and broken
21	48·0	48·0	48·0	1111·9	At beginning of Al Mamoon's hole on west side of passage

ENTRANCE PASSAGE,

Roof of.

East Side.

No. of joint.	First measure from joint to joint.	Second measure do.	Mean.	Whole distance from beginning of floor, produced upwards to roof-level—continued.	Character of joint, etc., January 30, 1865.
0	0·0	0·0	0·0	162·3	Wavy and uneven cut off to roof stone.
1	38·6	38·8	38·7	201·0	Indifferent.
2	40·9	40·9	40·9	241·9	Bad and broken.
3	43·3	43·3	43·3	285·2	Indifferent.
4	66·2	65·8	66·0	351·2	Bad and wide.
5	30·2	30·5	30·4	381·6	Bad and wide; powdery, passing into a rough eaten-in surface.
6	39·3	39·6	39·4	421·0	Close.
7	35·4	35·3	35·4	456·4	Indifferent.
8	35·6	35·5	35·5	492·0	Bad.
9	61·8	61·9	61·9	553·8	Bad: stone very rough.
10	36·6	36·4	36·5	590·3	Good and close.
11	37·8	37·8	37·8	628·1	Indifferent.
12	36·7	36·7	36·7	664·8	Bad.
13	55·4	55·3	55·4	720·2	Wide.
14	53·1	53·0	53·0	773·2	Stone very rough and broken.
15	54·4	54·6	54·5	827·7	Much broken at lower edge.
16	58·5	58·6	58·6	886·3	
17	35·5	35·4	35·4	921·7	
18	60·0	60·3	60·2	981·9	Situated up in a hole, which is in continuation of portcullis blocks of first ascending passages, and in their inclined line.
19	46·0	46·4	46·2	1028·1	At 6·5 before this, a parallel crack. This joint produced in its own plane upwards, hits end of granite portcullis, three inches above its bottom.
20	38·3	38·8	38·6	1066·7	Beyond this point the ceiling is much broken in continuation of Al Mamoon's forced hole from the west.

ENTRANCE PASSAGE,

Roof of.

East and West Sides compared together.

Number of joint from Top of North End.	Joint to joint on West side.	Do. on East side.	Whole distance from beginning of *Floor*, produced upwards to roof level, continued on West side.	Do. do. on East side.	Error of rectangularity.
0	0·0	0·0	162·2	162·3	+ 0·1
1	39·2	38·7	200·4	201·0	+ 0·6
2	40·5	40·9	241·2	241·9	+ 0·7
3	42·8	43·3	284·0	285·2	+ 1·2
4	66·4	66·0	350·4	351·2	+ 0·8
5	30·7	30·4	381·1	381·6	+ 0·5
6	39·1	39·4	420·2	421·0	+ 0·8
7	35·3	35·4	455·5	456·4	+ 0·9
8	35·4	35·5	490·9	492·0	+ 1·1
9	61·9	61·9	552·8	553·8	+ 1·0
10	36·6	36·5	589·4	590·3	+ 0·9
11	36·6	37·8	626·0	628·1	+ 2·1
12	36·6	36·7	662·6	664·8	+ 2·0
13	55·6	55·4	718·2	720·2	+ 2·0
14	55·4	53·0	773·6	773·2	− 0·4
15	54·6	54·5	828·2	827·7	− 0·5
16	35·6	58·6	863·8	886·3	+ 2·5
17	34·3	35·4	918·1	921·7	+ 3·6
18	59·0	60·2	977·1	981·9	+ 4·8
19	46·6	46·2	1023·7	1028·1	+ 4·4
20	40·2	38·6	1063·9	1066·7	+ [illegible]
21	48·0	...	1111·9	...	...

NOTES ON THE GENERAL CHARACTER OF ROOF OF ENTRANCE PASSAGE IN GREAT PYRAMID.

These blocks of stone do not seem of so hard and dense a quality as those of the side walls; and these again are inferior to the floor stones; which floor, therefore, seems to have been meant to stand work. The roof stones near upper end of passage have a pulverulent surface, as from dry oxidation; lower down the passage they show the same rough decayed surface as the wall stones. Water sometimes runs down both the roof and side walls, as shown by dark stains.

The roof is first notably broken in upon, or broken out of, at, about, and in continuation of, the butt-end of granite portcullis of first ascending passage; and next it is broken in upon, and even more extensively and irregularly, lower down, partly opposite to, but more in continuation of, Khaliph Al Mamoon's hole in the west.

The parts broken out of the roof, under the portcullis, are rather more than would supply the now missing 'triangular' or prismoidal stone,—which, according to Sir Gardner Wilkinson and others, once completed the roof at that spot, and kept the portcullis out of sight; but they quite include the reasonableness and probability of its once having existed.

The greater distances of nearly all the roof joints east, over west, as measured from commencement of basal sheet at its upper or north end, is probably due to the north escarpment of said basal sheet, in its present broken state, being rather difficult to trace; in fact, rather to error in point where measures were begun, than to all the roof joints being out of cross-level: the *differences* among them will, however, still serve to indicate the degree of closeness and accuracy aimed at, or attained, by the builders in that particular element.

ENTRANCE PASSAGE.

WALLS OF.

West Wall, *Lower ends of Joints.*

No. of Wall-joint from top or North End.	Measured January 27. Joint to joint. Whole course.		January 27. Joint to joint. Whole course.		January 30. Joint to joint. Whole course.		Mean concluded. Whole course.		Total distance from outside of basement. Whole course.		Character of Joint, etc. Whole course.	
	Upper course.	Lower course.	Upper course.	Lower course.	Upper course.	Lower course.	Upper course.	Lower course.	Upper course.	Lower course.	Upper course.	Lower course.
0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	123·4	116·6		
1	...	42·6	...	42·7	42·6	42·6	42·6	42·6	166·0	162·4	This first upper joint so fine as to have escaped observation on the two first measurements.	Good.
2	100·5	55·0	100·0	55·0	56·0	55·2	56·0	55·0	224·0	207·6	Good.	Good.
3	52·4		52·1		...		52·2		299·8		Vertical approximately.	
4	39·7		39·6		...		39·6		349·4		Do.	
5	47·1		47·5		...		47·3		391·7			
6	35·5		35·3		...		35·4		427·1		Good.	
7	55·0		55·1		...		55·0		482·1		Bad.	
8	45·0		45·1		...		45·0		527·1		Indifferent.	
9	35·1		34·9		...		35·0		562·1		Good.	
10	77·0		77·0		...		77·0		639·1		Bad.	
11	42·1		42·2		...		42·2		681·3		Bad.	
12	59·1		59·1		...		59·1		740·4		Bad.	
13	26·6		26·4		...		26·5		766·9		Bad.	
14	34·5		34·8		...		34·6		801·5		Bad or indifferent.	
15	40·6		40·4		...		40·5		842·0		Bad.	
16	29·1		29·1		...		29·1		871·1		Indifferent.	
17	60·4		60·4		...		60·4		931·5		Good.	
18	49·5		49·6		49·6		49·6		981·1		Good.	
19	29·7		...		29·8		29·6		1010·9		Good, when produced upwards hits centre of lower end of granite portcullis.	
20	41·3		41·5		41·2		41·4		1052·3		Good.	
21	...		54·5		56·0±		56·±		1108·±		Touched on by Khaliph Al Mamoon's hole.	
21'	...		...		70·±		70·±		1177·±		End of Al Mamoon's hole.	

ENTRANCE PASSAGE.

WALLS OF

West Wall, Upper ends of Joints.

No. of wall-joint from top North end	First measure, joint to joint. Whole course. Upper course.	Lower course.	Second measure, joint to joint. Whole course. Upper course.	Lower course.	Mean, joint to joint. Whole course. Upper course.	Lower course.	Total distance from outside of basement, North end. Whole course. Upper course.	Lower course.	Character of Joint, etc., January 31, 1865.
0	0·0	0·0	0·0	0·0	0·0	0·0	122·4	110·0	
1	42·8	42·6	42·7	42·7	42·8	42·6	165·2	152·6	
2	58·2	55·2	58·2	54·9	58·2	55·1	223·4	207·7	
3	50·4		50·2		50·2		273·6		Vertical joint approximately.
4	65·7		65·2		65·4		339·0		Vertical do.
5	52·7		52·7		52·7		391·7		
6	35·3		35·3		35·3		427·0		
7	55·1		55·2		55·2		482·2		
8	45·3		45·2		45·2		527·4		
9	35·0		35·0		35·0		562·4		
10	77·0		77·1		77·0		639·4		
11	41·9		41·8		41·8		681·2		
12	59·4		59·4		59·4		740·6		
13	26·3		26·3		26·4		767·0		
14	34·9		34·8		34·8		801·8		
15	40·2		40·5		40·4		842·2		
16	29·3		29·4		29·4		871·6		
17	59·7 ?		60·3		60·2		931·8		In a fracture.
18	49·5		49·4		49·4		981·2		
19	30·3		......		30·3		1011·5		This joint produced in its own line hits portcullis end.
20	40·8		......		40·8		1052·3		Past, or to south of portcullis-abut-end.

ENTRANCE PASSAGE.

WALLS OF.

[illegible]

No. of wall-joint from top at North end	Lower end, joint to joint. Whole course. Upper course.	Lower course.	Upper end, joint to joint. Whole course. Upper course.	Lower course.	Lower end. Total distance from outside of basement, North. Whole course. Upper course.	Lower course.	Upper end. Total distance from outside of basement, North. Whole course. Upper course.	Lower course.	Correction to be applied to Upper end. Whole course. Upper course.	Lower course.
0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	...
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	− [illegible]
3	[illegible]		[illegible]		[illegible]		[illegible]		+	10·2
4	[illegible]		[illegible]		[illegible]		[illegible]		+	10·4
5	[illegible]		[illegible]		[illegible]		[illegible]			[illegible]
6	[illegible]		[illegible]		[illegible]		[illegible]		+	[illegible]
7	[illegible]		[illegible]		[illegible]		[illegible]		−	[illegible]
8	[illegible]		[illegible]		[illegible]		[illegible]		−	0·3
9	[illegible]		[illegible]		[illegible]		[illegible]			[illegible]
10	77·0		[illegible]		[illegible]		[illegible]		−	[illegible]
11	[illegible]		[illegible]		[illegible]		[illegible]		+	[illegible]
12	[illegible]		[illegible]		[illegible]		[illegible]			[illegible]
13	[illegible]		[illegible]		[illegible]		[illegible]		−	[illegible]
14	[illegible]		[illegible]		[illegible]		[illegible]		−	[illegible]
15	40·5		[illegible]		[illegible]		[illegible]			[illegible]
16	[illegible]		[illegible]		[illegible]		[illegible]			[illegible]
17	[illegible]		[illegible]		[illegible]		[illegible]			[illegible]
18	[illegible]		[illegible]		[illegible]		[illegible]		−	[illegible]
19	[illegible]		[illegible]		[illegible]		[illegible]			[illegible]
20	[illegible]		[illegible]		[illegible]		[illegible]			[illegible]
21	[illegible]		...		[illegible]		...			...
22	[illegible]		...		[illegible]		......			......

ENTRANCE PASSAGE.

WALLS OF

East Wall, Lower end of Joints.

No. of wall-joint from top North end	First measure, joint to joint. Whole course.	Second measure, joint to joint. Whole course.	Mean, joint to joint. Whole course.	Total distance from outside of basement, North end. Whole course.	Character of Joint. Whole course.
0	[illegible]	[illegible]	0·0	[illegible]	
1	[illegible]	[illegible]	[illegible]	[illegible]	Exquisitely fine, more remarkably still the longitudinal joint between the two courses.
2	[illegible]	[illegible]	...	[illegible]	Exquisitely fine
3	[illegible]	[illegible]	[illegible]	[illegible]	True line injured; vertical approximately.
4	[illegible]	[illegible]	[illegible]	[illegible]	Bad and open, vertical approximately
5	[illegible]	[illegible]	[illegible]	[illegible]	Bad and open; wall-stone is rather glassy over an uneven grain, and a bit of so hard a stone at the floor.
6	[illegible]	[illegible]	[illegible]	[illegible]	Bad and open
7	[illegible]	[illegible]	[illegible]	[illegible]	Close; wall-stone much injured and decayed
8	[illegible]	[illegible]	[illegible]	[illegible]	Close at top, [illegible] at bottom
9	[illegible]	[illegible]	[illegible]	[illegible]	Moderately [illegible] stone surface [illegible] rough and decayed
10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]; having cracks between this and last joint
11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] at top than bottom
12	[illegible]	[illegible]	[illegible]	[illegible]	Indifferent
13	[illegible]	[illegible]	[illegible]	[illegible]	Indifferent; [illegible] stones very [illegible]
14	[illegible]	[illegible]	[illegible]	[illegible]	Close; from last joint to this one, and the next two or three, there are extensive chips or fractures in the upper part of the wall-stone
15	[illegible]	[illegible]	[illegible]	[illegible]	Close
16	42·4	[illegible]	[illegible]	[illegible]	Indifferent
17	[illegible]	[illegible]	[illegible]	[illegible]	Indifferent; stone much chipped both below and above
18	41·0	[illegible]	[illegible]	[illegible]	Exceedingly broken
20	[illegible]	[illegible]	[illegible]	1140·2	Close, but exceedingly broken and opposite to Al Mamoon's hole on West side, i.e., past its beginning by about 38 inches

ENTRANCE PASSAGE.
WALLS OF.
East Wall, Upper ends of Joints.

No. of joint from top or North end.	First measure, joint to joint. Whole course. Upper course.	Lower course.	Second measure, joint to joint. Whole course. Upper course.	Lower course.	Mean, joint to joint. Whole course. Upper course.	Lower course.	Total distance from beginning of floor, North. Whole course. Upper course.	Lower course.	February 1st, 1865.
0	0·0	0·0	0·0	0·0	0·0	0·0	124·8	110·2	Front, or North surface of the upper of these two courses, begins 15 to 20 inches behind or to south of lower one; but neither have good and regular fronts, being greatly broken and injured.
1	82·9	40·0	82·8	40·0	82·8	40·0	207·6	150·2	
2	...	68·8	...	68·8	...	68·8	...	219·0	
3	70·7		70·4		70·6		278·2		Bad joint and difficult reading
4	66·6		66·6		66·6		344·8		Do. do.
5	42·7		42·6		42·6		387·4		
6	54·8		54·8		54·8		442·2		
7	58·8		58·7		58·8		501·0		
8	36·6		36·4		36·5		537·5		
9	67·6		67·5		67·4		605·1		
10	53·8		53·7		53·8		658·9		
11	58·0		58·0		58·0		716·9		
12	44·2		44·2		44·2		761·1		
13	60·1		60·1		60·1		821·2		
14	32·8		32·9		32·8		854·0		
15	62·8		62·8		62·8		916·8		Close joint.
16	40·5		40·6		40·6		957·4		
17	42·4		42·5		42·5		999·9		This joint produced upwards hits top, or north side of lower buttend of granite portcullis.
18	39·3		39·1		39·2		1039·1		
19	43·8		43·7		43·6		1082·7		Grievously broken, and lower part ending in sand.
20	...		...		...		...		

ENTRANCE PASSAGE.
WALLS OF.
East wall, Lower and Upper ends of Joints compared.

No. of joint from top or North end.	*Lower* ends, joint to joint. Whole course. Upper course.	Lower course.	*Upper* ends, joint to joint. Whole course. Upper course.	Lower course.	*Lower* ends, total distance from beginning of floor, North. Whole course. Upper course.	Lower course.	*Upper* ends, total distance from beginning of floor, North. Whole course. Upper course.	Lower course.	Correction required to upper ends. Whole course. Upper course.	Lower course.
0	0·0	0·0	0·0	0·0	124·8	110·2	124·8	110·2	...	...
1	83·2	40·2	82·4	40·0	208·0	150·4	207·6	150·2	+0·4	+0·2
2	...	68·8	...	68·8	...	219·2	...	219·0	...	+0·2
3	70·8		70·6		290·0		278·2		+11·8	
4	63·9		66·6		353·9		344·8		+ 9·1	
5	33·4		42·6		387·3		387·4		− 0·1	
6	54·9		54·8		442·2		442·2		0·0	
7	58·8		58·8		501·0		501·0		0·0	
8	36·1		36·5		537·1		537·5		− 0·4	
9	68·0		67·6		605·1		605·1		0·0	
10	53·8		53·8		658·9		658·9		0·0	
11	58·2		58·0		717·1		716·9		+ 0·2	
12	44·2		44·2		761·3		761·1		+ 0·2	
13	60·0		60·1		821·3		821·2		+ 0·1	
14	32·9		32·8		854·2		854·0		+ 0·2	
15	62·8		62·8		917·0		916·8		+ 0·2	
16	40·8		40·6		957·8		957·4		+ 0·4	
17	42·6		42·5		1000·4		999·9		+ 0·5	
18	39·1		39·2		1039·5		1039·1		+ 0·4	
19	44·0		43·6		1083·5		1082·7		+ 0·8	
20	57·0		...		1140·5		...		...	
21	...		...		...		...		...	

NOTES ON THE CHARACTER OF THE STONE SURFACE OF THE WEST AND EAST WALLS.

These walls of the entrance passage begin at the north or upper end in two courses to form its height; but after 100 inches or more of distance southward, they are formed of larger blocks of the full height of the passage, and therefore in a single course only. All the joints between these stones are transverse or *perpendicular* to the axis of the passage, excepting only the third and fourth joints, which approximate to a *vertical* position.

A few inches below, or south of the fourth joint, and nearly similarly on either side of the passage, is still to be seen a line about ·08 broad and ·02 deep, drawn by a powerful hand, and with a hard tool, upon the stones, and in direction of a perpendicular to the line of the passage. The line finds itself on that particular stone, whose lower or southern end is perpendicular to the passage, while its upper and northern end is approaching to the vertical; and from its (the line's) position, would enable a set-off to be obtained for the unusual angle of the northern face more accurately than from the farther end of the stone, to which the line may be considered parallel,—but it is in fact rather truer in rectangularity than that, to the passage axis. The Pyramid guides had not noticed these lines on either side; and quite believed, on having them pointed out, that they might have been made by the original builders; while we ourselves afterwards found traces of similar lines on the junction surfaces of fragments of casing stones, and more notably on the south-west socket of the Pyramid excavated and exposed to view by Mr Aiton in April.

The joints of the stones near the beginning of the passage are fine, thin, and true almost past belief; towards the middle of the passage they become coarse and wide, say 0·2 in breadth; but are closer again on approaching the neighbourhood of the portcullis block of the first ascending passage.

The surface of the walls is nowhere absolutely smooth; it shows indications, indeed, of having been once worked to a true plane, and then having, ages afterwards, suffered a corroding effect, which has partially honey-

combed the surface; and this effect is chiefly visible far down inside the passage, where mechanical violence is most slightly felt. Wherever, on the contrary, the stone has been exposed to friction, it seems to harden under it, become smooth and marble-like, and resist the corroding, and rough honeycombing influence seen elsewhere. Wherever, too, the stone has been fresh chipped or fractured, as it has been abundantly near the portcullis, the chipped surfaces are smooth, dense, and uniform.

ENTRANCE PASSAGE.

WALLS OF.

West Wall Joints, tested for rectangularity by a large Square.

No. of joint from top or North end.	Tail of square to South.		Tail of square to North.		Mean, freed from error of square.		Notes, January 31, 1865.
	Whole course.		Whole course.		Whole course.		
	Upper course.	Lower course.	Upper course.	Lower course.	Upper course.	Lower course.	
0	...	...	...	...	...	...	Measures in first column made with tail of square to south, and going down passage; those, in second column, with tail to north.
1	+ 0·10	+ 0·30	− 0·20	− 0·09	− 0·05	+ 0·10	
2	+ 0·20	0·00	− 0·35	− 0·02	− 0·07	− 0·01	
3	+ 14·±		+ 13·±		+ 14·±		
4	+ 9·±		+ 8·±		+ 9·±		Bad joint; the rectilineal line drawn and engraved in the stone behind this joint, or at about 355 inches or more from beginning of basement sheet (for it was not measured for distance) reads on the square + 0·12 by a forward observation, and − 0·12 by a backward observation, whence the mean shows no error of perpendicularity.
5	0·00		− 0·18		− 0·09		
6	0·00		− 0·03		− 0·02		
7	+ 0·12		− 0·05		+ 0·03		
8	+ 0·07		− 0·35		− 0·14		
9	+ 0·10		− 0·37		− 0·14		
10	0·00		− 0·20		− 0·10		
11	0·00		− 0·10		− 0·05		Joint open below.
12	0·00		− 0·30		− 0·15		Joint open at top.
13	− 0·03		− 0·25		− 0·14		
14	0·00		− 0·2±		− 0·10		Bad joint.
15	0·00		− 0·12		− 0·06		
16	− 0·10		− 0·20		− 0·15		Passage grows dark about and below this point.
17	+ 0·12		− 0·15		− 0·02		
18	+ 0·10		− 0·10		0·00		
19	0·00		− 0·1±		− 0·06		This joint produced upwards hits nearly on middle of lower butt-end of granite portcullis.
20	Sand heap.		− 0·2±		...		

ENTRANCE PASSAGE.

WALLS OF.

East Wall Joints, tested for rectangularity by a large Square.

No. of joint from top or North end.	Tail of square to North.		Tail of square to South.		Mean, freed from error of square.		Notes, January 31, 1865.
	Whole course.		Whole course.		Whole course.		
	Upper course.	Lower course.	Upper course.	Lower course.	Upper course.	Lower course.	
0	...	...	...	...	...	...	
1	[illegible]	− 0·07	− 0·05	+ 0·10	− 0·02	+ 0·02	
2	...	− 0·10		− 0·10	...	0·00	
3	+ 10·±		+ 1[illegible]·±		+ 10·±		Bad joint, and measure at top in a hole.
4	+ 7·±		+ [illegible]·±		+ 8·±		Bad joint; line on stone behind or south of this joint reads one way of the square + 0·15, and the other way − 0·22; giving for mean − 0·04.
5	− 0·4[illegible]		− 0·04		− 0·26		
6	− 0·25		0·00		− 0·12		
7	− 0·25		+ 0·07		− 0·14		
8	− 0·[illegible]		− 0·02		− 0·21		
9	− 0·25		+ 0·10		− 0·12		
10	− 0·1[illegible]		+ 0·01		− 0·0[illegible]		
11	− 0·[illegible]		+ 0·01		− 0·12		Ends in a hole at top, and by a crack leads to a joint in roof.
12	− 0·2[illegible]		+ 0·05		− 0·08		
13	− 0·[illegible]		+ 0·05		− 0·14		
14	− 0·2[illegible]		+ 0·12		− 0·06		
15	− 0·1		+ 0·05		− 0·0[illegible]		Best joint for many preceding ones. Upper edge of wall is chipped more than half way down.
16	− [illegible]		+ 0·10		− 0·04		Getting rather dark for measuring.
17	− 0·[illegible]		+ 0·21		+ 0·01		This line produced hits near upper part of butt-end of portcullis.
18	[illegible]		Sand heap interferes.		...		This line produced hits a little past, or to the south of butt-end of granite portcullis.
19	...		...		...		

NOTES ON THE ABOVE OBSERVATIONS.

The square employed was made by myself at the Pyramid for the occasion, out of some of the well-planed flat deal bars contained as packing in the 100-inch linear box. The height of upright was 41·, and length of bar, 50 inches. The base was all on one side of the upright, in the L manner; hence, when testing any particular joint, and reversing the square upon it, the tail-piece stood on different portions of the passage floor on each occasion, which might introduce some error from want of perfect straightness of floor surface; the shape, moreover, of the pieces of wood forming the base was such as to prevent the upright applying quite so close to the wall in one way of using it as the other,—when the making of the observations accurately, became therefore rather more difficult.

I had hoped, on examining the square when first

made up in the instrument-tomb, that it was true at the top of its upright to much less than 0·1, but by the time it had been carried up to the Pyramid, the observations show that it must have increased its error to 0·1 full, each way; making a difference between two sets of readings, with tail-piece reversed, of 0·20, which is probably a greater error than most of the joints themselves are really affected by,—always excepting the two *quasi*-vertical joints, whatever the reason of their being so made, may have been. The large differences between the corrections for the said two joints, as measured with the square and as deduced from the linear measures, pages 16 and 19, are believed to be due to the measure of the square being taken at the top of its upright, or 41 inches from floor, while the linear measures were taken at the very top of the wall, or 47·3 inches above the same.

After making due note of those two anomalies, it will be perceived that there is a remarkably increased accuracy in the parallelism of the wall joints, as well as in their perpendicularity to the axis of the passage,—than what obtains with those of either floor or roof; where errors, or variations exist as often to whole inches, as in the walls they do to tenths. This species of accuracy, too, is preserved throughout the whole measured length of both walls, notwithstanding that there is no effort apparent to make the blocks composing the walls either all of equal size, or to make them correspond in large and small on the two opposite sides.

ENTRANCE PASSAGE.

Relative lengths of stones in floor, walls, and roof, beginning with the highest or Northernmost.—(See Plate 23).

Floor, West side of.	West wall. Bottom of. Whole course. Bottom of lower course.	Top of lower course.	West wall. Top of. Whole course. Bottom of upper course.	Top of upper course.	Roof. West side of.	East side of.	East wall. Top of. Whole course. Top of upper course.	Bottom of upper course.	East wall. Bottom of. Whole course. Top of lower course.	Bottom of lower course.	Floor, East side of.
54·1	...	...	...	...	...	...	...	...	...	...	64·6
40·0	...	...	...	...	...	...	...	...	...	...	47·0
38·9	47·6	47·6	47·6	42·9	39·2	38·7	62·8	63·2	40·0	40·2	54·0
55·8	55·0	55·1	55·0	56·2	40·8	40·9	...	...	68·8	68·5	53·0
65·7	85·2		80·2		42·6	43·0	79·6		70·6		
60·3	40·6		62·4		66·4	68·0	46·6		63·9		64·4
64·2	47·3		52·7		30·9	30·4	47·6		33·4		38·9
52·4	35·4		35·3		39·1	33·4	64·8		64·9		66·2
62·3	65·0		65·2		33·3	35·4	60·8		58·8		61·8
53·2	48·0		48·2		35·4	35·6	30·6		36·1		52·2
56·2	86·0		35·8		61·9	61·6	67·6		63·0		53·0
39·5	77·0		77·8		36·8	36·6	53·8		53·8		34·8
51·4	47·2		41·8		34·6	37·8	54·0		34·3		40·4
51·0	60·1		50·4		36·5	38·7	44·2		44·3		30·9
48·5	26·5		26·4		55·4	65·4	64·1		44·0		32·8
49·5	34·6		34·8		55·4	51·0	33·4		23·9		36·4
60·0	40·5		40·4		54·6	64·5	42·8		42·8		64·9
26·8	29·1		29·4		55·6	58·4	40·6		40·8		40·0
35·3	60·4		60·2		34·3	31·4	42·5		45·6		34·6
63·6	49·6		40·4		60·0	60·2	39·2		39·1		33·3
44·6	29·8		30·3		46·[illegible]	[illegible]	43·6		64·0		37·0
21·±	41·4		40·8		40·[illegible]	[illegible]	...		67·0		34·2
49·±	55·±		...		4[illegible]	...	...		...		33·±
...	70·±		...		...	...	...		...		...

ENTRANCE PASSAGE.

Relative positions of joints in floor, walls, and roof, as indicated by their distance from beginning of basement sheet at its North end.—(See Plate 23).

Floor, West side of.	West wall. Bottom of. Whole course. Bottom of lower course.	Top of lower course.	West wall. Top of. Whole course. Bottom of upper course.	Top of upper course.	Roof. West side of.	East side of.	East wall. Top of. Whole course. Top of upper course.	Bottom of upper course.	East wall. Bottom of. Whole course. Top of lower course.	Bottom of lower course.	Floor, East side of.
0·0	...	...	...	...	...	...	...	...	...	...	0·0
64·1	...	...	...	...	...	...	...	...	...	...	64·6
102·1	111·0	110·0	123·4	122·4	...	...	121·8	121·8	110·2	110·2	101·2
161·0	152·6	152·6	164·0	165·2	162·2	162·3	207·6	205·0	130·2	130·4	161·3
214·4	203·6	207·7	234·0	233·4	200·4	201·0	...	...	219·0	219·3	215·2
282·1	260·8		272·6		241·7	241·9	278·2		290·0		293·6
341·3	349·4		339·0		284·0	285·7	344·5		353·9		342·5
407·5	391·7		391·7		330·4	331·7	387·4		387·3		408·7
459·9	427·1		427·0		351·1	381·6	442·2		442·9		460·5
522·4	482·1		482·2		420·2	421·0	501·0		501·0		519·7
575·5	527·1		527·4		455·5	476·4	537·5		537·1		572·7
611·4	562·1		562·4		490·0	492·0	605·1		605·1		611·5
651·1	639·1		639·4		552·6	551·8	653·9		654·2		651·9
703·5	681·3		681·2		580·4	590·3	716·9		717·1		701·8
734·1	740·4		740·6		628·0	628·1	761·1		761·2		753·6
790·8	768·9		762·0		663·8	664·8	821·5		821·3		792·0
820·1	801·8		801·6		718·2	720·2	854·0		854·2		840·6
879·1	842·0		842·2		771·6	773·2	916·8		917·0		880·6
903·9	871·1		871·0		828·2	827·7	957·4		957·8		905·2
939·1	931·5		931·8		863·8	866·3	999·9		1000·4		940·6
1002·7	991·1		991·2		915·1	921·7	1039·1		1039·5		997·4
1049·3	1010·9		1011·5		977·1	981·9	1062·2		1063·3		1037·6
1070·±	1052·3		1052·8		1021·7	1026·1	......		1140·5		1068·±
1119·±	1107·3		......		1063·9	1066·7	......		.....		...
...	1177·3		.....		1111·9	...	......		.....		...

ENTRANCE PASSAGE.

Relative view of errors of perpendicularity to axis of passage in the joints of floor, walls and roof; the measures by the square being corrected for the less height of its upright, than the walls of the passage.—(*See Notes to this Table at foot of next page.*)

Floor.	West wall. By linear measure. Whole course. Lower course.	Upper course.	West wall. By square. Whole course. Lower course.	Upper course.	Roof.	East wall. By linear measure. Whole course. Upper course.	Lower course.	East wall. By square. Whole course. Upper course.	Lower course.
+ 0·3	...	...	...	...	...	...	...	...	...
+ 0·1	...	...	...	...	...	...	...	...	...
− 0·8	0·0	+ 0·8	+ 0·11	− 0·06	+ 0·1	+ 0·4	+ 0·2	− 0·02	+ 0·07
− 1·2	− 0·1	+ 0·6	− 0·01	− 0·02	+ 0·6	...	+ 0·2	...	0·00
+ 1·6	+ 16·2		+ 16· ±		+ 0·7	+ 11·8		+ 11·3 ±	
+ 1·2	+ 10·4		+ 10·3 ±		+ 1·7	+ 9·1		+ 9· ±	
+ 1·2	0·0		− 0·10		+ 0·8	− 0·1		− 0·30	
+ 0·8	+ 0·1		− 0·02		+ 0·5	0·0		− 0·14	
− 2·7	− 0·1		+ 0·08		+ 0·6	0·0		− 0·14	
− 2·8	− 0·3		− 0·16		+ 0·9	− 0·4		− 0·24	
− 0·1	− 0·3		− 0·16		+ 1·1	0·0		− 0·14	
+ 0·8	− 0·3		− 0·11		+ 1·9	0·0		− 0·02	
+ 0·1	+ 0·1		− 0·06		+ 0·3	+ 0·2		− 0·14	
+ 1·3	− 0·2		− 0·13		+ 2·1	+ 0·2		− 0·09	
+ 1·4	− 0·1		− 0·16		+ 2·0	+ 0·1		− 0·16	
+ 1·3	− 0·3		− 0·11		+ 2·0	+ 0·2		− 0·07	
+ 1·5	− 0·2		− 0·02		− 0·4	+ 0·2		− 0·02	
+ 1·3	− 0·5		− 0·17		− 0·3	+ 0·4		− 0·09	
+ 1·2	− 0·3		− 0·07		+ 2·5	+ 0·5		+ 0·01	
− 5·3	− 0·1		0·00		+ 3·6	+ 0·6		......	
− 15·7	− 0·6		− 0·06		+ 4·8	+ 0·8		......	
− 6 ±	0·0		......		+ 4·4	......		......	
...					+ 2·6	......		......	

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ENTRANCE PASSAGE.

Breadth and Height of, measured with Slider 35', and therefore corrected by —·14 to make it show British inches.

At or near floor joints, on West side.	*Breadth* perpendicular to axis of passage. Near bottom of walls.	Near top of walls.	Mean, or breadth near middle of walls.	*Height*, perpendicular to axis of passage. West side of floor.	East side of floor.	Mean height.	Notes. February 1, 1865.
1	...	...	...	...	...	...	
2	...	...	...	...	...	...	
3	...	...	...	...	...	...	
4	41·61	41·63	41·62	47·24	47·32	47·28	The peculiar little holes of the rough decayed surface, always avoided. Passage has a *vertical* height here = 52·68.
5	...	...	...	...	...	...	
6	...	...	...	...	...	...	
7	41·51	41·41	41·46	47·23	47·30	47·26	Supposed to be Professor Greaves' place of measure; the fifth joint might also answer his description of being 'opposite to a joint in the roof,' but there are wall joints on either side there, which would render the place inappropriate for his purpose.
9	41·29	41·41	41·35		...	...	
8	...	...	...		...	...	
10	...		...	...	...	...	
11	41·59	41·51	41·55	47·30	47·32	47·31	Depth from roof, perpendicular to axis of passage, down to bottom of the broken holes in floor = 55·0, about.
12	...		...	...	...	...	
13	...		...	...	...	...	
14	...	...	...	...	...	...	Breadth measured purposely from hollow to hollow of the surface roughnesses on either wall = 41·91.
15	41·20	41·46	41·33	47·16	47·14	47·15	Vertical height of passage = 52·6[illegible], depth from roof, as before, to bottom of holes in floor, from 61 to 71 about this part.
16		...	...	...	...	...	
17	...	...	...	...	...	...	
18	...	...	...	...	...	...	
19	...	...	...	...	...	...	
20	...	...	...	...	...	...	
21	41·46	{[illegible]}	...	47·28	47·14	47·21	Top defined for height by plane of side roof joint.
	Mean of all,		41·51			47·24	

NOTES TO LAST TABLE ON PAGE P 18.

Of the two methods by which the wall joints have been tested, that by the square is considered the more accurate of the two, and capable of the more accuracy; as top and bottom of the joints were compared at the same instant, and noted to ·01 of an inch; while with the other method the readings for the top of the joints were taken one day, and for the bottom perhaps on another day, and they were only read off at any time to tenths of an inch; with a certain amount always of risk as to the measuring-rod slipping on the inclined floor, whose angle is greater than that of frictional repose.

Yet it was important to exhibit the results of this method against the square on the walls, as it is the only method that was employed to test the joints of both roof and floor.

ENTRANCE PASSAGE.

BEGINNING OF.

The present beginning of the entrance passage is an accident of dilapidation, and mischievous destruction; hence, the roof ends northward at one distance, the walls extend a little farther out in the same direction, and the floor a good deal farther out still; the latter, moreover, bears evident markings on its surface, showing that the walls, and therefore the passage, had once extended along its whole length to its extreme upper or northern end. But that upper or northern end of the floor, *at present*, is probably short by more than 100· inches of the original surface of the Pyramid at that place.

There is nothing, therefore, of great theoretical importance derivable from the measured length of the whole passage, as at present; though much may be deduced from attention to different parts: and no one with an ability to appreciate good work, can look, unmoved with admiration, at the extraordinarily truthful straight lines, and close fittings of the wall joints near and about the present entrance. This feeling, too, increases on examining further the proximate means by which permanence and solidity were given to that special masonry: for instance though the passage itself is but 41·5 inches wide,—the flooring forming it, is close upon 400 inches wide, so that if that broad sheet, composed, too, of the hardest and whitest stone in all this part of the building, was cross-levelled only tolerably at its own sides, the error on the sides of the passage must have been, to linear measure, microscopically small. And when the truth of the floor had been thus secured, the firmness of the rest of the passage was obtained by a manner of building, best represented by drawings, as below; where the front view dispenses with the very difficult representation of the characteristic dip of the passage southward at an angle of 26·3° nearly; but the side view, or longitudinal section, supplies that deficiency.—(See Plate 24.)

The measurements on which the above sketches have been founded, are, in addition to those already detailed:—

Thickness of basement sheet, . . .	=	29 to 30 inches.
„ roof-stone, . . .	=	100
„ stone above roof-stone, .	=	60 at outer end.
Height of triangular hollow under arch-stones, ...	=	55 inches.
Length of roof sides of said hollow, .	=	84 „
Height of vertical line of the two lower arch-stones, ...	=	96 „
Depth of hollow from outer face of arch-stones, ...	=	83 „
Projection of stone above roof-stone, horizontally, or nearly so, beyond, or north of, face of arched stones, . . .	=	46 „
Projection of roof-stone beyond, or north of, stone above it, ...	=	89 „
Breadth of floor-base, ...	=	398 „
„ roof-stone, ...	=	147 „
„ base of triangular hollow, .	=	128 „

These measures about the so-called false portal are

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very rough; and the sketches have been partly filled in by reference to photographs. One or more pair of arched stones formerly existed northward of the present set, as testified to by masonry below, in the form of abutments; but there is no visible indication that there are any more sets behind the present ones, going farther into the Pyramid; and, if there should be such, they go in upon a horizontal line, and therefore rapidly leave the neighbourhood of the entrance passage,—which descends, as it enters, at an angle 26·3°, nearly, below the horizon.

ENTRANCE PASSAGE,

SHAFT OF.

This was not examined farther than the heap of sand and stones fixed in it by the Arabs, at about 1200 inches from the north commencement.

This obstruction occurs just below Khaliph Al Mamoon's hole, which is to the west; the forced front entrance to said hole being from a point outside the Pyramid, about 300 (?) inches below the proper entrance, and 250(?) inches west of it; very nearly, therefore, in the vertical central line of north face. On windy days a certain amount of ventilation goes on, between this forced passage and the entrance passage,—the incline of the latter giving it a certain amount of chimney power,—and their point of connexion being, where the bulbous inner end of the forced passage, or the Khaliph's hole, breaks into the western side of entrance passage. Shortly below that point, it is believed that the masonry of the entrance passage ceases, all the lower part being excavated in the live rock of the hill.

The lower butt-end of granite portcullis of first ascending passage, as it appears in roof of entrance passage, is most noteworthy. It is visible now by a stone having fallen out of the roof at that part; the 'triangular stone' of Pyramid historians.

The shape of this stone, judging by the hole it has left, was underneath, or in plane of roof, about 100 inches long and 41·5 inches broad, and rectangular; but in side elevation it must have been triangular, having

the northern side about	60	in. long,
and the southern,	70	"
with the base, as before, about	100	"

The position of said granite portcullis or block, with regard to entrance passage, is also important, and requires more accurate measures.

If the position of its butt-end be demanded as referred to the floor of entrance passage, by lines transverse to the axis of that, then—

On Western side—

Northern edge of butt-end of granite portcullis, from beginning of basement sheet,	=	992·9
Southern edge, do., do.,	=	1031·5
Mean,	=	1012·2

On Eastern side—

Northern edge, do., do.,	=	995·4
Southern edge, do., do.,	=	1033·3
Mean.	=	1014·4

Mean of both, or centre of portcullis's lower butt-end, distant by transverse line to axis of entrance passage, from beginning of floor of same,	=	1013·3

But if the distance on floor at which the axial line of the portcullis block, or, which is the same thing, of the first ascending passage, if produced, will strike,—be demanded, the distance will be very much less; viz. :—

For the mean,	=	963·9
And distance at which said axial line strikes axis of entrance passage, measured transversely on floor,	=	975·5
And distance at which roof of entrance passage is similarly struck,	=	993·3

These quantities were obtained for the means by small special calculations of the following measures; not absolutely accurate ones, for the roughness of many of the broken surfaces prevented great precision, and a constant difference was found between the measures east and measures west.—(See Plate 26.)

The letters refer to the diagram following.

MEASURES CONNECTING PORTCULLIS BLOCK WITH ENTRANCE PASSAGE.

		Measures West.	Measures East.
a d,	=	50·8	50·2
b e,	=	32·8	32·8
c f,	=	14·1	14·2
d g,	=	29·8	29·7
e h,	=	30·0	29·6
f i,	=	30·0	29·8
g j,	=	29·8	29·7
h k,	=	28·7	28·9
i l,	=	30·0	29·8

DISTANCES FROM BASEMENT BEGINNING, 100 ± *x* SHORT OF ANCIENT PYRAMID SURFACE.

		Measures West.	Measures East.
j,	=	927·3	928·2
k, first method,	=	957·9	959·4
k, second "	=	956·4	957·7
l, (or floor length cut by floor produced of first ascending passage),	=	985·6	987·2
h, first method,	=	974·6	976·4
h, second "	=	974·9	976·2
d,	=	963·0	964·8
e,	=	992·5	993·9
f,	=	1022·2	1023·0

SIZE OF LOWER END SURFACE OF PORTCULLIS BLOCK.

Breadth from east to west, across upper or north edge,	= 38·35 − ·15 = 38·20
Do. do. middle,	= 38·30 − ·15 = 38·15
Do. do. across lower or south edge,	= 38·22 − ·15 = 38·07
Mean,	38·14

Height or length on eastern side,	Feb. 9,	=	46·8 − ·20	= 46·6
„ „	„ 11,	=	47·1 − ·20	= 46·9
„ western side,	„ 9,	=	46·8 − ·20	= 46·6
„ „	„ 11,	=	47·0 − ·20	= 46·8
			Mean,	46·72

Diagonal, east top to west bottom, .	=	59·8
„ west top to east bottom, .	=	59·6

The longitudinal surfaces of portcullis extending southwards and upwards from the above butt-end surface,—are partly visible on all four sides; and indicate, that the so-called granite portcullis is not a large sheet of granite sliding transversely to the axis of passage, but is in form like a cork or stopper, rammed in along the axis, from above, and filling up all the bore of the passage.

The breadths and heights of butt end being measured with the scale 'Adie 25,' have been corrected accordingly. They still show a small excess of length over the diagonals, measured with '50 A,' but that may be due to my having been misled by the rounding of the corners of the granite block. All the other and larger linear measures were taken with rod '100 A,' considered not to require any correction for such purposes as those which are here being inquired into.

FIRST ASCENDING PASSAGE.

FEBRUARY 13–17, 1865.

COMMENCEMENT OF MEASURES FOR LENGTH AT ITS PRESENT PRACTICAL LOWER END, OR JUST ABOVE THE UPPER END OF GRANITE PORTCULLIS.

THE floor of this passage is, if traced underneath its walls, much broader than passage itself; as is most easily to be seen on western side, where several feet in length, from portcullis upwards, of western wall have been broken away to admit of entrance into the passage by any one climbing upwards from Al Mamoon's hole: the original position of the removed wall is, however, still to be traced on the floor surface, and is conformable to the passage itself above or south, and to the breadth of the granite portcullis below, or north of, that place. (Plate 5.)

The upper, or southern, face of the granite portcullis is very broken and uneven; it is, in fact, altogether a surface of fracture, and not the original end of the portcullis, which may have extended much farther upwards and southwards; while certain large fragments of granite, occasionally with parts of worked surfaces, still to be seen at the bottom of Al Mamoon's hole just underneath,—may have been derived from some former breaking up of the southern end of portcullis.

The base of the present upper or southern end of portcullis terminates in the uneven manner represented in the sketch (Plate 5); where the corrections required to reduce actual surface to a straight line A B, drawn at right angles to axis of passage, and touching the most prominent part of the portcullis block, are, at the places marked

1	=	1·8 inch
2	=	0·0 „
3	=	1·8 „
4	=	2·0 „
and 5	=	3·3 „

This line A B will be the reference for linear measures at the lower or northern end of first ascending passage.

TERMINATION OF MEASURES FOR LENGTH AT UPPER, OR SOUTHERN END OF FIRST ASCENDING PASSAGE.

At upper or southern end, first ascending passage enters the Grand Gallery, *i.e.*, the *second* ascending passage,—by passing through a vertical wall which makes north end of said Gallery. Roof and walls of first ascending passage terminate flush with said north wall of Gallery, but the floor passes in, and extends into Gallery to a distance of from twenty to twenty-three inches, preserving its steep ascending angle; so that a vertical section of upper end of first ascending passage, appears thus, when looking east.—(See Plate 5.)

The floor of first ascending passage is, however, marked by a joint in continuation of vertical plane forming roof and walls, say at C, which will therefore be made the upper reference line for linear measures of the length of this passage.

SHAFT OF THE FIRST ASCENDING PASSAGE.

The stone of which the *floor* of this passage has been composed, is excessively hard, and has acquired, under friction of feet, a species of half marble, half flinty sort of polished surface; on which, a screw-driver would not make any visible line, when tried, to mark the end of the measuring-rod,—obliging a black-lead pencil to be used for that purpose. There are abundant cross notches cut in the floor, to keep feet from slipping; but the joints themselves are not very good, as a rule; though occasionally there were some so excessively close and fine through parts of their course, as to be quite invisible on either their western or eastern sides, as will be perceived in the columns of measures.

The *walls* and roof of the passage are composed of a very much softer stone, as Professor Greaves remarked in his day; and they are decayed and exfoliated away to a lamentable degree, chiefly towards the lower end, so as quite to give all that part of the passage a rounded and cavernous character, which was not clearly mentioned by Professor Greaves, and is serious if it has occurred since his visit. Towards the upper end of the passage, the original surfaces of roof and walls begin to appear again; but a considerable portion of the roof is cracked longitudinally along the middle.

The walls show sometimes vertical, and sometimes perpendicular-to-passage, joints, and these are now and then confusedly interfered with by parts of horizontal courses of masonry. Altogether, there is smaller and less perfect masonry employed in the first ascending passage than in the entrance passage; giving the practical impres-

sion of the former being a mere necessary mean of communicating between the entrance passage and Grand Gallery, and having little or no symbolic importance in itself.

The measures were more troublesome than in entrance passage; for there, daylight generally served; but here, in first ascending passage, there is not a particle of daylight; candles had to be employed, and as they will not stand, but slip, and slide right away on the steep floor—small angular brackets were fitted to the measuring-rod; so that when that was duly held fast by an attendant Arab, the candles and their illumination were preserved about us.

FIRST ASCENDING PASSAGE,

Floor of, West Side; Measures for Length.

Numbers of joints from line A B at lower end.	Measures from joint to joint. Feb. 13.	Whole distance from line A B.	Measured by lengths of rod 100 A.	Notes on Characters of Joints, etc.
Line A B	0·0	0·0	...	
1	49·1	49·1	...	Bad joint.
2	42·2	91·3	...	
3	38·5	129·8	...	Very bad.
4	36·8	166·6	...	
5	37·0	203·6	...	Very bad, passage enlarged and cavernous.
6	51·0	254·6	...	Bad.
7	45·0	299·6	...	Bad.
8	60·0	359·6	...	Passage very cavernous.
9	41·5	401·1	...	
10	62·0	463·1	...	
11	32·8	495·9	...	
12	49·4	545·3	...	
13	56·4	601·7	...	All the joints in this passage very difficult to identify and measure.
14	29·3	631·0	...	
15	38·0	669·0	...	
16	32·8	701·8	...	
17	52·2	754·0	...	
18	37·0	791·0	...	
19	36·5	827·5	...	Extremely close.
20	50·0	877·5	...	Extremely close.
21	30·2	907·7	...	
22	41·5	949·2	...	Extremely close.
23	...	...	...	No joint perceivable on this side; see east side.
24	86·2	1035·4	...	
25	48·3	1083·7	...	Bad.
26	30·8	1114·5	...	
27	...	...	...	No joint perceivable on this side; see east side.
28	119·0	1233·5	...	Good
29	57·5	1291·0	1291·2	This measure really taken on the east side.

FIRST ASCENDING PASSAGE,

Floor of, on East Side; Measures for Length

Numbers of joints from line A B at lower end.	Measures from joint to joint. Feb. 16.	Whole distance from line A B.	Measured by lengths of 100 inch rod, A.	Notes on Characters of Joints, etc.
Line A B	0·0	0·0	...	On a second examination, a joint was noticed at 24
1	45·2	45·2	...	
2	36·4	81·6	...	
3	40·9	122·5	...	Very bad joint.
4	...	...	...	No joint perceivable on this side; see west side.
5	74·0	196·5	...	Bad: passage cavernous.
6	50·0	246·5	...	Bad.
7	53·3	299·8	...	Bad.
8	49·7	349·5	...	Bad

FIRST ASCENDING PASSAGE—*Continued.*

Numbers of joints from line A B at lower end.	Measures from joint to joint Feb. 16.	Whole distance from line A B.	Measured by lengths of 100 inch rod, A	Notes on Characters of Joints, etc.
9	50·0	399·5	...	Floor uneven and hollow to a degree.
10	62·5	462·0	...	
11	32·3	494·3	...	
12	50·2	544·5	...	
13	55·3	599·8	...	
14	...	...	...	No joint perceivable on this side; see west side. All these measures made by candlelight, as otherwise the passage is perfectly dark.
15	67·7	667·5	...	
16	33·0	700·5	...	
17	53·1	753·6	...	Good.
18	34·7	788·3	...	
19	37·4	825·7	...	
20	49·0	874·7	...	
21	31·7	906·4	...	
22	41·0	947·4	...	
23	53·0	1000·4	...	
24	33·5	1033·9	...	
25	48·8	1082·7	...	
26	30·7	1113·4	...	
27	58·5	1171·9	...	All the joints in this passage very difficult to identify and measure.
28	61·3	1233·2	...	
Line C = 29	57·8	1291·0	1291·4	

FIRST ASCENDING PASSAGE,

Floor of.

West and *East* sides compared.

Numbers of joints from line A B, at lower or Northern end.	Sizes of joint-stones: On West side of floor.	On East side of floor.	Whole distances from line A B: On West side.	On East side.	Error of irregularities	Notes.
Line A B	0·0	0·0		0·0		
1	49·1	45·2	[illegible]	[illegible]	[illegible]	
2	42·2	36·4	[illegible]	[illegible]	[illegible]	
3	38·5	40·9	[illegible]	[illegible]	[illegible]	
4	36·8	...	166·6	...	...	Joint so close as to be invisible on East side.
5	37·0	74·0	[illegible]	[illegible]	[illegible]	
6	51·0	50·0	[illegible]	[illegible]	[illegible]	
7	45·0	53·3	[illegible]	[illegible]	[illegible]	
8	60·0	49·7	[illegible]	[illegible]	+ 10·1	
9	41·5	[illegible]	[illegible]	[illegible]	+ 1·6	
10	62·0	62·5	[illegible]	[illegible]	[illegible]	
11	32·8	32·3	[illegible]	494·3	[illegible]	
12	49·4	50·2	[illegible]	544·5	[illegible]	
13	56·4	55·3	601·7	599·8	+ 1·9	
14	29·3		[illegible]	...	...	Joint invisible on East side.
15	38·0	67·7	669·0	667·5	+ 1·5	
16	32·8	33·0	701·8	700·5	+ 1·3	
17	52·2	53·1	754·0	753·6	+ 0·4	
18	37·0	34·7	791·0	788·3	+ 2·7	
19	36·5	37·4	827·5	825·7	+ 1·8	
20	50·0	49·0	877·5	874·7	+ 2·8	
21	30·2	31·7	907·7	906·4	+ 1·3	
22	41·5	41·0	949·2	947·4	+ 1·8	
23	...	53·0	...	1000·4	...	Joint invisible on West side.
24	86·2	33·5	1035·4	1033·9	+ 1·5	
25	48·3	48·8	1083·7	1082·7	+ 1·0	
26	30·8	30·7	1114·5	1113·4	+ 1·1	
27	...	58·5	...	1171·9	...	Joint invisible on West side.
28	119·0	61·3	1233·5	1233·2	+ 0·3	
29	57·5	57·8	1291·0	1291·0	0·0	

FIRST ASCENDING PASSAGE,

BREADTH AND HEIGHT OF.

Observed with Slider 33, and therefore corrected by — 0·1.

At or near joints on floor, numbered from line A B upwards and southwards to line C.	Breadth.	Height perpendicular to axis of passage.	Notes, February 13, and February 16, 1865.
Line A B	41·6	47·3	These measures are rather of the portcullis block, close-fitting into the original passage at this point; and showing what that must have been.
Between line A B and joint 1	41·4	47·5	By old markings on floor and walls.
2	...	...	
3	...	50·?	These excessive breadths and heights are caused by the extraordinary cavernous exfoliations of the stone, which have enlarged all the lower end and much of the middle of the passage, above its original size.
4	55·?	53·?	
5	60·?	54·?	
6	61·?	50·?	
7	60·?	53·?	
8	...	...	
9	56·?	54·?	
10	...	...	
11	55·?	55·?	
12	...	...	
13	...	...	
14	...	...	
15	...	...	
16	...	...	
17	...	...	
18	...	...	
19	...	...	
20	...	...	
21	...	...	Hereabouts the original surfaces of roof and walls begin to reappear; and with them the true measures; but roughly only by reason of cracks, and holes, and wear
22	...	...	
23	...	...	
24	...	...	
25	...	47·7	Vertical height = 53·0±.
26	...	...	
27	...	47·7	All sorts of larger heights and breadths are possible by measuring in holes in the surfaces caused by wear and tear, but these have been carefully avoided in the present case.
28	42·2	47·4	
29	42·1	47·5	

PORTCULLIS.

This is composed of a series of blocks of red granite of shape of the passage, viz., 47·3 high (transverse to axis of passage), and 41·6 broad, and have been pushed down the passage from above; the lowest block being made with a 'taper,' and the lowest part of the passage similarly, to prevent the blocks going right through and into the entrance passage below. This tapered shape is proved by comparing the above measures for height and breadth of the top or south end of the portcullis with the similar measures for the lower end, see pages P 20 and P 21 of entrance passage linear measures, viz.:—

Lower butt-end of portcullis, height (transverse to its passage), ...	= 46·7
Do. do. breadth, ...	= 38·1

The length of the portcullis from lower butt-end up to the line A B, marking its upper or southern end on the floor = 178·8. See next section.

TOTAL LENGTH OF FIRST ASCENDING PASSAGE.

This may be considered as made up thus:—

1st, Shaft, or from line A B to line C, . . .	= 1291·2
2d, Portcullis; or from line A B to lower butt-end,	= 178·8
and 3d, From middle of lower butt-end to axis of entrance passage in *h* (P 20 and Plate 26), .	= 62·5
See also Plate 25.	1532·5

Of these three quantities, the second has not yet been proved; and it was so very difficult and roundabout to measure, that I do not attach much value to the numbers; but, such as they are, they were obtained as follows.

Standing in Al Mamoon's hole, towards its western side, you can see, looking eastward, a part of the upper or southern end of the portcullis; and also part of the entrance passage vertically under it; but you cannot drop a plumb-line from one to the other, for there is much projecting masonry between; neither can you see the whole length of portcullis, for the lower part thereof is buried still in solid surrounding masonry: and this state of things is shown in our large Plate 25, in elevation; and partly in plan, in the upper figure of Plate 26.

The difficulty of the plumb-line was overcome, by making use of two,—one hung upon the portcullis itself, and the other from the end of a square, whose base was on the portcullis surface, and whose rectangular arm was so long, horizontally, as to carry the plumb-line clear of the obstructing matter below. It was then tolerably easy to bring the eye into the plane of the two plumb-lines, and see where that, being produced optically, would cut on the roof line of the entrance passage below, or at the point C.

Now, that point C was measurable by rods from the point A, or at where the roof surface of the upper passage met the roof of the lower one; and such length A C, must be geometrically equal to A B, the angles of the passages being assumed equal and opposite. But A B being thus obtained, and found = 180·5; we must evidently, in order to get the portcullis itself, subtract A A′ = 50·2, or the distance of top of lower butt-end of portcullis from roof of entrance passage; and we must add on thereto at the other end, the length B B′, = 48·5, so as to reach on roof, a line transversely opposite that other line (A B) on the floor, of first ascending passage, which formed the origin there for measures of length.

We have then, finally, for the length of the portcullis or A′ B′, 180·5 — 50·2 + 48·5 = 178·8.

Hence the length of first ascending passage, on its *floor*, from back of portcullis to line C (page P 21) at top or south end of said passage,

$$= 1291{\cdot}2 + 178{\cdot}8 = 1470{\cdot}0,$$

but from roof of entrance passage (see page P 20),

$$= 1291{\cdot}2 + 178{\cdot}8 + 14{\cdot}2 = 1484{\cdot}2,$$

and from axis of entrance passage (see page P 20),

$$= 1291{\cdot}2 + 178{\cdot}8 + 14{\cdot}2 + 29{\cdot}9 = 1514{\cdot}1,$$

and from floor of entrance passage,

$$= 1291{\cdot}2 + 178{\cdot}8 + 14{\cdot}2 + 29{\cdot}9 + 29{\cdot}9 = 1544{\cdot}0,$$

While from *axis* of entrance passage, as cut by *axis line* of upper passage (see page P 20 and Plate 26),

$$= 1291{\cdot}2 + 178{\cdot}8 + 82{\cdot}6 + 29{\cdot}8 = 1582{\cdot}4.$$

But, if *axis* of passage be thus adopted, there must be a further addition at the upper end; for a line produced upwards from the old line *c* (there on the floor), and perpendicularly to axis of passage,—will fall inwards or north of the doorway there; and by a quantity of about 12 inches, making thus, for full *axial length* of first ascending passage, from axis of entrance passage, to middle of doorway at south end of said first ascending passage,

= 1291·2 + 178·8 + 32·6 + 20·8 + 12·0 = 1544·4 inches.

HORIZONTAL PASSAGE TO QUEEN'S CHAMBER.

THIS horizontal passage may be considered to begin at the north wall of the Grand Gallery; and trending thence due south, has its first portion coincident with, or hidden in, said large Gallery; it then passes under the elevated floor of that Gallery, and continuing on still horizontal (approximately) and southward, reaches the room called the Queen's chamber, entering it on its floor-level, and at the eastern side of its northern wall. But in order that such coincidence of floors may take place at the entrance, the floor of the passage experiences a notable depression of nearly half the whole height of the passage, at about 1·7th of its whole length from the southern end. It is also to be noted, that the horizontal passage only begins *visibly* to be a passage, and of about the height and breadth of the 'entrance passage,' when it passes under floor of Grand Gallery; and this place occurs also at about 1·7th of the whole length, but from the north end, reference being had to the mean of the *two* northern ends or cut-offs of the Grand Gallery floor.

Further, it is particularly noteworthy, that in going from north to south in the horizontal passage, saline incrustations are observable on walls and floor, beginning at about 150 to 200 of distance from north end, and increasing in amount farther southward; until at last both roof, walls, and floor are covered with a coating of them near an inch thick, brown outside, white inside, and of almost stony hardness, and they are termed by some authors, 'sparry excrescences.'

These saline incrustations are alluded to elsewhere in this volume, as well as in vols. i. and iii., for their chemical nature, mode of formation, and probable origin; here, they are merely mentioned as being impediments to applying linear measures direct to the original worked surface of the stone.

For the shape of this passage, near its commencement at north end, see Plate 32; also Plate 27; and for southern end, see Plate 29. For the whole passage on a very small scale, see Plate 20.

HORIZONTAL PASSAGE TO QUEEN'S CHAMBER.

WALLS OF.

Floor Joints on East side, measured from North to South.

Number of Joint.	Length from joint to joint.	Total length from North wall of Grand Gallery.	Notes, February, 18, 1865.
North wall of Grand Gallery	0·0	0·0	
1	27·3	27·3	This joint about 4·5 in front, or to south of the cut-off of inclined floor of first ascending passage.
2	40·4	67·7	Bad joint.
3	45·0	112·7	Concluded from west side; east side being covered by hardened dirt.
4	58·2	170·9	Bad joint.
5	43·4	214·3	This is under roof; roof having begun at 200·4, where is the last or total cut-off of Grand Gallery floor.
6	16·9	231·2	At 226·0, is the first or southernmost, but only partial cut-off of Grand Gallery floor.
7	39·3	270·5	Wall joints at and beyond this part are all close, good, and true; vertical and horizontal, for they are in two layers or courses.
8	40·0	310·5	
9	44·1	354·6	
10	36·7	391·3	From about 200 to this distance, and thence right on into the Queen's chamber, walls and roof are all composed of a species of limestone, hard, but having a species of saline incrustation on its surface, in sheets hard and brownish on the surface.
11	18·4	409·7	
12	29·3	439·0	
13	31·5	470·5	
14	62·2	532·7	All these floor joints are more or less wide and bad; the stones, too, are small, and so narrow as to require two, sometimes three, to cross the passage.
15	44·2	576·9	
16	43·8	620·7	
17	42·0	662·7	
18	45·0	707·7	
19	33·3	741·0	At 766 in centre of floor a cylindrical hole, 8·0 in diameter, and 3·0 deep.
20	39·7	780·7	Hereabouts begins a better floor, in large blocks all across.
21	86·6	867·3	
22	80·4	947·7	At 916·5 a hole in centre of floor, 4·0 diameter, and 4·5 deep.
23	79·3	1027·0	
24	68·3	1095·3	Wide joint.
25	79·0	1174·3	At 1125·5 a hole in middle of floor, 3·0 diameter, and filled with dirt.
26	49·4	1223·7	Stone broken longitudinally.
27	79·6	1303·3	At 1268·0 a hole in middle of floor, 2·5 diameter, and chipped about edges.
28	42·0	1345·3	At and from 1303·3 begins the lower level of passage floor.
29	50·0	1395·3	Wall joints hid by the excessive amount of hard, brown, stone-like, yet saline incrustation.
30	127·3	1522·6	This joint is 3·2 inches *inside* the Queen's chamber.
		− 3·2	
		1519·4	= Passage length

The above measures for length being the mean of two sets, nowhere differing more than 0·3, and having been further tested for the whole length by a third measuring carried on by rod lengths of 100 inches, may be pretty safely depended on.

Hence whole length of horizontal passage, from north wall of Grand Gallery to north wall of Queen's chamber, ... = 1519·4

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One-seventh of the above, ... = 217·1
South length of passage with low level, . . = 216·1
North length without roof, measuring to *mean place* of the two cuts-off in Grand Gallery floor, = 217·8

BREADTH AND HEIGHT OF HORIZONTAL PASSAGE.

These measures, when below 50 inches, were taken with the '35 Slider' scale, and have had 0·14 subtracted from them for its correction; but when above that width, with the '50 Slider,' in which case the readings have not been corrected. Both roof, sides, and floor of this passage were so uniformly coated with more or less of the saline incrustation, that the measures are probably always less than the original truth by the thickness of such adventitious crust.

Place in passage, by distance from North wall of Grand Gallery.	Breadth, near the			Height, vertical, and also in this case perpendicular to axis of passage.			Notes, February 20.
	Bottom.	Middle.	Top.	East side.	Middle.	West side.	
220	40·61	40·84	41·16	46·26	...	46·64	
760·	...	40·96	...	46·10	...	46·10	
1270·	41·06	...	41·16	46·36	...	46·20	
1310·	...	41·26	...	49·0	...	48·5	Lower level of floor here; stones much broken and badly placed over an excavated hole.
1316·	...	41·06	...	67·3	47·3	46·5	Roof stone is cracked over the entrance into Queen's chamber.

The original height of northern portion of above passage was not improbably 47·0 at least; the difference between 47·0 and the numbers above being due to the saline incrustations. But that height is what is measured off the floor of the passage; and that floor, although the saline matter were to be removed, is rough to a degree, and has even been assumed by Mr Perring to be the casual surface of the mere course of core masonry of the whole Pyramid, which is nakedly exposed both here and in the floor of the Queen's chamber; and he alludes to the round holes (p. P 24), as pivot-holes of the machines used in lifting stones at the building. The present apparent floor is therefore not in a manner an *intended* feature; it was never worked true as a floor; and even if masons were to cut it down now to the depth of six inches all along (a quantity by which it is in a manner too high, as presently to be shown) and polish it, the material would not be the finer and more precious Mokattam stone, which forms the floor of all the other passages. The bringing in, indeed, of layers of that species of stone to the thickness seen in some other parts, would nearly fill this horizontal passage up to its roof or ceiling, in fact, destroy it as a passage; and yet there is every appearance of roof, and walls perhaps also, being constructed in the fine stone, intended to be durable and be seen, or made some use of.

The floor is therefore eminently an anomaly in the horizontal passage; and if measured at its commencement, is shown to be six inches above the level of the line C, formerly referred to in measurements, on the floor of the first ascending passage; *i.e.*, that part of its floor which is in the plane of the north wall of the Grand Gallery.

Connexion of Floors of First Ascending, and the Horizontal, Passages.

The measurements were not very accurate, on account of the broken state of the upper corner of the protruding portion of ascending floor; but slightly assisting the present forms, as shown by the dotted lines in the above diagram, the following measures were taken:—

A C, or inclined length, ... = 28·2
A D, ... = 4·7(?)
C E, or horizontal length, ... = 21·5
D E, or vertical height of floor of horizontal passage above C on floor of first ascending passage, = 6·0

If this 6·0 be now added to vertical height of horizontal passage, formerly given, or 47·0, we have 53·0, or the same as the *vertical* measured height of south end of first ascending passage; and both top and bottom of horizontal passage will then be on the same levels as top and bottom of the other passage, or, which is the same thing, as the north doorway of Grand Gallery.

But southern, or depressed, end of floor of horizontal passage, together with the whole floor of Queen's chamber, is still 14·0 *below* the bottom of said north doorway of Grand Gallery.

QUEEN'S CHAMBER.

The chamber known under this name, at the south end of the horizontal passage, has been long, and entirely, an enigma as to its objects or purposes: it is nearly square on the floor, with an angular roof; and the eastern wall has a large and sumptuously-constructed niche, of the Grand Gallery walls description, but with a less number of overlappings (four only in place of seven), and it is not in the centre of its wall by a very notable distance.

The material of walls, roof, and niche, is a fine white lime-stone; the floor is uneven, and apparently merely the general masonry of the Pyramid, so that the room is in fact without a floor proper, and we are left to speculate where, in height, the upper surface of that would have reached. This peculiar condition of the chamber becomes all the more manifest on examining the structure of the walls; for they are not only not of the general masonry of the whole building, but are in advance both as to whiteness, beauty of the material, and closeness of the joints to the lining of any of the passages yet inspected. The joints are so close, that the edges of the two surfaces of worked stone, and the filling of cement between, are comprisable often within the thickness of a hair. This fact was noted chiefly on the west wall, where, too, the presence of cement in the vertical as well as horizontal joints was duly noted. Elsewhere there is a difficulty in recognising the joints, on account of the half-glazy coating of saline matter. This substance must be regarded as a modern exudation of the stone, for some letters scratched on the north wall, with date 1824, have now a raised outline in the salty matter around and upon them. The saline matter was also seen filling a fissure apparently formed by injurious pressure in the west wall. In one or two places small portions of the original surface of the wall-stones appeared, and bore traces of having been once exquisitely smoothed and finished. The inclined roof-stones appear of a similar order, and extend 100 inches, more or less, into the wall or substance of the Pyramid, to give a firm bearing, as shown by two holes, just under the ceiling, worked by Colonel Howard Vyse and Mr. Perring. A large excavation hole has been made in the floor under the niche (by Sir Gardner Wilkinson, it is said, searching for Mummies); and another at the back of it, by various parties, chiefly Arabs in search of treasure, in former years; while on the south side of the room is a trifling nick very recently cut into the wall, apparently for holding visitors' candles.

The following are the measures taken in this room, partly with the 100-inch rod, and partly with the great 400-inch slider, tested by the others, and not requiring greater corrections than theirs.

QUEEN'S CHAMBER.

FLOOR UP.

	First Measure.	Second Measure.	Mean.
East side, LENGTH of, =	204·7	206·5	205·6
South " " =	227·0	227·4	227·2
West " " =	206·2	205·8	206·0
North " " =	226·3	226·3	226·3
Mean of sides, E. and W.,	...	...	205·8
" N. and S., =	...	...	226·7
East gable end, HEIGHT from floor, =	243·4	244·9	244·2
West, " " =	244·2	...	244·2
Gable ridge, in middle of room, =	243·9	...	243·9
Mean,	...	...	244·4
North wall at E. end, height, =	182· (?)	...	182·2
" W. " =	183·5		
South wall at E. end, " =	181· (?)	...	181·5
" W. " =	182· (?)		
Mean,	...	...	182·4

Diagonals, LENGTH of measured.		Mean
Floor, N.E. corner to S.W. corner, =	302·9	303·2
" N.W. " S.E. " =	303·6	
North wall, low N.E. corner to high N.W. corner, =	293·6	292·3
" " N.W. " N.E. " =	291·0	
South wall, low S.E. " S.W. " =	291·8	291·0
" " S.W. " S.E. " =	290·1	
East wall, low S.E. " N.E. " =	275·5	275·4
" " N.E. " S.E. " =	275·2	
West wall, low S.W. " N.W. " =	273·8	275·6
" " N.W. " S.W. " =	277·3	

The notes to the above measures, state the floor to be in a very disorganised state; some of the slabs being higher, or lower, than others, and all very rough and much broken; base of walls also much injured, and corners rendered uncertain by hardened dirt, with saline incrustations.

This room may be considered to have seven sides, viz., one floor, four walls, and two inclined roof-sides: these I was not able to measure directly, but they may be deduced from the above measures, and stated as follows, viz.:—

INCLINED ROOF SIDES—
Length from East to West (same as floor), . = 226·7
Breadth on the incline, ... = 120·1

The latter is computed as the hypothenuse of the right-angled triangle, where the vertical = 62·0 (or the difference between 182·4, the mean height of walls at outer side of gable end, and 244·4, the mean observed height in centre of same), and the base = 102·9 (or half 205·8, which is the mean breadth of the floor). But tenths of inches are a needless refinement with the lower part of this room, especially in connexion with its uneven floor; and, having due regard to diagonals computed from the rectangular measures, as compared with the diagonals observed, I am inclined to take the following as the most probable rough approximations to the real size of this room, viz.:—

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QUEEN'S CHAMBER.

Floor, East and West sides, length, . .	=	205·
" North and South " " . .	=	226·
Walls, North and South, length of, . .	=	226·
" " height of, . .	=	183·
Walls, East and West, length of, . . .	=	205·
" " mean height of, or $\frac{183+244}{2}$	=	214·
Roofs, North and South, length of, . .	=	226·
" " breadth, . . .	=	119·
And angle of rise of each side of roof, computed from base = 102·5 and perpendicular = 61·0,	=	30·8°

Hence room opened out on plane of east side, may be represented as in Plate 30.

The mark on the western side of the door (in Plates 30 and 29) shows a shallow projection of the stone material.

Of the niche above represented, the following measures were taken on February 20; but are rude in the extreme towards the higher parts, as I had then no ladder to stand upon:—

Breadth of *a* to *f*, ...	=	61·8
" *b* to *g*, ...	=	52·8
" *c* to *h*, ...	=	43·8 (estimated)
" *d* to *i*, ...	=	34·8 (estimated)
" *e* to *j*, ...	=	25·3 (estimated)
Horizontal distance, North wall to *a*,	=	97·2
" South " *f*,	=	46·6
" Centre of niche from continuation of East wall, or roof,	=	25·8

	First measure.	Second measure.	Mean.
Height of portion *a* or *f*, . . . =	66·7	64·7	65·7
" " *b* or *g*, . . . =	31·6	31·5	31·6
" " *c* or *h*, . . . =	28·3	29·0	28·7
" " *d* or *i*, . . . =	29·5	29·3	29·4
" " *e* or *j*, . . . =	29·7	29·0	29·4
Mean Whole height of niche, ... =			185·8

Workmanship of niche, originally very good and true; the intended depth of it generally seems to have been 41 inches; but the stones which reach back to form this depth, penetrate some 35 inches still farther eastward into the masonry. A portion of the niche, just above a level bank or long shelf about 38 inches above the floor, reached much farther back still, say 100·, with height of 40·; but all that part is now much disfigured by modern excavations. These are shown in the two following views of the Queen's chamber in Plate 29; where the arrangement of the roof and wall lining blocks is taken from Howard Vyse and Perring's views.

GRAND GALLERY.

From the larger space, and more numerous architectural features in the Grand Gallery over the simple passages, it requires much examination of the nature of each end, before attempting to measure the distance of one from the other. We shall also do well to look just now, only to the lower, or floor-ward portion of each end,—leaving everything with regard to the upper portions, whether of north or south ends, to a separate section for height.

Entering then the north end of Grand Gallery, by the first ascending passage, we enter there by a doorway 53·2 inches in vertical height (53·5, first measure, and 53·0, second measure), and 42·2 inches broad, *i.e.*, where not broader on account of manifest injury; and these measures are taken on the north wall of Grand Gallery, which is vertical for a certain height upwards from the floor.

The breadth of that wall, or end of Gallery, is about 82·0 (81·7 to 83·0) inches, and the lower storey of Grand Gallery progresses always at that breadth,—except in so far as its very lowest part is filled up on either side by the ramps or side benches of stone; and these, for a vertical height of 23 inches, contract the breadth to about 42·0 inches, or the same approximately as the first ascending passage and its doorway.

The floor of the Grand Gallery may be considered to begin, with the protruding (southward) portion of the floor of first ascending passage; and if continued thence would run along the base of the ramps the whole way, up to the upper or southern end of Grand Gallery.

But in such case there would be no communication to the Queen's chamber. A long part, therefore, 220 inches, of the inclined floor has been removed, and that space has been dug (in a manner) vertically down, preserving the breadth between the ramps as its measure of breadth, and continued downwards until it reaches the level of six inches above the base of north wall of Grand Gallery. (See fig. on page P 25.)

Hence the first part of the floor of Grand Gallery *seems* to casual observation to be level; but the level part is no portion proper to the Gallery; and is so much as six inches too high for its beginning. This state of things may generally be apprehended from the diagrams of Plate 27; which are also constructed to give an idea of the five holes in the vertical sides of the chink leading to the Queen's chamber, and of the entrance to the well. The well (Plate 27) is one of the most peculiar structures in the Pyramid, and forms a rather dangerous place of stumbling at the first entrance into the Grand Gallery: the square hole, however, in the floor, is not that of the well itself, but only the beginning of a horizontal passage, some 28 inches deep, and 85 long, leading straight away west; and then and there only, plunging downwards to form the very well. Further, the hole spoken of as in the floor of Grand Gallery, is rather to one side of it, being within the limits of the western ramp, which has been broken away at the place, for the purpose. In fact there is every appearance that the entrance to the well was once completely closed, by the continuance of the ramp along the western side, similarly to what is now seen along the eastern. Under such circumstances,

strangers would have passed through the Grand Gallery without suspecting any neighbouring well, or concealed passage of any kind; and it seems probable that it must have been opened by men ascending the well from its entrance below and bursting open its closed ramp-stone; when, thanks to the extraordinary strength of the cement employed in all the joints, a portion of the said stone was left sticking in the north-west corner of the Gallery, where it may still be seen, testifying to the once completion of the ramp.

The measures (February 18–22) on which the drawings of Plate 27 depend, are—

Entrance Passage. . . Height vertical. . = 53·2
" . . Breadth, . . = 42·2
Passage to Queen's chamber. Height vertical, . = 46·7?
" " Breadth, . . = 42·0
Grand Gallery, Breadth over ramps, . . . = 82·0
" " between ramps, . . = 42·0
" " in 'dug-out' vertical depth leading to Queen's chamber, ... = 42·0
North end of floor, Height of absolute cut-off, . . . = 39·7 and 39·8
" " Length on the incline to second cut-off, . . = 40·5 and 40·8
" " Height of second cut-off, = 9·0
" " Same on opposite side, . = 9·0
Horizontal distance from North wall of Grand Gallery to North end, or absolute cut-off of floor. . =190·4
Inclined distance, computed from above for angle 26° 18′. . . . . =222·4
Inclined distance, given by summing small measures connected with the five holes on either side within the above length, ... =221·6

WELL, PARTICULARS OF.

Horizontal distance, North wall Grand Gallery, to beginning of hole in floor, measured near floor, . . = 19·3
Inclined distance of the same to beginning of break-out near upper level of ramp, . . . = 25·5
Length North to South of hole in horizontal floor, = 30·0
Inclined distance, North wall Grand Gallery to South end of break-out under ramp, . . . = 64·8
Distance horizontal from North wall Grand Gallery to North Side of Well, produced Eastward, . = 21·3
Distance North side, to South side of Well mouth, = 28·0
Distance East side, to West side of Well mouth, = 28·0
Distance horizontal from North wall of Grand Gallery to centre of Well. . . . . . . = 35·3
Depth within wall, from which ramp-stone to close Well mouth, has been broken out, . . = 7·0
Horizontal length of Western passage to Well mouth, from East side of hole in floor to West side of Well, = 84·5
Do. do. do. East do., = 56·0
Do. from East side of acting roof to West side of Well, = 57·0
Depth of hole in floor, ... = 27·0
Depth of roofed portion of horizontal passage to Well mouth, ... = 27·0
Distance from North wall of Grand Gallery, to parallel of centre of Well mouth, measured horizontally on floor, ... = 34·3
The same distance computed from above, for the ramp incline, ... = 38·4
The same measured direct on broken indications, = 33·0
Ramps, vertical height, ... = 23·0
" breadth (but for more particulars see a subsequent section), ... = 20·0

The five side holes *a*, *b*, *c*, *d*, *e* (see Plate 27), on east side, measure thus:—

	a.	*b*.	*c*.	*d*.	*e*.
Distance from North wall on incline of ramp of North side, . . .	72·5	115·7	148·7	172·7	197·4
Do. do. South side, . .	90·7	132·5	157·7	182·4	207·1
Length or tallness of North side, .	11·0	15·0	14·8	14·0	15·0
" " South side, .	14·0	20·1	17·4	17·0	18·0
Length, inclined, of upper side. . .	8·2	14·6	9·6	9·7	9·7
" horizontal, of lower side. .	8·2	16·0	8·4	8·8	9·1
Height of lower side above apparent floor, ...	18·0	31·4	47·2	57·8	68·8
Do. do., above horizontal plane of North wall base.	24·0	37·8	53·2	62·4	74·8
Horizontal depth eastward. . .	15·3	9·5	22·0	21·2	10·4

The holes are worked very rudely; and pickmarks are visible inwards; some of them have also been mischievously enlarged in part.

The sides of the holes all deviate from being truly vertical, and affect a slight tendency towards the position of being at right angles to incline, thus:—

With hole *d*, South side at its base requires correction to vertical . . . . . = 1·1
and North " " " = 0·6
With hole *c*, South " " " = 1·0
and North " " " = 0·4

The five holes on the *west* side measure thus:—

	a.	*b*.	*c*.	*d*.	*e*.
Distance from North wall on incline of ramp of North side of hole. .	72·5	114·3	147·3	171·8	196·6
Do. do., of South side of hole. .	81·0	132·3	155·8	193·3	206·6
Length of tallness of North side. .	10·0	16·0	14·5	14·0	14·0
" " South side, .	13·0	21·0	18·0	20·0	18·0
Length, inclined, of upper side, . .	8·5	10·0	8·5	9·5	10·0
" horizontal, of lower side. .	[illegible]	10·5	9·4	9·0	9·3
Height of lower side above apparent floor, ...	18·0	32·0	45·5	56·0	69·4
Do. do. horizontal plane of North wall base, ...	24·0	26·0	51·5	64·0	75·4
Horizontal depth westward. .	10·5	23·0	11·0	10·0	19·0

These holes are worked very rudely; pick-marks are visible internally; and large injuries to the adjacent stones, and edges of the holes externally, have been committed.

The sides of the holds deviate from true *vertical* directions, slightly towards being perpendicular to incline, so that with hole *b*, north side requires for correction to vertical = 0·4; and with hole *c*, its south side requires for correction to vertical = 1·0.

UPPER OR SOUTH END OF GRAND GALLERY.

(FEBRUARY 22.)

A principal feature at this part is the grand step, which stretches all across the Gallery, and interferes with the last part of the ramps. The step, once grandly severe, is now lamentably fissured in two places, and much broken away about the middle, as indicated in the several sketches of Plate 31.

The measures on which the plan, and elevations, both

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front, and for either side, in the Plate, are founded,—stand thus:—

Breadth of Grand Gallery, above South doorway,	=	82·2
" South doorway,	=	41·4
" " in broken places Westward,		45 to 50·0
Height of doorway, on East side,	=	43·8
" West side,	=	43·3
" Mean,	=	43·6
Horizontal length of great step on East side, North to South, 60·7 to 61·0,	=	60·8
Do. do., on West side,	=	61·0
Vertical height of great step, at North end, East side, 35·8 and 35·9,	=	35·8
Do. do., West side,	=	36·2
Distance from joint 28 to South wall, along ramp line produced, and on East side,	=	81·4
Do. do., on West side,	=	81·8

These two last measures are important, because they have to be added to what will presently be measured along the whole Gallery, to give its full length: they are also rather difficult to determine, as well on account of the interference of the corner of the great step, as the error of rectangularity of the joints 28, and the one above it. But although the ramp itself ends north of the step, its joint line produced, reappears visibly above the step, and thence extends to the south wall of the Gallery. Some minor measures connected with this feature are thus:—

EASTERN SIDE OF SOUTH END OF GRAND GALLERY.

Horizontal distance from South wall of re-appearance of ramp joint,	=	33·2
Vertical height attained by it on the South wall,	=	16·6
Hole in South-East corner, length, 21·6 and 21·2,	=	21·4
" " breadth, 6·2 and 6·0,	=	6·1
" " depth, 5·5 and 5·5?	=	5·5

WESTERN SIDE OF SOUTH END OF GRAND GALLERY.

Horizontal distance from South wall of reappearance of ramp joint,	=	33·4
Vertical height attained by it on the South wall,	=	17·0
Hole in South-West corner, length, 20·5 to 21·0	=	20·8
" " breadth, 5·7 to 5·8	=	5·8
" " depth, 5·0?	=	5·0?

but depth doubtful, on account of hard dust.

GRAND GALLERY, LENGTH OF, ALONG THE EAST SIDE.

(FEBRUARY 21, 22, 1865.)

Measured with rod 100 A, carrying brackets for candles: at first the rod was held from slipping by hand, but was afterwards attached to a cord, drawn up and clamped at pleasure to a peculiar wooden anchor fixed in a ramp-hole above it. (See Frontispiece.)

The measurement was made on the wall-joints where they meet the ramp-top; these joints are generally good, and perpendicular to the incline; but some of them are unfortunately concealed by a hard, brown, stone-like salt incrustation (something similar to that in Queen's chamber, but usually thinner, harder, and darker externally); others, again, of the wall-joints are absorbed in certain stones inserted vertically, or nearly so, over every ramp-hole, excepting only the north hole and that next to it; and the joints of these inserted stones are not very good:—

GRAND GALLERY,

LENGTH of, upon *East side* (February 21, 22, 1865), along inclined Ramp-line.

Number of joint.	First Measure.	Second Measure.	Mean, or length from joint to joint.	Total length of each joint from North wall.	Remarks.
North wall,	0·0	0·0	0·0	0·0	
Joint 1	55·6	55·6	55·6	55·6	
2	75·5	75·5	75·5	131·1	Absorbed in vertical joint.
3	67·4	67·4	67·4	198·5	At 220·0, absolute or final cut-off of floor.
4	60·7	60·7	60·7	259·2	
5	...	79·5	79·5	338·7	At 282·6 partial cut-off of floor.
6	(117·8)	98·3	98·3	357·0	
7	92·6	92·6	92·6	449·6	
8	54·4	54·4	54·4	504·0	
9	...	...	...	...	Hid behind an inserted stone.
10	137·5	137·5	137·5	641·5	
11	62·3	62·3	62·3	703·8	
12	67·3	67·4	67·4	771·2	
13	95·4	95·4	95·4	866·6	
14	36·0	36·0	36·0	904·6	
15	177·5	177·5	177·5	1082·1	Ramp almost entirely broken away from 1067 to 1186.
16	39·0	39·0	39·0	1121·1	
17	62·1	61·9	62·0	1183·1	
18	49·0	49·0	49·0	1232·1	Ends in a hole.
19	43·4	43·6	43·5	1275·6	
20	52·6	52·8	52·7	1328·3	
21	87·5	87·7	87·6	1415·9	
22	36·7	36·6	36·6	1452·5	
23	43·0	43·0	43·0	1495·5	Absorbed in vertical joint.
24	80·2	80·2	80·2	1575·7	Do. do.
25	55·3	55·3	55·3	1631·0	Do. do.
26	65·7	65·9	65·8	1696·8	Do. do.
27	63·2	63·2	63·2	1760·0	
28	41·1	41·3	41·2	1801·2	
Step	...	...	12·7	1813·9	
South wall,	81·4 − 12·7	...	68·7	1882·6	Full length of Grand Gallery on East side.

GRAND GALLERY,

LENGTH of, upon *West side* (February 21, 22, 1865), along inclined Ramp-line.

Number of joint.	First Measure.	Second Measure.	Mean, or length from joint to joint.	Total length of each joint from North wall.	Remarks.
North wall,	0·0	0·0	0·0	0·0	
Joint 1	80·0	80·3	80·2	80·2	
2	52·8	52·9	52·8	133·0	Absorbed in vertical joint.
3	80·2	80·3	80·2	213·2	Do. do.
4	68·0	67·7	67·8	281·0	
5	54·8	54·6	54·6	335·6	Do. do.
6	44·0	44·1	44·0	379·6	
7	48·0	48·0	48·0	427·6	
8	43·7	43·7	43·7	471·3	Do. do.
9	56·7	56·8	56·8	528·1	

GRAND GALLERY—*Continued.*

Number of joint.	First Measure.	Second measure.	Mean, or length from joint to joint.	Total length of each joint from North wall.	Remarks.
10	42·7	42·8	42·8	520·9	
11	96·8	96·6	96·6	662·2	
12	60·0	59·8	59·9	727·6	
13	76·8	76·7	76·6	804·2	
14	47·2	47·3	47·2	851·4	Close joint, almost concealed by hard, brown, salt incrustations.
15	64·4	64·3	64·4	915·8	
16	4(5)·6	51·7	51·7	967·5	Examined and proved error of first measure.
17	36·6	37·3	37·0	1004·5	
18	46·0	46·1	46·0	1050·5	
19	62·0	61·8	61·9	1112·4	
20	60·7	60·7	60·7	1173·1	Joint not quite perpendicular to incline.
21	96·7	96·5	96·6	1269·7	Ramp much broken from 1260 to 1317.
22	56·8	55·4	55·4	1325·1	
23	99·6	99·6	99·6	1424·7	Absorbed in vertical joint
24	86·8	86·8	86·8	1511·5	Do. do.
25	93·4	93·9	93·6	1605·1	
26	90·8	90·5	90·6	1695·7	
27	56·8	56·4	56·7	1752·4	
28	48·7	48·8	48·8	1801·2	
Step,	...	...	14·4	1815·6	
South wall,	81·8 − 14·4	...	67·4	1883·0	Full length of Grand Gallery on West side.

Hence the total length of Grand Gallery from north wall, to south wall measured along surface of ramps—

= on Eastern side, ... 1882·6
„ Western „ . . . . . 1883·0

Mean, . . . = 1882·8

And the partial length from north wall to beginning of great step—

= on Eastern side, ... 1813·9
„ Western „ . . . . . 1815·6

Mean, . . . = 1814·8

RAMP HOLES IN GRAND GALLERY.

These holes are cut in the ramps, next the wall, rather rudely, and have their edges now much broken. (See Plate 27 and Plate 31.)

Their upper and lower, or north and south sides, are cut nearly vertical, certainly far from at right angles to the general incline of the Gallery: the depth of the holes (vertical) varies from eight to eleven inches, probably as influenced by hardened dirt.

Their number,—*including* one at the south-east inside corner, and another at the south-west inside corner, of the upper horizontal surface of the great step at the upper and south end of the Gallery,—is, twenty-eight on either side.

Of these, all, except the two on the great step, and the *two* lowest or northernmost on *either* side (*i.e.*, four at the north end) have a piece of stone let into the wall vertically over their middle; the height of such inserted piece being usually 18·, and breadth 13·; while the depth or thickness in one particular case where a neighbouring fracture enables it to be seen, is about 10· inches.

The holes on either ramp are always opposite, or nearly so, to each other.

The following measures of the ramp holes were only taken once, excepting a few checks; though the general nature, character, number, and position of the holes were observed again and again. As touching the number too, which has been variously stated by different persons as from twenty-five to twenty-eight,—the method of mensuration adopted on this occasion will, it is hoped, put any mistake in that feature within the power of any one looking over the figures, and assisting themselves by the general symmetry in size and distance observed throughout,—to correct for themselves.

GRAND GALLERY.

RAMP-HOLES ON EAST SIDE.

Number of, beginning at North end of Gallery.	Distance from North wall of North side of hole.	Distance from North wall of South side of hole.	Distance between adjacent sides of two holes.	Length of hole from North to South.	Breadth from East to West.	Depth vertical.	Remarks.
At N. wall, 1	0·0	23·0		23·0	0·0	11·0	
2	64·9	84·6	41·9	19·7	6·7	11·0	
3	126·4	151·0	41·8	24·0	6·7	+ 7·0	
4	193·6	216·1	44·6	20·3	6·7	+ 7·0	
5	262·2	285·7	46·1	23·6	6·4	12·0	
6	331·6	352·4	45·9	20·8	6·7	+ 7·0	
7	400·4	422·9	46·0	22·5	6·8	...	
8	466·5	488·8	45·7	20·2	6·2	...	
9	535·1	557·5	46·2	22·4	6·4	...	
10	603·5	624·4	46·0	20·8	6·4	...	
11	671·2	693·7	46·8	22·0	6·7	...	
12	740·2	759·7	47·0	19·5	[illegible]	...	
13	806·6	828·5	46·8	23·3	6·7	...	
14	876·2	896·5	47·4	20·3	6·3	...	
15	943·2	966·2	46·7	23·5	6·8	...	
16	1012·2	1032·7	46·6	20·6	6·4	...	
17	1079·7	1101·2	47·0	21·5	...	...	Ramp nearly broken out from 1067 to 1166.
18	1149·7	1169·7	46·5	20·0	...	...	
19	1216·8	1239·3	45·8	23·8	...	...	
20	1284·0	1306·6	44·7	20·0	6·2	8·0	
21	1351·8	1375·5	46·2	24·0	6·3	8·0	
22	1421·8	1441·8	46·0	20·0	6·2	6·0	
23	1487·8	1511·8	46·0	24·0	0·0	8·0	
24	1557·5	1577·5	45·7	20·0	[illegible]	+ 7·0	
25	1622·2	1647·2	44·7	25·0	[illegible]	8·0	
26	1692·8	1712·9	45·3	20·4	6·3	8·5	
27	1758·2	1781·7	46·3	23·5	6·2	8·0	
On step, 28	1861·4	1882·0	79·2	21·2	0·0	+ 8·5	

GRAND GALLERY.

Ramp-holes on West side.

Number of hole from North wall of Gallery.	Distance from North wall of — North side of hole.	— South side of hole.	Distance between adjacent sides of two holes.	Length from North to South.	Breadth from East to West.	Depth, vertical.	Remarks.
At N. wall, 1	0·0	23·1		23·?	6·0	(?)	Relics only of ramp.
2	63·0	86·5	47·0	21·6	5·7	9·0	
3	130·0	150·0	41·5	22·9	5·7	10·0	
4	190·6	210·3	46·6	19·7	6·0	9·5	
5	261·0	284·4	44·7	23·4	5·5	10·9	
6	333·5	355·0	49·1	21·5	6·2	11·0	
7	399·6	424·6	44·6	25·0	4·8	10·0	
8	468·9	489·9	44·3	21·0	6·1	11·0	
9	533·3	558·3	45·4	25·0	5·7	10·5	
10	611·0	632·1	44·7	20·1	5·9	10·0	
11	667·2	692·3	46·1	23·1	5·8	11·5	
12	739·1	759·8	47·0	20·6	4·3	10·5	
13	805·0	826·0	45·2	21·0	6·0	11·0	
14	872·0	891·2	45·9	20·2	6·4	11·6	
15	943·0	966·1	50·6	22·5	5·0	8·0	
16	1016·6	1038·2	44·7	21·4	6·5	9·1	
17	1078·7	1102·2	40·5	23·5	6·3	7·5	
18	1148·0	1169·0	45·8	21·0	6·5	7·6	
19	1214·0	1236·4	46·0	22·4	4·1	8·3	
20	1282·4	1305·1	46·0	[illegible]	...	...	Ramp much broken from 1290 to 1317
21	1349·7	1372·9	46·6	[illegible]	6·5	8·5	
22	1420·8	1441·5	47·9	20·7	4·2	7·5	
23	1489·2	1510·0	44·7	21·6	6·1	7·6	
24	[illegible]	1577·0	45·9	21·0	6·6	7·3	
25	1622·5	1646·9	45·5	24·6	6·3	8·9	
26	1691·7	1712·5	44·8	20·8	5·5	7·0	
27	1758·2	1782·9	46·2	24·2	6·0	8·0	
On step, 28	1862·5	1883·0	79·6	20·5	5·8	3±	

GRAND GALLERY.

Breadth of, between Ramps, and above Ramps.

At distance from North wall nearly	Breadth between ramps. First measure.	Breadth between ramps. Second measure.	Breadth just above ramps.
At North wall,	...	...	41·7
76	41·6	41·5	...
90	...	...	41·8
124	41·4	...	...
152	41·0	...	...
186	40·8	...	...
214	41·0	...	...
222	41·3	...	...
263	41·8	41·9	...
300	...	...	82·0
315	42·2	...	...
400	42·0	...	82·0
500	42·3		...
600	42·4	..	82·1
900	42·4	42·2	82·9
1100	41·8	41·9	81·6
1300	42·8	...	82·9
1600	42·0	42·4	82·9
1800	42·6	42·7	82·3
At South wall.	...	...	82·2

These measures show without doubt that the Grand Gallery is broader towards middle and upper or southern end than at the lower or northern end; and this prevails equally with the breadth between, and that above, the ramps. The much more notable contraction of the breadth higher up, caused by the *overlappings* of the walls, will be given further on.

GRAND GALLERY.

Ramps of, *Height* and *Breadth* of each.

Place of measurement, by distance from North wall of Gallery.	Ramp on East side of Gallery. Breadth.	Height, at right angles to incline.	Notes.	Ramp on West side of Gallery. Breadth.	Height, at right angles to incline.	Notes.
100	20·1	...	...	20·3	...	
300	20·2	20·9	...	19·6	21·3	
570	20·4	21·0	Walls chipped and injured where ramps join them.	19·9	20·8	
640	20·1	21·2	...	19·9	20·9	
1000	20·2	21·8	Both ramps much fractured and parted from walls. Floor also from ramps.	20·2	20·9	Through a considerable length this West side of floor is parted from ramp by a downward crevice 0·5 broad.
1600	20·3	21·2	...	20·2	21·3	
1650	20·1	21·3	...	20·3	21·2	
1700	20·0	20·9		19·6	20·9	
1750	20·4	20·6		20·1	20·5	
1800	[illegible]	20·3		19·8	20·6	
Mean.	20·14	21·03		20·04	20·92	

The above observations were taken with care to avoid fractures of wall, or wearing of floors: matters that might easily have increased any of the above returns by 0·3 to 0·5, and sometimes even 1·0; without specially calling attention in themselves.

At each spot selected, generally for the goodness of the ramps at that part, the measurement was verified at the time as being certainly within 0·2 of the truth. This leaves, as may be noticed, a variation in the size of the ramps along the run of the Gallery as a measured fact; and also that the height, taken perpendicular to the incline, is greater than the breadth, by the quantity very nearly of 1 inch.

Along nearly the whole distance from 400 to 1800 of western ramp, and occasionally along eastern ramp, there are longitudinal parallel scratches, forming almost a border or species of intended ornament following the direction of the ramp; they are inflicted upon and along its upright edge, close under the top, and towards axis of Gallery. But although the very same lines are traceable far, they do not extend the whole distance, being more or less gradually replaced by others; they may therefore be merely the accidental scratches caused by rough and heavy bodies having once been slided along the sloping floor.

VERTICAL HEIGHT OF GRAND GALLERY.

(MARCH 1–11, 1865.)

Measured with Slider-scale of 400.

This element of the Grand Gallery has always been a difficult one to travellers with limited apparatus, on account of its enormous proportions, and the tilt or incline of both floor and ceiling, together with the darkness, bad air, etc. But I had had specially pre-

pared for the work, by Mr Cooke, a trunk of 300 inches long (formed in three pieces, but fixed together inside the Pyramid), and furnished with an inside pointed slider of 100, capable of being pushed up from below from 0 to 90; while the foot of the trunk was formed by a long steel peg, and levels were applied at the sides to test verticality. The mode of working was,—that two men held the apparatus vertical, or made it so by reference to the levels; I then pulled the string which raised the slider, until it touched the roof, and clamped; in which state the whole structure was lowered on the upward inclining floor, for me to read off the scale. The differences, at different parts of the length of the Gallery, are greater than I should have expected; and may be due partly to the roof being formed of slabs set at a tilt, each of them, to the general incline, like tiles.

The mean of the whole will, however, probably be pretty accurate; for there is no constant error of the apparatus amounting to a sensible quantity; seeing that one of the readings registering 350·2, being directly tested on the great rod by the known 100 a, was proved to be by that = 350·17.

The height sought to be measured, being the *vertical* height between *sloping floor* and *sloping roof*,—a large correction is needed at parts near the north end of Gallery, where the sloping floor has been cut away, and there is only the horizontal floor of Queen's chamber passage at a lower level to refer to. In such cases the elements of correction are, the distance from the north wall, and the angle of the Gallery assumed = 26° 18'.

GRAND GALLERY, *VERTICAL* HEIGHT OF.

Distance from North wall.	Measured on March 1.	Correction for level floor.	Measured on March 11.	Correction for level floor.	General results.	Notes.
20	...	...	344·2	...	344·2	On step of protruding passage floor.
30	350·2	−8·8	...	...	341·4	8'' South of step.
38	351·0	−9·8	...	...	341·2	16'' South of step.
77	...	...	365·6	−27·0	338·6	On level floor.
125	...	...	394·2	−55·8	338·4	On level floor.
230	...	...	343·7	...	343·7	On first six inches of true Grand Gallery inclined floor.
550	346·0	...	...	...	346·0	
670	...	...	336·0	...	336·0	
970	341·3	...	339·0	...	340·2	
1240	334·0	...	...	...	334·0	
1390	...	...	340·0	...	340·0	
1500	334·3	...	...	...	334·3	
1670	...	...	342·0	...	342·0	
1700	333·9	...	...	...	333·9	
1780	...	...	339·0	...	339·0	
Mean of height of Grand Gallery by 15 obs. =					339·5	*N.B.*—Vertical height.

ROOF OF GRAND GALLERY.

(MARCH 1, 1865.)

Examined the roof-stones of Grand Gallery, by a strong light from below, and made their number from north to south = 36.

Of these, the last nine towards the south are absolutely black with smoke; those preceding them towards the north, are only partially black. The stones are manifestly of unequal lengths, and the tile-angle at which they set to the general angle of the passage, is by no means constant; it was particularly marked at the fourth, seventh, and tenth from the north. Looking up from below, the absolute cut-off of north end of Grand Gallery floor, was found to point to 4·3 of the roof-stones, measured from the north wall of Gallery.

GRAND GALLERY, OVERLAPPINGS OF, AT NORTH END.

Noticed with regard to these overlappings, that the first one of the side walls above the ramps, though making its due compression in the width of the north end wall, is *not* developed on that end as an end-overlapping; wherefore north wall goes up higher in plane of door than it otherwise would do.

Noticed also, that when the end-overlappings of north wall *are* developed, their under surfaces follow the general incline of the Gallery.

The shape of the wall at the highest overlapping of north end-wall, where there is evidently a large forced hole, I could not examine: the figure indicated in the diagram by dots, is from Perring's large views: also the groove above the third overlapping, measured from below. (See Plates 28, 32.)

This groove on either side did not catch my eye; but that may have arisen partly from much of the overlapping which it belongs to, having been recently broken away. Vyse and Perring say, 'For the long 'grooves running on each side the whole length of the 'passage, it is difficult to assign a use; they are roughly 'cut, and therefore could not have been used for a 'sliding platform, for which, at first sight, they appear 'adapted. Perhaps they were made to receive a scaffold-'ing for the workmen employed in trimming off the 'sides of the passage.' To this I may add, that the groove is represented so near the bottom of its overlapping sheet, that there was little strength left to support any weight; and as the grooved portion has to a great extent perished, without any strain being put upon it, we cannot regard it as anything connected with scaffolding, but rather with some symbolic meaning.

The same authors, who had more opportunities than any other men, since the building of the Pyramid, to examine the upper parts of the Grand Gallery, and are therefore to be listened to with all respect for facts, say of its *roof*,—'it has been laid on a flat bed at the 'incline of the passage; but a settlement towards the 'lower end has given the roof-stones the angular direc-'tion shown in the figure.' I cannot altogether understand the mechanics of this paragraph, combined with the Pyramid method of forming the roofs of passages; generally by large stones spanning all across them, and far over the walls on either side: but I had no means of examining the roof closely, and can only speak by appearances judged of from the floor, as to each 'tile'

corner of a roof-stone really throwing a shadow; and that there were thirty-six of them, in place of the thirty-one indicated by Howard Vyse and Perring, and thirty in the French work.

The further measures I was enabled to take from the floor, of the overlappings, are as given below.

GRAND GALLERY.

End-overlappings of, at NORTH END and on NORTH WALL.

Number of overlapping	Vertical height above floor, following its incline.	Breadth of, from North to South.	Differences of Vertical heights.	Notes.
1st from floor,	94·4	0·0	...	The numbers in parentheses are concluded only from eye-estimate, checked by the whole height, previously measured.
2	130·4	[illegible]	36·0	
3	166·7	4·5	36·3	
4	203·5	(4·)	36·8	
5	(238·3)	(3·)	35·0	
6	(274·0)	(3·)	35·5	
7	(309·0)	(1)	35·0	A forced hole between 7 and roof.
Roof,	344·0	...	...	The vertical height of Grand Gallery at that point.

Side-overlappings at NORTH END, but on EAST AND WEST WALLS, and measured at *right angles* to incline, from *ramp surfaces* upwards.

Number of overlapping.	East wall.		West wall.		Mean East and West.		
	Rectangular height.	Breadth.	Rectangular height.	Breadth.	Rectangular height	Breadth.	Differences in rectangular heights.
1st from ramps,	63·9	3·1	63·5	3·2	63·6	3·2	
2	95·2	3·0	96·0	3·0	95·8	3·0	32·2
3	128·0	3·2	128·1	3·0	128·0	3·0	32·2
4	159·9	(3·)	159·8	(3·)	159·8	(3·)	31·8
5	(192·)	(3·)	(192·)	(3·)	(192·)	(3·)	32·2
6	(224·)	(3·)	(224·)	(3·)	(224·)	(3·)	32·0
7	(255·)	(3·)	(255·)	(3·)	(255·)	(3·)	31·0
Roof,	286·	...	286·0	...	286·0	...	31·0

OVERLAPPINGS OF GRAND GALLERY AT SOUTHERN OR UPPER END.

This upper or southern end differs in many details from the northern end, as—

1*st*, The lowest side overlapping *is* developed on the end wall, together with all the rest.

2*d*, The under surfaces of all these overlappings are *level*, and not following the incline of the Gallery.

3*d*, The end wall is not vertical, but impends or hangs over the great step, *i.e.*, leans towards the north by a quantity of about 1°.

This circumstance may render the heights measured at this, the south end, always rather small; while, again, at the north end, the difficulty of eliminating fully the slope of the under surfaces of the end-overlappings may have made them there rather too great. (See Plates 32 and 28.)

GRAND GALLERY.

OVERLAPPINGS *of*, *at South or Upper end*.

Number of overlapping.	Vertical height above great step upper surface.	Breadth of overlapping from South to North, on South wall.	Reduction for surface of step to Gallery inclined floor, continued.	Vertical height above Grand Gallery sloping floor, concluded.	Differences of vertical heights.
1st from floor of great step.	84·9	2·0	7·5	92·4	
2	119·3	3·0	9·0	128·3	35·9
3	152·6	3·0	10·5	163·1	34·8
4	185·7	(3·0)	12·0	197·7	34·6
5	...	(3·0)	...	(232·)	34·3
6	...	(3·0)	...	(267·)	35·0
7	...	(3·0)	...	(302·)	35·0
Roof,	...	...	...	337· ±	35·0

N.B.—The numbers in parentheses not directly measured.

GRAND GALLERY.

Side-overlappings, South end; but on *East and West walls*, and measured at RIGHT ANGLES to incline from ramp-surfaces upwards.

Number of overlapping from ramp-surface up.	East wall.		West wall.		Mean East and West walls.		
	Rectangular height.	Breadth.	Rectangular height.	Breadth.	Rectangular height.	Breadth.	Differences of Rectangular height.
1	(63·5)	3·	62·6*	3·	63·3	3·	
2	95·5	3·	94·1	3	94·8	3·	32·3
3	124·3†	3	‡	3·	125·7	3·	30·9
4	157·9	...	157·0	...	157·4	(3·)	31·7
5	...	...	...	...	(189·)	(3·)	(31·6)
6	...	...	...	...	(221·)	(3·)	(32·0)
7	...	...	...	...	(252·)	(3·)	(31·0)
Roof,	...	...	...	...	284.	...	(32·0)

* Large corner of overlapping much broken.

† Large piece of this overlapping, from its lower edge upwards, broken away; and extensive dripping marks, as of water escaping at the place, hang vertically down from it.

‡ After the first 30 inches or so from the south, so very long a portion of this overlapping is broken away, that no good measure can be obtained.

This is that overlapping, towards the lower side of which Howard Vyse and Perring have placed their longitudinal groove. Hence much decay has evidently taken place since their day. (See Plates 32 and 28.)

ANTECHAMBER AND ITS PASSAGES.

(MARCH 14, 15, 1866.)

Floor, from North end of great step at the top of Grand Gallery, on through the antechamber and passage beyond, into King's chamber (see Plate 33.)

The joints of this floor all go right across it from East to West wall; the floor is horizontal.

Floor-joints on East side.

No. of Joints on floor.	First measure.	Second measure.	Mean, or length from joint to joint.	Total horizontal distance from N. end of great step of Grand Gallery.	Notes.
1st, or N. end of great step	0·0	0·0	0·0	0·0	
2	62·2	62·3	62·2	62·2	
3	64·0	64·5	64·5	126·7	Limestone ends here, and granite begins.
4	47·3	47·2	47·2	173·9	
5	85·8	85·8	85·8	259·7	
6	70·6	70·5	70·6	330·3	

Floor-joints on West side.

No. of Joints on floor.	Length from joint to joint.	Total distance from N end of great step.	Notes.
1st, or great step N. end	0·0	0·0	
2	62·0	62·0	
3	64·6	126·6	Limestone up to this point, granite beyond it for the floor.
4	47·3	173·9	
5	85·8	259·7	
6	70·6	330·3	

The northernmost *granite* stone, as from 126·6 to 173·9 in the above passage, is about 0·3 in level *above* the two limestones preceding, and the two granite stones following it; and the last of them is about 0·8 below the level of first stone of King's chamber floor.

ANTECHAMBER AND ITS PASSAGES.

FLOOR OF—*Continued.*

BREADTHS of, above floor, at different parts of its length, from North end of great step of Grand Gallery.

Distances from great step.	Breadths measured.	Notes.
91	41·6 ±	This is from East wall to certain marks on floor, obscurely indicating where old West wall, now broken away, once stood.
...	40·6 ±	To present broken-away West wall.
136	41·45	Between the true ancient walls, both East and West, of granite, and under Greaves' granite leaf.
171	40·8	Normal part of floor, save chippings.
...	48·1	To sides of small rectangular trenches cut on either side of floor and into the walls high up.
214	41·2	Floor proper.
...	48·0	Floor extended by breadth of the small trenches three to four inches deep; this peculiar part of the floor is in the antechamber, and extends from 153·5 to 229·7, barring interruptions from pilasters now nearly broken away.
251	41·4	
321	41·4	

N.B.—The parts shaded in Plate 33 of this passage, with *crossed* lines, represent granite; and with *single* lines, limestone. The two walls and floor do not begin their respective granites in the same vertical plane; but all other features, as of joints, the broadened part of the floor, etc., are truly rectangular to axis of passage.

The numbers on which the particulars connected with the base of the walls are given in the above plan, are as follows:—

DISTANCE MEASURED NEAR BASE OF ANTECHAMBER PASSAGES.

	East side.			West side.		
	Distance from great step.		Longitudinal breadth of pilasters and of floor side holes.	Distance from great step.		Longitudinal breadth of pilasters and of floor side holes.
	First measure.	Second measure.		First measure.	Second measure.	
Beginning of the granite,	135·4	136·0	...	134·0	134·2	
Beginning of cut-out in floor,	153·0	152·5		153·4	153·6	
			22·0			22·1
North edge of first pilaster,	175·2	174·5		175·6	176·0	
			5·5			5·6
South " "	181·0	180·5		181·0	182·0	
			21·4			21·
North edge of second pilaster,	202·5	202·0		202·4	203 ±	
			5·6			5·6
South " "	208·3	208·0		208·0	209 ±	
			21·1			20·4
End of cut-out in floor,	229·3	229 ±		229·8	230·0	
Beginning of King's chamber,	330·3	330·2		330·3	330·3	

Of Northern part of above passage, or near great step—
Height = 43·7, and breadth = 41·5.
And of Southern part of above passage, or near King's chamber—
Height = 43·6 to 43·8, and breadth = 41·4.

This very peculiar little antechamber, which finds itself rather north of the middle of the short horizontal passage leading from the Grand Gallery to the King's chamber, has a much greater width than the passage, even in the part which is somewhat increased by the breadth of the side depressions in the floor. But the full width of the antechamber does not appear in the plan previously given of the passage, except by certain dotted lines, because the lower two-thirds about, of the room are filled in, on the east and west sides, by a thick wainscoting of granite; hence the full width of the room is only clearly visible near the ceiling, and is then found to measure

Width of room at top above wainscots,	= 65·0 to 65·3
while its length measures from North to South—	
near East side, ...	= 116·3
and near West side, ...	= 116·8
but along floor near East side, ...	= 116·2
the height of the room from floor to ceiling varying according to the more or less sunken position of the floor stones, ...	from 149·2 to 149·5
Circumference of walls, under ceiling, . . .	= 363·4

At a depth of 46·2 below ceiling on east side, and 37·5 on the west side, the above width of 65·2 is suddenly decreased to 41·4 and 42·0 by the sort of granite wainscot mentioned, rising from the floor up to the above-mentioned 46·2 and 37·5 from the ceiling. But the width is again increased to 48·1 in the parts extending between 39·0 and 116·0 from the north end of the room towards the south; for within these limits of space certain broad grooves were originally cut out, leaving only narrow pilasters between, which pilasters have since been nearly completely knocked away, chip after chip, by specimen seekers.

The position of the antechamber in the course of the passage may be obtained from the following numbers,

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amongst which are marked some details which will be recognised in Plates 34 and 35.

MEASURES OF A PLAN, NEAR TOP-LEVEL OF ANTECHAMBER.

Parts measured.	East side.	West side.
North end of antechamber from North end of great step,	113·1	113·6
North side of slit containing granite leaf,	119·6	121·0
North side of granite leaf, omitting boss,	124·0	134·8
South side of granite leaf,	140·3	150·8
South side of slit containing granite leaf,	159·3	150·9
South side of ridge containing granite leaf,	153·9	153·8
South end of antechamber,	229·4	229·8
South end to a fractured edge,	236·1	230·0

Referring now to the large opening out of all the sides of the antechamber, Plate 34, we may state :—

Of the *ceiling*, it is of granite, in three lengths, from North to South, measuring,

the 1st,	= 41·5
2d,	= 38·5
3d,	= 36·5 nearly.

Of the *North wall*, it is of limestone, rough with pickmarks; and in three courses, measuring from the top,

1st,	= 29·0
2d,	= 35·3
3d,	= 41·5
Whole height from floor, including doorway 43·5,	= 149·3
Breadth at top,	= 65·2
,, inside granite wainscot,	= 41·7
Depth from ceiling to granite wainscot on East side,	= 46·2
Depth from ceiling to granite wainscot on West side,	= 37·5

Of the *South wall*, it is entirely of granite, except the topmost course, which is 12·0 deep of limestone,

Whole height from floor surface to ceiling,	= 149·4
,, bottom of side-hollows to do.,	= 152·5±
Breadth at top,	= 65·2
Breadth elsewhere,	= 46·1±

(*N.B.*—In this, different from its congener the North wall, where the breadth is 41·7 only.)

This south end wall is chiefly remarkable for the disputed '*four*' or '*five*' vertical lines of many authors.

They are actually and really four (4) in number; and are deep, straight, vertical grooves, which subdivide the space from east to west side, at the level of any eye, symmetrically into five parts. (Plates 34, 35.)

Their depth = 2·8, and their breadths, taking them from east to west, are—

Near the top = 3·6, 4·0, 4·0, and 4·0
And near the bottom = 3·4, 3·8, 3·5, and 3·3

Their shape in cross-section being somewhat parabolic. Measured from east wall near top, and therefore above the granite wainscot, their central lines are distant therefrom 17·0, 27·4, 37·9, and 47·9 respectively, and near the bottom = 9·1, 19·6, 29·6, and 39·7 respectively.

The grooved granite stone is much fissured and broken away below. (See Plates 34, 35 and 28.)

East wall, all composed of granite, except the small stones marked L :—

Whole height from floor to ceiling,	= 149·3
,, length from North to South,	= 116·3
Height of joint of first course, above floor surface,	= 43·7
Height from first to second course, or top of granite wainscot,	= 59·4
Height from second to third course or ceiling,	= 46·2

The granite wainscoting of this wall is 12·0 thick from wall; but has four broad grooves cut back upon it, 4·0 deep. Of these, from the north,

The first is 16·5 broad, and extends over from 19·5 to 36·0 from N. wall.
second 22·0 ,, ,, 39·6 to 61·6 ,,
third 21·8 ,, ,, 64·4 to 86·2 ,,
and fourth 22·5 ,, ,, 89·5 to 116·0 ,,
or to South wall.

The intervening spaces, or ribs, or pilasters, are 3·6, 5·0, and 5·3 broad respectively, but are now broken away for by far the greater part of their height. The first groove, however, is only cut to a depth of 59·4, or to bottom of granite leaf, which spans the room, leaving solid stone wainscot or wall under that; while the others all go down to about three inches under the floor.

West wall, all composed of granite, except the stone marked L.

Along the southern edge of the northernmost of the two granite stones, next under the ceiling,—is an appearance, partly of a bad joint edge and partly of a flattish curved beading; making a sensible difference from all the ordinary joints.

This west wall differs mainly from the east wall in having a higher wainscoting (higher by 8·7); and, in the tops of the three southern flat grooves (4· deep) having three semi-cylindrical hollows cut straight back to the wall, through the remaining 8·3 of thickness of the granite wainscot. These semi-cylindrical hollows have a radius of curvature = 9. The first flat vertical groove from the north descends only to the bottom of the granite leaf—

and is 17·1 broad, and extends from 20·2 to 37·3 from N. wall
the second 21·7 ,, 41·0 to 62·7 ,,
third 21·6 ,, 68·0 to 89·6 ,,
fourth 21·3 ,, 95·2 to 116·5 ,,

leaving the projecting ribs between them, in the few places where they at present exist, in breadth = 3·7, 5·3, and 5·4 respectively.

This west side wall is also noteworthy at present, on account of the forced passage made from its lower north-west corner to meet north-air channel from King's chamber.

THE 'GRANITE LEAF.'

In the antechamber's first groove from the north, is to be seen Greaves' 'granite leaf,' or the 'portcullis' of many authors. It is, in thickness from north to south, on east side = 15·4; and on west side = 16·0; crossing the antechamber from east to west in two courses,—whereof the lower is from 27·5 to 28·0 high, and the upper from 18·0 on the east to 23·5 on the west, the upper surface of this upper stone being very rude and fractured. Further, the lower side of the whole granite leaf is 43·7 above the floor, and the upper side 57·0 nearly below the roof. (See Plates 34, 35 and 28.)

I had concluded, before visiting Egypt, that this granite leaf could not be a portcullis; because, if lowered to the floor, it would not come near enough to the door to stop it up. Local examination proved this idea correct; for the space between north wall of antechamber and north surface of granite leaf is 21 inches,

so that a man can easily stand between; and he could also easily clamber over said granite leaf, if lowered to the floor. But it has not been so lowered; and cannot be, without its grooves in the east and west walls being cut lower than they are by 43·7 inches, for it stands on firm granite and limestone at that height. The granite leaf is moreover cemented into its place, and wedged in after a fashion from the north, the groove being 1 inch broader than the stone. The groove, as visible above the granite leaf, up to the top of the granite wainscot, is remarkably *well, truly, and smoothly, made in the solid granite.*

So much care could hardly have been taken to introduce, once and for all, two stones which ever after were to have been fixtures; and the present appearances are certainly in favour of their being intended to slide upwards again, rather than downwards. For what purpose? Perhaps to disclose some secret; and it is well to call prominent notice to the raised ornament on the upper of the two stones forming the 'leaf;' it is something like one of the rudimentary handles on later sarcophagi, and a most unique thing certainly, throughout the whole of the Great Pyramid. It is of the following shape in elevation and vertical section; and is 7 inches broad and 7 high, measured on its second surface, or that next the whole stone slab; and 5 inches high and 5 broad, measured on its first or outer surface; 1 thick, and has its lowest line 5 inches above the joint between the lower and upper stone. It is further 16 from west wall and 18 from east at its boundaries, or 19·5 and 21·5 respectively at its centre. (See Plates 34, 35 and 28.)

ADDITIONAL TABULAR EXHIBITIONS OF ANTECHAMBER MEASURES: IN LENGTH, HEIGHT, AND BREADTH.

Lengths, *i.e.*, Horizontal distance measures from N. end of Great Step in Grand Gallery, to various parts of the Antechamber, and its passages, southward.

Floor.	East side.	West side.	Wall.	East wall.	West wall.
N. end of great step—1st joint,	0·0	0·0	N. end of G. step,	0·0	0·0
N. end of Grand Gallery,	60·8	61·0			
2d Joint,	62·2	62·0			
			N. end of antechamber,	113·1	113·5
3d Joint Limestone ends and granite begins,	126·7	126·6			
			N. side of slit containing granite leaf,	132·6	133·0
			N. side of gran. leaf touching boss,	134·6	134·6
			Boss of granite on lower wall,	134·0	134·2
			S. side of gran. leaf,	[illegible]	[illegible]
			S. side of slit containing gran. leaf,	[illegible]	[illegible]
Beginning of cut-out in floor,	152·8	153·6			
			S. side of ridge containing gran. leaf,	153·9	153·8
4th joint,	173·9	173·9			
			N. edge of first pilaster,	174·8	176·7
			S. edge of do. do.	180·8	181·5
			N. edge of second pilaster,	202·2	202·7
End of cut-out in floor,	229·2	229·9	S. edge of do. do.	208·2	208·6
5th joint,	230·7	[illegible]	S. end of antechamber,	229·4	229·8
			(S. end of fractured edge,	234·	230·1
6th joint,	330·3	330·3	Beginning of King's Chamber,	330·35	330·3

Heights all measured from floor as it was at each point concerned; *i.e.*, without correction for angle, or for position, risen or sunk, of floor stones. Angle was tried by long clinometers, and believed to be horizontal within 0·5 degrees from N. to S.; but this result was involved in the greater errors of position, or rise and fall of the various stones comprising the floor: the northernmost granite stone, or that from 126·6 to 173·9, being about 0·3 inch above both the two limestones preceding and the two granite stones following; and the last of these is about 0·8 below the level of the first stones of the King's chamber floor.

But King's chamber floor-stones are also risen and sunk variably; and the one stone there referred to for the antechamber's floor, is 0·45 below the mean circumferential stones of the chamber now, as indicated by the heights of the lower course of the King's chamber at different places, and assuming the first wall course there to be level. Therefore the northernmost granite floor-stones in antechamber may be from 0·5 to 0·95 too low; and the other parts form of antechamber floor from 0·8 to 1·25 inch too low.

HEIGHTS MEASURED IN ANTECHAMBER AND ITS PASSAGES.

	East side.	West side.
Northern part of passage, doorway from G. Gall., at 61· of dist. from G. step,	43·8	43·9
Northern part of passage, at about 70· of dist.,	43·7	
Antechamber's beginning, or North transverse wall at 113·3:		
Bottom of lowest course, or ceiling of door,	43·5	
Next joint above,	85·9	
Top of Wainscot on East side,	103·1	
" " West side,	111·8	
Next joint above,	126·3	
Next above or ceiling of room,	149·3	
Granite leaf, extending in its thickness from 134·8 to 150·6—		
Bottom of,	43·7	
Joint between its two stones,	71·5	
Base of Boss on upper stone,	76·5	
Top of upper stone, broken,	95·5	96·0
Top of the groove for it,	103·1	111·8
Antechamber generally, whole height thereof near 170 of dist.,	149·2	
" " " 200 "	149·5	
Antechamber, from Measures along East wall, or from 113·3 to 229·6 of dist.—		
Joint of first course above floor,	43·7	
Second course, or top of granite wainscot,	103·1	
Third course or ceiling,	149·3	
Antechamber, from Measures along West wall, or from 113·3 to 229·6 of dist.—		
Base of cylindrical hollows in wainscot,	102·8	
Top of Wainscot,	111·8	
Top of Room,	149·3	
Antechamber's ending: or South transverse wall, at 229·6—		
Ceiling of doorway much fissured,	43·7	
Top of granite,	137·6	
Top of room,	149·4	

TRANSVERSE (OR E. TO W.) BREADTHS IN ANTECHAMBER AND ITS PASSAGES.

Northern passage, at about 61 of dist. from great step,	41·4
" " 70 " "	41·6
" " 91 from E. wall, to old markings on floor, where W. wall may have stood,	41·8?
North transverse wall of Antechamber, at 113·3 of dist.—	
Breadth of room at top,	65·2
" Inside granite wainscot,	41·7

TRANSVERSE (OR E. TO W.) BREADTHS IN ANTECHAMBER—*Continued.*

North transverse wall of Antechamber—*continued.*	
At 136 of dist.—	
Between the true ancient walls, under granite leaf, .	41·45
Higher up, on face of granite leaf, ...	41·0
Higher up still, or breadth of grooves in which granite leaf runs, ...	48·0
At 171 of dist.—	
Normal part of floor, save chippings, ...	40·8
To sides of small rectangular trenches cut on either side into the floor of the granite wainscot of the walls also, ...	48·1
At 214 of dist.—	
Floor proper, ...	41·2
To sides of small rectangular trenches of wainscot grooves,	48·0
South transverse wall at 229·6 of distance—	
Breadth of top of room, ...	65·2
Breadth lower down, or including grooves of wainscot, .	48·1
Southern passage, at 251 of dist., ...	41·4
" 321 "	41·4
At doorway into King's Chamber, or at 330·3 of dist., .	41·2

SPECIAL MEASURES AND MEANS IN ANTECHAMBER.

Whole room: breadth at top = 65·0 to 65·8 = 65·2
" length " E. = 116·3 }
" " " W. = 116·8 } say = 116·4
" " floor E. = 116·2 }
" height " = 149·2 to 149·5 = 149·4

Breadth within flat vertical grooves in granite, 48·0, 48·1, 48·0, and 48·1, . . = 48·05

Breadth within the ordinary normal walls, 41·45, 41·0, 40·8, 41·2, 41·4, 41·4, and 41·2, . = 41·21

Granite leaf:
Thickness from N. to S. on East side = 15·4 } = 15·7
" " West " = 16·0 }
Height of lower stone, . 27·5 to 28·0 = 27·8
" upper stone, broken, 18 to 28·5; its grooves extend up to 31·6

Breadth E. to W., 41·21 ± x openly between the walls; and 48·05 ± x inwardly in the grooves of said wall.

Boss on leaf:
On upper stone, its lowest line 5 inches above bottom.
" " 5 high, 5 broad, and 1 thick externally.
" " 7 high, 7 broad, joining stone.
Its centre 19·5 from W. wall, and 21·5 from East wall.

KING'S CHAMBER.

(MARCH 11, 16, 18, 19, 20.)

GENERAL PROPORTIONS OF.

THIS fine room is entirely constructed in polished granite, and *appears* rectangular everywhere; the general measures of it are as follows; either by the 400-inch slider, or the 100 A and 100 B rods:—

Height of, floor to ceiling, granite both, but the floor-blocks sensibly disarranged from mutual level—

Near North-east angle of room, ...	= 230·8
" middle of North side, ...	= 229·7
" North-West angle, ...	= 229·2
" South-West "	= 229·9
" middle of South side, ...	= 229·5
" South-East angle, ...	= 230·8
" North-East angle, repeated, . . .	= 230·8
Mean height,	= 230·1

The differences amongst the above measures are chiefly owing to the errors of floor-blocks, or effects of modern dilapidation.

Length of, or from East to West Wall, along *South* side, near floor level—

First measure, on March 11, ...	= 412·6
Second " "	= 412·58
First " March 16, ...	= 412·5
Second " "	= 412·7
South side mean,	= 412·60
And along *North* side—	
First measure, on March 11, ...	= 412·4
Second " "	= 412·6
First " March 16, ...	= 412·5
North side mean,	= 412·5
Mean length for whole room,	= 412·55

Breadth, or from North to South wall—

Near East side, first measure, ...	= 206·4
" second "	= 206·2
East side mean,	= 206·3
Near West side, first measure, ...	= 206·3
Mean breadth for whole room,	= 206·3

Diagonals of Floor—

From South-West to North-East corners, .	= 462·0
" North-West to South-East " .	= 461·3
Mean measured diagonal floor,	= 461·7
And same computed from sides, 412·6 and 206·3, ...	= 461·3

Diagonals of East wall—

Low North-East corner to high South-East,	= 309·2
Low South-East corner to high North-East (subtracting 1·6 for hole in low South-East corner), ...	= 310·0
Mean diagonal for East wall,	= 309·6
And same computed from breadth and height, 206·3 and 230·1,	= 309·0

Diagonals of West wall—

Low South-West corner to high North-West,	= 310·4
Substract 1·0 for a sunk floor stone,	1·0
	309·4

Low North-West to high South-West cannot be measured by reason of deep hole in floor in low North-West corner.

The diagonals of the north and south walls were unfortunately rather too long to measure: there is however every probability, from angular measures subsequently taken, that they are as nearly rectangular and parallel, as are the east and west walls.

KING'S CHAMBER, FLOOR OF.

This floor, though once exquisitely level in polished granite, and greatly praised by Howard Vyse and others for its remarkably close joints,—is now much decomposed as to some stones being higher, some lower, than others, by a total quantity of more than an inch. An effect, one is inclined to think, resulting, possibly, from earthquake action subsequently to the

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large excavations in the neighbourhood of this room, carried on both by the Colonel and Signor Caviglia: and it is worth while to record here, that Mr Sopwith, in his *Notes on Egypt*, mentions finding the house of the engineer of the railway between Alexandria and Cairo half ruinous, in December 1856, from a then recent shock of earthquake.

The blocks of the floor are notably arranged in six grand stripes crossing the length of the room: but they are not equal in breadth. The joints, measured in the usual manner, give the following results (see Plate 37):—

JOINTS ALONG SOUTH SIDE.

Joint.	Lengths, joint to joint.	Total distances from East side.	Remarks.
East wall,	0·0	0·0	
	(29·5)	(29·5)	A half stone merely.
1	63·2	63·2	
2	67·9	131·1	
	(46·6)	(177·7)	A half stone again.
3	88·5	219·6	
4	67·6	287·0	
5	67·0	354·0	
West wall,	58·6	412·6	

KING'S CHAMBER.

FLOOR OF—continued.

JOINTS ALONG NORTH SIDE.

Joint.	Lengths from joint to joint.	Total Distances from East side.	Remarks.
East side,	0·0	0·0	
1	63·2	63·2	
2	68·0	131·2	
3	88·0	219·2	
4	67·8	287·0	
5	66·9	353·9	Portions of the northern ends of these last three rows of stones have been extracted, leaving a hole.
West wall,	58·6	412·5	

JOINTS ALONG EAST SIDE OF THE SEVERAL NORTH AND SOUTH FLOOR-COURSES.

Name of Joint.	East side.	Second line of blocks West of East wall.	Third line of blocks West of East wall.	Fourth line of blocks West of East wall.	Fifth line of blocks West of East wall.	Sixth line of blocks West of East wall.
North side,	0·0	0·0	0·0	0·0	0·0	0·0
1	107·4	20·1	55·0	21·1	84·3	21·0
2	78·8	93·2	46·9	136·2	102·0	...
3	...	...	83·9	...	...	...
South side,	20·1	93·1	20·6	49·1	20·1	185·3
Sum, giving breadth of chamber,	206·3	206·4	206·4	206·4	206·4	206·3

The 'coffer' stands upon the open floor of this room, without apparently any mark to guide its placing, or anything to prevent its being pushed about anywhere. It is nevertheless most probably still very near its original position, for its place is very similar to that of the sarcophagus *sunk* up to its top in the floor of the large chamber of the second Pyramid. But the place evidently has been *somewhat* disturbed, for the south end of coffer is tilted up on a stone, a black jasper pebble of modern pushing in, and about 1·5 high; the coffer is also nearer the north wall than the south by 20 inches; and is further askew on the floor, so that north end of west side is nearer to west wall, than is the south end of same side, by 2·5 inches; the distances measured in direction of coffer's sides being thus:—

South-East corner,	from	South wall,	. . .	= 68·6
South-West	"	"	. . .	= 67·0
North-East	"	North	" . . .	= 47·7
North-West	"	"	. . .	= 49·6
North-West	"	West	" . . .	= 58·8
South-West	"	"	. . .	= 56·3

KING'S CHAMBER, WALLS OF, GENERALLY.

These walls, by many persons thought the chief triumph of the Pyramid-builders' architectural skill, from the fineness and evenness of the joints, are also symbolically remarkable in being composed of five horizontal courses which run round and round the room, of the same height everywhere, and all of them of equal height with each other to 0·1 of an inch,—with only the single interference, viz., that over the doorway, to make its roof very strong, there is an enormous block introduced, equal, throughout its length of 122·7 inches, to exactly *two* of the courses.

The '*fineness*' of these courses is all the more noteworthy, because, while it seems to have been called attention to by the builders, in the four deep lines which subdivide the space over the antechamber entrance to this room into *five* portions,—many travellers have written that the number of courses in the King's chamber is *six;* and others, *one* only. (See Plate 37.)

Yet not only are they five, but all these five are of equal height, viz., 47·0 inches; for though the lower course appears, on being measured off the floor, to be only 42·0 inches,—yet the hole which exists in the north-west corner of the floor, enables one to see there the construction of the walls, and to perceive and feel that the granite of the lowest wall-course goes down five inches under the level of the floor before it comes to a joint; and then rests on limestone, as shown in a sketch made at the place, and to be seen in one corner of Plate 37.

To prove beyond all doubt that there are five, and not six courses, I wished to have measured the height of each course, and then compared the sum of their heights with the whole height previously given by the great measuring-rod; but not being able to reach the *upper* courses, I give *them* only by eye-estimation, placing them in brackets in the following table: but supplying everything else by direct measure: the *roughness* of the first-course measures being due to the modern disorganised state of the floor.

VERTICAL HEIGHTS OF WALL COURSES IN KING'S CHAMBER, AS MEASURED IN DIFFERENT DIRECTIONS SEEN FROM THE CENTRE OF ROOM.

Directions bearing from centre	Height of first course from floor.	Height of second course from floor.	Height of third course from floor.	Height of fourth course from floor.	Height of fifth course from floor.	Sum of heights of courses.	Height of room in same part by a previous independent measure.
E.-N.-East,	42·1	47·0	47·1	(47·0)	(47·0)	230·2	230·8
East,	42·8	47·0	(47·0)	(47·0)	(47·0)	230·8	...
E.-S.-East,	42·7	47·1	47·0	(47·0)	(47·0)	230·8	230·8
S.-S.-East,	Wall much fissured through several courses.						...
South,	41·1	47·0	(47·0)	(47·0)	(47·0)	229·1	229·5
S.-S.-West,	41·8	47·0	47·0	(47·0)	(47·0)	229·8 }	229·9
W.-S.-West,	41·6	47·0	47·0	(47·0)	(47·0)	229·6 }	
West,	41·6	47·0	(47·0)	(47·0)	(47·0)	229·6	...
W.-N.-West,	41·2	46·9	47·0	(47·0)	(47·0)	229·1	229·2
N.-N.-West,	Hole in floor caused by removal of three blocks.						...
North,	42·0	47·1	(47·0)	(47·0)	(47·0)	230·1	229·7
N.-N.-East,	42·3	47·0	47·0	(47·0)	(47·0)	230·3	230·8

The above table can leave no doubt of the number of courses being five, or a characteristic Pyramid number: and as respects their equality of height round every side of the room, that must have cost a great effort in many ways; for elsewhere in the Pyramid, and as more particularly seen in the granite lining of King Shafre's tomb, if the object was to build a wall surface merely, the architect simply built a good surface, and cared not what the sizes and even heights of two adjoining stones were, so long as the joints between them were close and true. The argument therefore follows, that something more than a good wall was wanted, or that something further was intended to be symbolized, by these *five* courses in the King's chamber.

Each of the above five courses is formed in the run of its length, of many blocks, whose lengths are various; and apparently therefore, symbolically unimportant. I measured the lengths, however, in the three lower courses; and am enabled now, by the kindness of Mr

EAST WALL, VERTICAL JOINTS IN.

Joint.	Lowest course.			Second course.			Third course.			Fourth course.		Fifth or top course.	
	Length joint to joint.	Aiton and Inglis.	Total distance.	Length joint to joint.	Aiton and Inglis.	Total distance.	Length joint to joint.	Aiton and Inglis.	Total distance.	Aiton and Inglis.	Total distance.	Aiton and Inglis.	Total distance.
North wall,	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0
1	16·8	15·9	16·8	71·0	72·0	71·6	52·7	52·9	52·7	43·0	43·0	...	...
2	30·5	31·0	47·3	56·8	55·9	128·4	(44·9	33·6)	97·5	37·9	80·9	...	...
3	44·0	44·0	91·3	...	...	...	(58·2	60·0)	155·7	46·0	126·9	...	...
4	65·4	65·0	156·7	...	...	...	...	...	...	35·0	161·9	...	...
South wall,	49·5	49·9	206·2	77·7	76·0	204·1	50·5	51·0	206·2	42·0	203·9	203·9	203·9

The brackets on two sets of numbers of the third course call attention to a case of certain blunder, either of mine, or Mr Inglis's; but which of the two, it is now left to some third observer to determine.

WEST WALL, VERTICAL JOINTS IN.

Joint.	Lowest course.			Second course.			Third course.			Fourth course.		Fifth or top course.	
	Length joint to joint.	Aiton and Inglis.	Total distance.	Length joint to joint.	Aiton and Inglis.	Total distance.	Length joint to joint.	Aiton and Inglis.	Total distance.	Aiton and Inglis.	Total distance.	Aiton and Inglis.	Total distance.
South wall,	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0
1	36·0	36·0	36·0	14·7	15·0	14·7	47·8	48·0	47·8	65·0	65·0	...	...
2	41·7	41·9	77·7	37·6	37·0	52·3	67·4	67·3	115·2	41·0	106·0	...	...
3	43·0	42·0	120·7	34·9	35·0	87·2	58·3	58·1	173·5	41·0	147·0	...	...
4	52·3	51·9	173·0	69·0	69·0	156·2	...	...	...	...	...	...	...
North wall,	34·4	34·1	206·4	50·2	47·9	206·4	32·5	31·9	206·0	58·8	205·8	205·9	205·9

NORTH WALL, VERTICAL JOINTS IN.

Joint.	Lowest course.			Second course.			Third course.			Fourth course.		Fifth or top course.	
	Length joint to joint.	Aiton and Inglis.	Total distance.	Length joint to joint.	Aiton and Inglis.	Total distance.	Length joint to joint.	Aiton and Inglis.	Total distance.	Aiton and Inglis.	Total distance.	Aiton and Inglis.	Total distance.
West wall,	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0
1	54·3	53·9	54·3	38·7	37·9	38·7	(36·0	63·3)	36·0	46·0	46·0	222·0	222·0
2	45·4	42·0	99·7	65·8	66·0	104·5	(63·6	61·4)	99·6	61·9	107·9	...	...
3	49·5	49·9	149·2	77·4	77·0	181·9	61·5	61·4	161·1	79·0	186·9	...	...
4	63·0	63·0	212·2	53·5	53·0	235·4	44·2	44·0	205·3	51·0	237·9	...	...
5	57·3	57·5	269·5	54·5	55·4	289·9	53·9	54·0	259·2	84·0	321·9	...	...
6	40·2	40·0	310·0	...	...	...	...	...	...	54·0	375·9	...	...
Door side or 7	62·0	61·4	372·1	...	...	...	...	...	...	...	...	...	...
East wall,	41·2	41·5	413·3	122·7	123·4	412·6	152·7	152·4	411·9	36·0	411·9	190·0	412·0

SOUTH WALL, VERTICAL JOINTS IN.

Joint	Lowest course			Second course			Third course			Fourth course		Fifth or top course	
	Length joint to joint.	Aiton and Inglis.	Total distance.	Length joint to joint.	Aiton and Inglis.	Total distance.	Length joint to joint.	Aiton and Inglis.	Total distance.	Aiton and Inglis.	Total distance.	Aiton and Inglis.	Total distance.
East wall,	0·0	0·0	0·0	0·0	—	0·0	0·0	0·0	0·0	—	0·0	0·0	0·0
1	37·1	22·1	[illegible]	7·8	[illegible]	75·8	44·0	45·0	45·0	55·0	51·0	60·0	60·0
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	114·2	[illegible]	55·8	[illegible]	67·0	118·0	193·0	253·0
3	[illegible]	37·1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	72·0	160·1	45·0	163·0	...	...
4	[illegible]	44·1	[illegible]	[illegible]	[illegible]	[illegible]	119·4	220·0	[illegible]	42·0	205·0	...	...
5	[illegible]	37·5	231·0	[illegible]	55·0	[illegible]	63·7	[illegible]	352·6	72·0	277·0	...	...
6	[illegible]	270·6	[illegible]	[illegible]	47·5	[illegible]	...	...		42·0	[illegible]	...	...
7	40·7	[illegible]	[illegible]	41·8	41·0	[illegible]	...	...		42·0	362·0	...	...
8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	...	...	...	...	...	...
9	[illegible]	[illegible]	[illegible]	...		...	...	...	...	...	...	...	...
West wall	[illegible]	[illegible]	412·4	[illegible]		412·1	[illegible]	[illegible]	411·0	[illegible]	411·0	159·0	412·0

Aiton to add the measures of all five, as taken soon after I had left by Mr Aiton's assistant, Mr Inglis. A comparison of his measures with mine, through the three first courses, will indicate the possible limits of error where his stand alone; I have noted to my own, that the measures are very rude, and not worthy of competing in their united lengths for determining the whole length of any of the walls.

REMARKS ON THE WALLS INDIVIDUALLY

EAST WALL.

Good joints, and smooth surfaces of granite; no peculiarity except the unfortunate Russian-German inscription

TCHARIKOFF NADLERERG
1845 $\frac{12}{24}$ MAI

smeared on in greasy black oil paint, and in letters six to twelve inches high.

WEST WALL.

This wall has joints in two courses near its southern end, low down, and therefore not far from the coffer,—seriously chipped by travellers for specimens.

NORTH WALL.

This is chipped all round the corners of doorway, and round the air-hole.

This northern air-hole goes straight and rectilineally in, to a distance of more than 100 inches; after which it is stopped up with modern broken stones and sand.

On the north wall, the measures of the mouth of the air-channel, which is rectangular, are as follows:—

East side of North air-hole distant from East end of room,	=	98·3
West side of north air-hole distant from East end of room,	=	106·6
Breadth of air-hole,	=	8·3
Height of top, from floor of room,	=	42·0
,, bottom on East side, from floor,	=	36·4
,, ,, West ,,	=	36·2
Tallness of air-hole,	=	5·7

SOUTH WALL.

Remarkable for fissures near east end, passing through several courses as they stand; there is much surface-fissuring also about the mouth of the air-channel. (See Plate 37.)

This air-channel's mouth is a large, arch-roofed, tunnel-shaped thing; but at a distance inwards of from 50 to 100 inches it gradually decreases to much about the same size and proportions as the northern air-hole

East side of South air-hole, at its broadest part, distant from East end of room,	=	91·4
East side of South air-hole, at level of first course, distant from East end of room,	=	93·0
Breadth of the hole, at its broadest part,	=	17·6
,, at level of first course,	=	11·0
Tallness of hole,	=	23·1
Height from floor to top of hole,	=	59·5
,, bottom of hole,	=	36·4

N.B.—The far-in, narrowed portion of this hole, seems to be beneath the level of the first wall course, similarly with the northern air-hole.

CEILING.

The ceiling of the King's chamber is remarkably finished in appearance, being composed of polished granite, which crosses the room in lengths from north to south. In the run from east to west there are *nine* of these flat beams, but the two end beams have something more than the half of their breadth concealed; there are therefore in reality only *seven* full beams, and two portions of beams to form the ceiling. The breadths, however, of the whole ones are not equal; and hence the number is probably not important symbolically. (See Plate 36.)

I did not measure the breadth of these beams myself; but having compared Mr Perring's drawings with Messrs Aiton and Inglis's measures, and found a certain amount of resemblance,—though not so close as it might be,—have deduced the following probable breadths, approximately:—

		Whole distances from East wall.
East wall of ceiling of King's chamber,	= 0·0	0·
East wall to Joint 1 ..	= 22· (?)	22· (?)
Joint 1 .. 2 ..	= 50 (?)	72 (?)
.. 2 .. 3 ..	= 52· (?)	124· (?)
.. 3 .. 4 ..	= 53· (?)	177· (?)
.. 4 .. 5 ..	= 43· (?)	220· (?)
.. 5 .. 6 ..	= 46· (?)	272 (?)
.. 6 .. 7 ..	= 61· (?)	312· (?)
.. 7 .. 8 ..	= 57· (?)	390 (?)
.. 8 to West wall, ..	= 22· (?)	412·

These beams, of course, cross the King's chamber in one entire length; and not only so, but extend over the thickness of the granite lining of the walls, or 60· inches on either side. As the beams are further of greater depth than breadth, in joist fashion, they form altogether some of the largest and heaviest stones known to exist in the whole Pyramid; and one of them at least, has a

Breadth of . . 60· inches
Depth of . . 80· ..
And Length of . . 326· ..

The sum in cubic inches, amounting to 1,564,800; or above 60 tons in weight.

Yet this mighty ceiling, as every one knows since Colonel Howard Vyse's admirable discovery, has above it, five successive ceilings, all designed to assist in taking off the extreme pressure of the upper part of the Pyramid on the lowest ceiling. I did not visit those upper chambers, being quite content with the Colonel's and Mr Perring's measurements thereof; but inasmuch as they contain the dark and closed-up hollows, wherein the quarry-marks expressing the names of kings of the fourth dynasty have been found on some of the stones, and are necessary to understanding the mechanics of this room,—I subjoin two drawings of them, prepared from the Colonel's large publication. (See Plate 36.)

The granite, in section is indicated by cross lines; limestone, by single lines. The quarry-marks are found only on limestone, and that from Mokattam. The lowest of the five chambers of construction had been known before Colonel Howard Vyse's time, being called indeed after an English consul, Davison, in the eighteenth century, as duly mentioned by the Colonel in his honest, able, and faithful volumes.

THE COFFER,

MARCH 20–23, 25.

THIS vessel, the sole contents of the King's chamber, and termed, according to various writers, stone box, granite chest, lidless box, porphyry vase, sarcophagus, and coffer,—is composed, as to its material, of a blackish variety of red granite. And there is no difficulty in seeing this; for although the ancient polished sides have long since acquired a dark chocolate hue,—there are such numerous chips effected on all the edges in recent years, that the component crystals, quartz, mica, and felspar may be seen even brilliantly. (See Plate 38.)

The vessel is chipped around, or along, every line and edge of bottom, sides, and top; and at its south-east corner, the chippings extend to a breaking away of nearly half its height from the top downwards. It is, moreover, tilted up at its south end, by a black jasper pebble, about 1·5 inch high, pushed in underneath the south-west corner. The vessel is therefore in a state of strain, aggravated by the depth to which the vertical sides have been broken down near one corner; and great care must be taken in outside measures, not to be misled by the space between some parts of the bottom and the floor.

As for the under surface of the bottom, I felt it, near the south end, with my hand; and tried to look under it also, when a piece of magnesium wire was burning there,—without being sensible of any approach to hieroglyphics or engraving. But as to the inside, or upper surface of the bottom, and the vertical sides of the vessel, both inside and out,—all the ancient surfaces there are polished smooth; they are also, all of them, simple, plain, and flat (sensibly to common observation); excepting only the top margin, which is cut into, in a manner implying that a sarcophagus lid once fitted on, sliding into its place from the west, and fixable by three steady pins, entering holes on that side.

The west side of the coffer is therefore lowered all over its top surface, except at the north and south ends, by the amount of depth of such lid cut-out, or 1·72 inch; and the other, or east, north, and south sides are, or should be, lowered to the same depth *on their inner edges*, and to a distance from inside to out, of about one-third the whole thickness. But the fulness of this arrangement cannot be seen now, because in some places, both ledge and top of sides are broken away together; and in others, though much of the inner angle of the ledge remains,—thanks to its protected position,—the upper and true surface of the side has all been chipped away. In fact it is only over a short length near the north-east corner of the coffer, that the chippers have left any portion of the original top surface.

The whole question, therefore, of the full depth of the coffer, rests on that one small portion of the north-east wall, so to speak, of the coffer.

At the north-east corner only, is there an opportunity of measuring the vertical depth between the ancient top surface of a side, and the bottom surface of the *ledge*; and it was, by repeated measure, found = from 1·68 to 1·70 and 1·75; say mean = 1·72 inch.

The sides of the depression are vertical, or without any dovetailing: and the horizontal breadth of such cut-out,—measuring from within, to, or towards, the 'without' of the coffer,—and restoring the sides to their original completeness before the chipping away of the edges,—is—

On and near Western portion of Northern side,	=	1·65
,, Middle ,, ,,	=	1·62
,, Eastern ,, ,,	=	1·73
,, Northern part of Eastern side,	=	1·55
,, Middle and North-east ,,	=	1·60
,, Southern ,, ,,		*all broken.*
,, Eastern and Western parts of Southern side,		*all broken.*

Along the western side are three fixing-pin holes, 1·2 deep, and 0·84 in diameter, save where they are broken larger, as is chiefly the case with the middle, and southern one. The three holes have their centres at the following distances from north end; viz., 16·0, 45·3, and 75·1 respectively.

It is inconceivable how the French Academicians could have pictured the coffer, as they did, without anything of this ledge cut out; unless they looked upon it, as a comparatively modern attempt to convert the original pure coffer, into a sarcophagus: and which they were therefore bound to overlook.

OUTSIDE OF COFFER: ITS FIGURE.

The planes forming the four external vertical sides of the coffer, are far from true; excepting the east one, whose errors are under 0·02; while the north, west, and south sides are so largely concave as to have central depressions of 0·3 and 0·5; or more particularly—

At North side, central hollow or depression of coffer's side (measured from a horizontal straight-edge touching the side at either end, and in a horizontal plane), or the quantity, *d*, near bottom,	=	0·46
,, middle of height,	=	0·20
,, top,	=	0·12
Mean,	=	0·26
At West side, *d*, near bottom,	=	0·35
,, ,, middle,	=	0·15
,, ,, top,	=	0·10
Mean,	=	0·20
At South side, *d*, near bottom,	=	0·28
,, ,, middle,	=	0·18
,, ,, top,	=	0·10
Mean,	=	0·19

Again, when the straight-edge is applied *vertically* to the sides,—east side comes out true, but the others concave—

On North side, the maxima of such depression or *d'*		
On West side, *d'*, at South end,	=	0·20 and 0·28
and *d'*, at North end,	=	0·00
And on South side, *d'*, at different distances	=	0·20
from East to West,	=	0·08, 0·12, and 0·04

ITS SIZE, OUTSIDE.

The corners and edges of the coffer are so much chipped, that the steel claws I had had prepared for the sliding-rods to adapt them from inside to outside measures, were found not long enough to reach the original polished surfaces. A method was therefore adopted, of making up the sides with straight-edges projecting beyond the coffer at either end; and then measuring between such straight-edges, and on either side, or end, of the coffer.

LENGTH OF COFFER OUTSIDE, MEASURED WITH BAR NO. A

	1st Measure.	2d Measure.	3d Measure.
On East side, near bottom,	90·5	90·3	90·4
,, 10 inches under top,	90·15		...
,, above top,	89·70	...	...
On West side, near bottom,	89·8	89·7	89·9
,, above top,	89·93	...	...
,, near top,	90·05	...	...
Mean,	89·91	...	...

The above mean, however, represents only the mean length of the edges of the two sides, not of the whole coffer, on account of the concavity of the two external ends; wherefore, if we desire to state the mean length, for the mean of each end surface, we must subtract two-thirds of the mean central concavity, as previously determined; *i.e.*, = 0·17 for the north end, and similarly 0·13 for the south end; wherefore, then, the mean length for mean of each end of coffer = **89·71**

BREADTH OF COFFER, OUTSIDE.

	1st Measure.	2d Measure.	3d Measure.
At North end, near bottom,	39·05	39·1	39·1
,, near top,	38·7	...	...
,, over top,	38·67	...	
At South end, near bottom,	38·8	38·7	...
,, near top,	38·6	...	...
,, over top,	38·5	...	...
Mean,	38·72	...	...
Correction for curvature of West side,	·07	...	...
Mean breadth of mean sides,	38·65	..	...

HEIGHT OF COFFER, OUTSIDE.

Height of coffer outside, eliminating the stone under bottom, and the sarcophagus ledge of 1·72; *i.e.*, measuring from coffer-bottom to *extreme* top of sides, is—		
At North end, eastern part of it,	=	41·3
Same repeated,	=	41·3
At North end, north-eastern part of it,	=	41·22
At other parts no top left.		
Mean,		41·27
Correction for a supposed hollow curvature of under side of bottom; agreeably with three, out of the four, upright sides; and also agreeably with the construction of the under sides of the casing-stones, which rest on their circumferences, on account of a slight hollowing away of their central areas; not less than	=	·10
		41·17

SIDES, THICKNESS OF.

For this purpose two vertical straight-edges were placed opposite each other, in contact with the inside and outside surfaces of any flank of the coffer, and the

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distance across measured; finding at successive parts of the coffer circumference, bearing from centre—

South-south-west, thickness,	=	6·0
South, ,,	=	6·0
South-south east, ,,	=	5·95
East-south-east, ,,	=	5·85
East, ,,	=	5·95
East-north east, ,,	=	6·10
North-north-east, ,,	=	5·95
North, ,,	=	5·98
North-north-west, ,,	=	6·10
West-north-west, ,,	=	5·95
West, ,,	=	6·10
West-south-west, ,,	=	5·95
Mean thickness of vertical sides,	=	5·99

The above measures were repeated on March 28th, and proved sensibly true for this method of measurement over the top edge of the coffer; but if calipered lower down, it is extremely probable that a notably different thickness would have been found there.

BOTTOM OF THE COFFER, THICKNESS OF.

By difference of heights of two straight-edges of equal length, applied, one inside and one outside,—the outside one being further propped up where required by a third straight-edge, inserted under the bottom,—there was found—

Under South-west corner, thickness of bottom,	=	7·0
,, East side ,, ,,	=	6·6
,, East-north-east, ,, ,,	=	6·87
,, East-north-east, again, ,, ,,	=	6·90
,, North end, ,, ,,	=	6·90
,, North-north-west, ,, ,,	=	6·85
,, North-north-east, ,, ,,	=	6·80
,, West-north-west, ,, ,,	=	7·20
,, West, ,, ,,	=	6·90
,, South-south-west, ,, ,,	=	7·15
Mean thickness of bottom around the edges (the thickness of bottom in the centre cannot at present be measured),	=	6·92

INTERNAL MEASURES.

The inside surfaces of the coffer, seem very true and flat over the greater part of their extent; but betray, on examination by straight-edges, a slight convergence at the bottom, towards the centre.

INSIDE LENGTH OF COFFER, BY SLIDER 70.
(Correction + 0·13 added to all the readings for length of Slider.)

Distance between East and West sides of the North and South ends.	Level at which observations were taken.			
	4 to 6 inches under top.	Middle of height.	6 to 7 above bottom.	0·4 above bottom.
Close to Eastern side,	Broken at S.-E. corner,	78·08	77·93	77·68
At ¼d breadth from East,	78·04	78·06	77·97	77·56
Halfway between E. and W.,	78·08	78·08	78·06	77·33
At ¾ds breadth from East,	78·05	78·09	78·06	77·59
Close to west side,	78·03	78·04	78·01	77·37
Mean at each level,	78·05	78·07	78·01	77·39

Mean of the whole, or inside length of coffer, = 77·93

INSIDE BREADTH OF COFFER.
(By Slider 21, not requiring any correction.)

Distance between North and South end, along the East and West sides.	Level at which observations were taken.				
	Near top.	Near middle.	6 to 7 above bottom.	0·6 above bottom.	0·4 Re-measured.
Close to North end,	26·68	26·69	26·65	26·40	26·30
At ¼ length from N. end,	26·69	26·69	27·00	26·72	26·54
Near middle of length,	26·64	26·60	27·10	27·06	27·00
At ¾ds length from N. end,	26·67	26·78	26·77	26·67	26·75
Close to South end,	26·79	26·78	26·63	26·49	26·49
Mean at each level,	26·67	26·73	26·83	26·67	...

Mean of the whole, or inside breadth of coffer, = 26·73

INSIDE DEPTH OF COFFER.

The measure of this element is taken from the inside bottom of the coffer,—which is apparently smooth and flat,—up in the shortest line to the level of the original top-surface of the north, the east, and the south sides; and of the west side also, *presumably*, before it was cut down to the level of the ledge which runs round the inner edges of the north, east, and south sides.

Now, the depth of that ledge was before ascertained = 1·72 inches below the original top; a block of wood was therefore prepared of that thickness, and placed on the west side, to support one end of a straight-edge, whose other end rested on some part or parts of the original top, which is still preserved at and about the north-east corner.

INSIDE DEPTH FROM ORIGINAL TOP OF NORTH, EAST, AND SOUTH SIDES
(By Slider 23, not requiring any correction.)

Part of Length where observations were taken.	Part of Breadth where observations were taken.			
	Near east side.	Near middle.	Near West side.	Mean at each part of length.
0·0 south of inner N. end,	34·20	34·28	34·36	34·28
3·0 south of inner N. end,	34·44	34·36	34·35	34·38
5·0 Do. do.	34·43	34·41	34·28	34·37
10·0 Do. do.	34·40	34·38	34·28	34·35
24·0 Do. do.	34·34	34·35	34·36	34·33
Mean at each part of breadth,	34·36	34·36	34·29	34·34

General mean, or inside depth of coffer, + 34·34

COFFER, INSIDE MEASURES OF.

DIAGONALS.

Diagonals inside the north end; from either low corner at bottom, up to a measured height of 30·0, *i.e.*, the greatest height quite free from fractures; then—

from low North-east to 30· high North-west, = 39·71
and from low North-west to 30· high North-east, = 39·70

Diagonals inside west side; from either corner below, up to a height of 30 inches measured at the sides—

or from low South-west to 30· high North-west, = 83·19
and from low North-west to 30· high South-west, = 83·13

CUBICAL DIAGONALS.

From low South-west to 30· high North-east,	=	87·13
" South-east " North-west,	=	87·06
" North-east " South-west,	=	87·06
" North-west " South-east, temporarily supplied.	=	87·11

These diagonals give sensibly less than the mean lengths and breadths; on account, apparently, of the extreme points of the corners of the bottom not being perfectly worked out to the exact intersection of the general planes of the entire sides. But they seem abundantly sufficient to prove general rectangularity of figure, in the main part of the coffer's interior.

AZIMUTH TRENCHES.

JANUARY.

On the east side of the Great Pyramid, several explorers have described certain *trenches* cut in the rock. Their notices, nevertheless, generally refer to a system of Pyramid *passages*, one entering the ground at a steep angle from the south, and another from the north; and meeting below the surface, in a vertical and meridian plane. These are therefore not trenches proper, or hypæthral cuts in the ground,—but tunnellings into its substance; on a very much smaller scale too, than the *trenches* of which we have now to speak,—and have denominated *azimuth* trenches.

These azimuth trenches, then, are a sort of large open ditches, spread about here and there on the surface of the hill, before the eastern face of the Great Pyramid; and not very noticeable, except for their relative angles in a horizontal plane; for these gave me the idea, at first sight, of being strangely similar to the dominant angles of the exterior of the Great Pyramid. (Plate 33.)

To ascertain whether this idea was true or not, I determined to measure all the angles rather carefully; and, as a necessary preliminary, proceeded to make myself acquainted with the forms of the trenches, by approximate linear measures. The trenches are four in number, named the North, the South, the East-north-east, and the North-north-east; the latter being a very small one (in breadth and depth), and only to be thought of in connexion with the others when looking to its angular position on the ground. The trenches are shown on the accompanying Plate (33), where I have endeavoured to mark wherever there is a *worked* surface still existing; and the numerical dimensions are as follows:—

NORTH TRENCH.

Total axial length,	=	2188 inches
Distance of its furthest end from central point c,	=	3492
Distance of same from North side of broken base-side (not the socket defined base-side, the sockets not having been opened up at the time of this measure being made) of Pyramid, produced eastward, but uncertainly,	=	960?
Distance of longitudinal axis, from East side of the same broken Pyramid base, uncertainly,	=	1220?
Depth, at North end, worked surface,	=	70
" near middle, worked surfaces,	=	110
" about 200· short of South end,	=	100
Breadth, at North end, worked corners,	=	177
" near middle,	=	290
" South end, smaller than North, but uncertain.		

SOUTH TRENCH.

Total axial length,	=	2060
Distance of its furthest end from central point c,	=	3490
Distance of same from South side of the broken, not the socket-defined, base-side of the Pyramid, produced east, but uncertainly,	=	1020?
Distance of longitudinal axis from East side of the same broken Pyramid base-side, uncertainly,	=	1250?
Depth, at South end, worked surface,	=	70
" at North end, first step, worked surface,	=	25
" " second step, "	=	22?
Breadth, at South end, worked surface,	=	200
" near middle, rough and worn,	=	280?
" at North end, first step,	=	127
" " second step,	=	106

EAST-NORTH-EAST TRENCH.

Total axial length uncertain, because no termination inwards to c, could be found,	=	1580 + x.
Distance of its furthest end from c,	=	3280
Depth, at outer or E.N.E. end, first step, worked surfaces,	=	40
" " second step, "	=	50
" " third step, "	=	60
Depth, near middle,	=	150
" towards inner end, as far as traceable, but much filled with rubbish,	=	40
Breadth, at outer or E.N.E. end, first step, worked surfaces,	=	150
" " second step,	=	44
" " third step,	=	60
Breadth near middle,	=	260
Breadth, near inner end, between longitudinal worked surface,	=	165

NORTH-NORTH-EAST TRENCH.

Neither outer nor inner ends sharply defined.		
Total length, of two marked portions,	=	1280
Distance of furthest visible part from c,	=	4200
Breadth, at all parts, worked surfaces, 39· to 40·, say	=	40
Depth, at all parts, roughly, 10· to 12·, say	=	11

The system of vertical *passages* is only inserted approximately on the plan of the trenches in Plate 33, as I did not *measure* their distance from other known objects. Their general appearance and nature are shown in fig. 4, of Plate 41. Compare also the map in Plate 18.

The bottoms of all the azimuth trenches were filled with more or less broken stones and rubbish, to an extent beyond my means of clearing out. The distances of the North and the South trenches, from the since-discovered sockets of the Pyramid's original base-side, should be measured again.

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LINEAR MEASURES OF THE GREAT PYRAMID.

APRIL 6, 10, 27, 1865.

HEIGHT, VERTICAL.

On the evening of April 10, in ascending the Great Pyramid, I measured in a rough manner the height of every course of stones; and repeated the measure next morning in descending. The two sets were not always quite so similar as they should have been, and the second gave 202 courses, while the former gave 201. Differences which may have arisen, both from the tracks up and down not being precisely the same; and because it was often difficult to say, from dilapidation, where any particular course began or ended: especially as the courses of masonry,—though generally running uniformly along all four sides, if not also through the whole Pyramid, were in some particular places composed of two layers of stone, each of which might then be taken inadvertently as a single course; or again, two small courses rather ruined, might appear as one large one. There is, however, abundant proof, on looking over the numbers, that the courses are not of uniform or regular decreasing or increasing thickness; and that they form little more than a core or substance upon which the ancient builders fastened the casing-stones with their fixing series, and *thereby* gave truth of figure to the whole Pyramid.

At the time of measuring, I merely made a guess at the depth of rubbish concealing the true foot of the Pyramid; but was able afterwards to correct it, when the socket of the corner-stone was uncovered at the north-east angle. And, reducing this to the supposed 'pavement' surface (see p. 47), we have the following numbers (see p. 46).

The course marked above 202, forms the present effective flat summit of the Pyramid; for though there are portions of two other and higher courses (one of 21 and the other of 19 inches), they are too fragmentary to allow any calculations to be made upon them, for approximating to the ancient height of the Pyramid.

But course 202 is complete, in so far as it forms a general square, and an equally good or bad termination to all the four present Pyramid sides, as now deprived of their casing-stones. Said course is built of good, hard, firm, rectangular blocks of Mokattam stone, browned with oxide of iron over the surface; but the original workmanship was only that of the core masonry, and the corners of the platform have been sadly broken in upon. When these were rudely made up, or supplied as to the missing stones, with measuring-rods,—each of the four sides measured something like 400 inches in length; and the diagonals 570 or 580; which implies a length of side = 406; but there were more obstructions in the way of the diagonal, than the side, measures.

Hence then, we conclude that the present height of Great Pyramid, from surface of pavement to top of present platform, or 202d course, = 5445 British inches; and that said platform is a square, of 400 inches in the side, nearly.

The peculiar shelf, or great cut-out in the north-east angle, known among the Arabs as 'half-way,' is considerably more than half-way, or occurs with its floor at or near both the 105th course, and a height of 3203 inches; leaving therefore from thence to platform summit, 97 courses, and 2242 inches.

LENGTH OF SIDES OF PYRAMID BASE.

On April 6th, I attempted to measure the length of each side of the Pyramid's base with a 500-inch cord; and made each side between 8900 and 9000 inches in length; leaving an unknown quantity to be added on for the casing-stone thickness.

The above numbers, therefore, apply only to the internal core of masonry; and include an attempt to supply its lower corners, which are egregiously broken away, and rendered thereby absurdly blunt in figure. But the problem is next to impossibly difficult; both from the extent and abnormal character of the fractures, and the concealment of one end from the other, of each side of the base by the intervening heap of rubbish; that heap of rubbish too, not only altering the line vertically,—which would be its only effect if lying against a vertical wall,—but azimuthally also, on account of the sloping flank of a Pyramid.

In the third and fourth weeks, however, of April, Mr Inglis, deputed by Mr Aiton, having uncovered all four sockets of the Pyramid,—the sockets, as believed but requiring further proof, of the corner stones of the ancient casing,—he was enabled, on such hypothesis, to eliminate all uncertainties of thickness of such once existing casing, and had only remaining the difficulties of the ground, identification, and insufficient mensuration apparatus, to contend with. Subject therefore still to those difficulties,—and they were all of them excessive—Mr Inglis handed me, on April 27, the following measures:—

Length of North side of base of Great Pyramid, from socket to socket (their outer corners),			=	9120 inches
Length of South	do.	do.,	=	9114
,, East	do.	do.,	=	9102
,, West	do.	do.,	=	9102

(See further p. 47.)

CORNER SOCKETS.

Now these corner-sockets of the Pyramid were, from my own measures, of the following sizes and shapes:—

North-east socket—

East side, length = 152· inches.
North ,, = 137· ,,
South ,, = 121·0 to a cut-off of 26· and then another of 21·
West ,, = 157·0 to South side produced rudely.
Diagonal North-west to South-east = 200·0.
Semi-diagonal, centre to North-east corner = 100·0, + thickness of measuring-rods.

MEASUREMENT OF VERTICAL HEIGHT OF GREAT PYRAMID.

Number of course in ascending	Vertical measure in inches	Whole height from pavement.	Every tenth course	Whole height from pavement.
Pavement	0	0	0	0
1 and 2	79	79		
3	34	113		
4	43	157		
5	40	223		
6	40	251		
7	34	301		
8	33	340		
9	34	378		
10	36	414	414	414
11	34	445		
12	31	481		
13	30	513		
14	30	541		
15	28	569		
16	30	599		
17	24	627		
18	26	651		
19	32	685		
20	34	723	309	723
21	24	747		
22	23	770		
23	25	805		
24	23	818		
25	31	869		
26	28	917		
27	26	943		
28	28	961		
29	31	992		
30	30	1022	299	1022
31	25	1048		
32	24	1078		
33	24	1104		
34	24	1129		
35	24	1153		
36	50	1202		
37	41	1243		
38	39	1282		
39	38	1320		
40	34	1354	332	1354
41	32	1386		
42	32	1418		
43	28	1446		
44	32	1478		
45	42	1520		
46	37	1557		
47	28	1585		
48	35	1620		
49	36	1656		
50	30	1686	332	1686
51	28	1714		
52	30	1744		
53	26	1770		
54	27	1797		
55	24	1821		
56	26	1847		
57	22	1869		
58	26	1895		
59	27	1922		
60	30	1952	266	1952
61	23	1980		
62	26	2006		
63	26	2032		
64	26	2058		
65	28	2086		
66	26	2112		
67	26	2138		
68	34	2172		
69	33	2205		
70	31	2236	284	2236

Number of course in ascending	Vertical measure in inches	Whole height from pavement.	Every tenth course.	Whole height from pavement.
71	38	2274		
72	38	2312		
73	27	2339		
74	26	2365		
75	31	2396		
76	24	2404		
77	26	2430		
78	24	2454		
79	24	2478		
80	24	2502	266	2502
81	22	2524		
82	24	2548		
83	24	2572		
84	26	2598		
85	26	2624		
86	25	2649		
87	25	2674		
88	24	2698		
89	24	2722		
90	25	2747	245	2747
91	26	2763		
92	33	2816		
93	31	2847		
94	28	2875		
95	26	2901		
96	25	2926		
97	24	2950		
98	24	2974		
99	41	3015		
100	37	3052	305	3052
101	34	3086		
102	32	3118		
103	30	3148		
104	28	3176		
105	27	3203		
106	27	3230		
107	26	3256		
108	25	3281		
109	29	3310		
110	25	3335	283	3335
111	21	3356		
112	24	3381		
113	26	3407		
114	23	3430		
115	23	3453		
116	23	3476		
117	25	3501		
118	23	3524		
119	35	3559		
120	31	3590	255	3590
121	29	3619		
122	28	3647		
123	26	3673		
124	26	3699		
125	24	3723		
126	24	3747		
127	23	3770		
128	22	3792		
129	24	3816		
130	23	3839	249	3839
131	27	3866		
132	25	3891		
133	23	3914		
134	22	3936		
135	22	3958		
136	22	3980		
137	25	4005		
138	23	4028		
139	25	4053		
140	25	4078	239	4078

Number of course in ascending.	Vertical measure in inches.	Whole height from pavement.	Every tenth course.	Whole height from pavement.
141	22	4100		
142	22	4122		
143	22	4144		
144	22	4166		
145	28	4194		
146	27	4221		
147	24	4245		
148	22	4267		
149	22	4289		
150	21	4310	232	4310
151	26	4336		
152	26	4362		
153	25	4387		
154	22	4409		
155	21	4430		
156	21	4451		
157	21	4472		
158	21	4493		
159	21	4514		
160	22	4536	226	4536
161	21	4557		
162	21	4578		
163	24	4602		
164	23	4625		
165	25	4650		
166	22	4672		
167	22	4694		
168	21	4715		
169	21	4736		
170	20	4756	220	4756
171	21	4777		
172	20	4797		
173	21	4818		
174	21	4839		
175	20	4859		
176	21	4880		
177	20	4900		
178	20	4920		
179	21	4941		
180	20	4961	205	4961
181	26	4987		
182	25	5012		
183	23	5035		
184	24	5059		
185	22	5081		
186	21	5102		
187	21	5123		
188	20	5143		
189	21	5164		
190	21	5185	224	5185
191	21	5206		
192	21	5227		
193	21	5248		
194	20	5268		
195	21	5289		
196	22	5311		
197	24	5335		
198	22	5357		
199	22	5379		
200	22	5401	216	5401
201	22	5423		
202	22	5445	44	5445

Depth, varying from 8 to 7 inches, but bottom quite flat.
Distance of outer, or North-east corner of this North-east socket, from present North-east corner of Pyramid as standing now, = about 350 inches.

The above socket was once cut neatly in the firm live rock of the hill; and is still remarkably true in level, and smooth all over its floor; the sides are evidently injured by wear and tear, and are of unequal depth, besides their symptoms of erosion. The diagonal, computed from the north and east sides, comes out 4·5 inches longer than that directly observed, which is probably owing to the greater wearing of the outer corner; for the diagonal was really *so* very close to 200 inches, that the two rods of 100 inches each in length would just extend along the straight line, when put in edgeways, but not when put in flatways. (See Plate of Sockets; or Plate 40; also Plate 21.)

South-east socket—

East side in length,	=	52· inches.
North ,,	=	81·5 ,,
South ,,	=	86 ,,
West ,,	=	53· ,,

Diagonals, N.-E. to S.-W. corner, observed = 100, computed = 101·
Diagonals, S.-E. to N.-W. corner, observed = 100, computed = 97·
Depth somewhere from 12 to 20, but bottom quite flat.
Distance of outer or South-east corner, from present South-east corner of Pyramid = 330.

This hole is cut in the rock, and its bottom is well and smoothly levelled; the sides are rather sloping and converging towards the bottom, so that the 100-inch rods, measuring both diagonals, jammed about halfway down; the upper surface of the rock was not cleared over any greater extent and was not distinct.

North-west socket—

North side in length,	=	87
East ,,	=	137 + *x*.
West ,,	=	100 + *x*.
South ,,	=	not uncovered, or not visible.

Diagonals not to be measured, as well from South side not being discoverable, as from a large block of building-stone out of the Pyramid having chanced to fall into the middle of the area of the socket, and being, to us, immovable.
Depth about sides observed, from 4 to 11 inches.
Floor smoothly levelled.
Distance of outer or North-west corner of socket from present North-west corner of Pyramid = 350· about.

South-west socket—

North side in length,	=	141·
East ,,	=	72· + *x*.
West ,,	=	74·8
South ,,	=	142·

Diagonals not measured.
Depth of North-east sides from 2 to 3 inches.
But South side is high, above the rock surface outside, or South of it, by about 1 inch.
And West side is level with what is outside it, being merely marked by a line drawn with a blunt tool, similarly with the lines of rectangle in the entrance passage of the Great Pyramid.
Distance of outer or South-west corner of socket, from South-west corner of Pyramid, = 350·, about.
Floor well cut, smoothed, and levelled.

The floors of all the above sockets are exquisitely cut out in the rock, and levelled within their own area; but they are neither cut to the same depth in the rock near them, nor to a uniform general level; for according to Mr Inglis's measures—

Taking the North-east socket floor for 0·0 in level.

South-east	,,	is 13·6	inches	low.
North-west	,,	4·2	,,	low.
and South-west	,,	6·6	,,	high.

THE PAVEMENT.

But the floors of no sockets can form the commencing surface, *i.e.*, the datum plane, or bench mark for level of the whole Pyramid, and for referring all heights to. That end is rather fulfilled by the upper surface of the *pavement* which Colonel Howard Vyse, when cutting down through the middle of the northern rubbish mound, discovered in front of that side of the building; and on which his casing-stones, *in situ*, stood, and from which the inclined side of the Pyramid rose. The pavement was there, about 400 inches broad and 21 thick; and was thence supposed to extend all round the Pyramid, with the same thickness and breadth; but when the same northern rubbish-mound was cut into again, also by Howard Vyse, in the middle of each half of it, east and west of its centre,—the pavement was only found there, about 120 inches broad, though broken, and thickness is not stated: nor has it been reported as having been seen anywhere else; while the very high pavements or pedestals of some authors, are pure inventions from ideas of modern architecture.

At the north-west socket, however, of which we took a photograph, there is, close to the east of it, something which looks like a portion of the pavement; it is only about ten inches thick, and stands up by that amount of height, above the floor of that socket. Hence, reducing all the sockets to such apparent pavement surface, we have—

North-east socket floor	is	5·8,	below pavement	upper surface.
South-east	,,	19·4,	,,	,,
North-west	,,	10·0,	,,	,,
and South-west	,,	0·2,	,,	,,

numbers which are very descriptive of the general appearance of depth, to which each socket has been dug at its own corner.

SIZE OF THE GREAT PYRAMID.

But though the four sockets thus uncovered in 1865, may be sufficiently well measured for the approximate purposes of level, they are by no means satisfactorily measured in distance for the more important size-question of the Pyramid.

Mr Inglis' measure of the North socket side in 1865	= 9120	inches.
The French Academicians of same side in 1799	= 9163	,,
Col. Howard Vyse's of same side in 1837	= 9168	,,

An amount of difference which is disgraceful to modern scientists reporting on an ancient metrological work; but a better result can hardly be obtained by any private hand until all the base sides of the structure shall have been extensively cleared, by Government or national aid, of their present vast encumbrances.

SECTION II.—ANGULAR MEASURES, GEOMETRICAL.

INTRODUCTION.

The principal instruments for measurement of angle were three in number, each of very diverse character to the others :—

First, A sextant-horizon instrument, for vertical angles. This consisted of an ordinary box-sextant by Troughton and Simms, reading by vernier to 1′; but attached to one end of a slab of wood,—the other end of which carried a 'spontaneous-horizon-point' made for me by Adie and Son of Edinburgh, according to my own invention in 1854. It was exhibited at the Paris Universal Exposition of 1855, and has the following qualities; viz., that a level bubble, made to look like a small black-rimmed circle, is seen in the field of view of the sextant, in place of the usual *horizon* reference at sea; and the angular place of that level bubble with reference to the horizontal direction, is not altered by any direct tilting either of sextant, or level, *within the range of the field of view*, say 5°. Hence an object to be observed has merely to be brought down, technically as with sextant observations of the sun, to the level bubble; and the observation is equally good, in whatever part of the field of view the bubble may be situated at the moment.

Such an instrument, therefore, giving vertical angles, true within its moderate powers, and independent or nearly so of level errors in its own position of several degrees, is important as a field instrument,—for it may be held in the hand, and so used with tolerable results for any altitude, from 0° to 90°. But in practice I used always to place it on a rough stand, with which it could be easily brought within half a degree of absolute level, and it then remained steady thereat.

This instrument was in almost daily employ; being used for observations of the time both by the sun and stars when near the prime vertical; and for the latitude by meridian observations as a means of getting the combined index-error; also to determine the angles of ascent of all the Pyramid passages, as well as the slope of the Pyramid sides. The limits of error of an ordinary observation, I used to regard as from 3′ to 4′; and this quantity was partly due to the bad or broken silvering of the glasses, which prevented good definition of the reflected object,—and partly to a slow change of the index-correction of the whole instrument, caused probably by a change in the tin box holding the level, and altering either with time or heat, from 1° 21′ to 1° 8′ in the course of four months.

Second, A circular clinometer presented expressly for these observations at the Great Pyramid, by Andrew Coventry, Esq., of Moray Place, Edinburgh.

This instrument was constructed in the summer of 1864 by T. Cooke and Sons of York; and is probably unique for its excellence and power among all similar instruments for measuring mechanically the tilt of any given surface. It is generally constructed of gun-metal, with divisions on silver; the verniers being in form of a complete circle, with their surfaces in the same plane as that of the divided circle. The divisions are to every 10′, and the vernier readings to 10″; and there are six, or three pair of opposite, verniers, so that by comparing the mean of two with the mean of six, the errors of division, as well as those of eccentricity and motion of the centre, may be kept in check. The whole circle can likewise be shifted on a stout central screw, so as to bring any set of divisions whatever into a given direction. There is a powerful longitudinal level attached to the vernier circle, also a small cross level; and the frame of the instrument stands on three feet,—two of them being fixed feet, at either end of the frame, and in plane of the circle; and the third being a screw-foot, opposite the middle point of the other two feet, and intended to correct in level the cross position of the instrument, on whatever uneven foundation it might at any time be erected.

The circle is eight inches in diameter, and the two longitudinal feet thirteen inches apart; but in use on the worn and rough stones of the Pyramid passages, it was mounted first on a very stout beam of mahogany, fifty inches long, and about six deep; and afterwards on a compound beam of deal and mahogany of greater depth, and 129 inches long, as will be more particularly described in connexion with the observations themselves. (See Plate 31.)

The mahogany packing-box of the instrument had been fitted with a large thermometer; but at some time on the journey, the screws fastening the straps of the glass-tube to the metal scale, loosened; the glass-tube tumbled off, broke and scattered the contained mercury about the box, to the grievous injury of much of the silver-divided circle, as to visibility. With this one exception, the instrument answered admirably, and worked perfectly up to the full degree of accuracy of its 10″ readings, or rather much closer; and the misfortune above mentioned might have been avoided, had there been a wooden block beneath the metal scale, to receive the screws: for a metal screw in a metal socket shakes loose very easily. This was witnessed in a small way when the late Professor Playfair, as mentioned in Stevenson's large volume on the Bell Rock Lighthouse, found that every screw, of a telescope sent him from London by mail-coach, had shaken out. And in a large way, in the recent Government experiments of firing at iron-plate targets; for there, metal nuts and metal screws positively flew off from each other, all around any place where a ball struck; while in another experiment where long metal screws were screwed into thick *wood* planks, the cannon-balls did every sort of mischief both to the iron plates, wooden backing, and even the screws themselves, but not one of these turned itself on its axis or got loose.

And third, An altitude-azimuth instrument by Troughton.

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This had been a splendid instrument of its order, and was presented to the great Playfair, by students in his class of Natural Philosophy, in the year 1806. It is of the general figure rendered famous by Troughton, and his successor Simms, and measures as follows:—

Distance from foot-screw to foot-screw,	. = 15·3	inches
Diameter of azimuth circle,	. = 14·0	,,
,, vertical circle, . . .	. = 15·5	,,
,, object-glass, . . .	. = 1·8	,,
Focal length of telescope, . . .	. = 19·7	,,
Magnifying power, with eye-piece generally employed, ...	. = 25·0	,,
Azimuth circle divided in direction of the motion of hands of a watch from 0 to 360.		
Vertical circle divided in quadrants.		
Both circles reading off by pairs of opposite microscope-micrometers to single seconds.		
Usual tripod-stand, solid, and high, .	. = 82·4	,,
Height from surface of stand to centre of horizontal axis, in mean position of foot-screws, ...	. = 19·9	,,

Hence the optical and angle-reading power of this instrument were immense, wherever they could be brought to bear on any of the Pyramid slopes; and were not unworthy of accurate determinations of latitude as well.

ENTRANCE-PASSAGE ANGLE.

SEXTANT HORIZON INSTRUMENT.

February 9, 1865.—Fixed a bar horizontally across mouth of entrance passage, at a height of 23·7 inches from floor, measured perpendicularly to incline,—for a signal to be observed from below.

Placed sextant-horizon on a stand prepared yesterday, over the 'slide' part of the floor under portcullis: index-mirror axis 23·7 inches above floor, perpendicular to incline, and at a place 1036 inches south of and below basement-beginning; then, subtracting 1° 20′ for index-correction,—

1st measure of vertical angle of altitude of signal,	= 26° 24′
2d ,, ,,	= 26 28
3d ,, ,,	= 26 24
Re-adjusted instrument to a *vertical* height of 26·2 inches above floor.	
1st measure, ...	. = 26 28
2d ,, ...	. = 26 32
3d ,, ...	. = 26 28
Mean, . . .	. = 26° 27′

February 11.—Sextant-horizon again.

In place of former signal, put up a board 14·8 high, but with a perforated observing centre 23·7 inches perpendicularly above floor.

Placed instrument as before, at lower end of passage, and subtracting for index correction 1° 18′, we have—

First observation, ...	= 26° 27′
Second ,, ...	= 26 25
Third ,, ...	= 26 25
Fourth ,, ...	= 26 28
Fifth ,, ...	= 26 27
Sixth, ,, ...	= 26 27
	26° 26·5′

Mean of both days, for angle of elevation of entrance passage as seen from below, under portcullis, = 26° 27′.

CIRCULAR CLINOMETER.

February 6.—This instrument was mounted on its 50-inch mahogany base, and taken down the west side of the entrance passage floor, step by step of its own length, so that the first or highest foot in the second observation was as near as possible on the spot occupied by the second and lowest foot at the first observation. In going down, or indeed up, the west side, the face of the instrument was necessarily looking east, and *vice versâ* when measuring along the east side of the passage floor. Hence a combination of all the observations on either side of the passage floor, enabled a fair approach to the index-correction to be obtained; it was large, viz., 35′ 22″, and therefore completely masked—in the progress of the work—what the final result was likely to be. Each observation is, however, now presented with the finally determined index-correction applied to it; that is, to the mean of the two opposite verniers A and D, which were always read and entered in the observing-book separately, though they are hardly worthy of being now reproduced. The following readings of all six verniers at the parts of the circle which came into play for the readings west, and the readings east, will show the limits of errors of divisions, and prove them to be practically insensible. The degree readings of all the verniers except A, are purposely kept out of sight, as quite unnecessary in such a question.

Vernier A,	27° 3′ 0″	Vernier A,	334° 3′ 0″
,, B,	3 10	,, B,	3 20
,, C,	3 50	,, C,	3 40
,, D,	4 10	,, D,	4 10
,, E,	3 50	,, E,	3 40
,, F,	2 50	,, F,	2 50
Mean of A and D, =	27° 3′ 35″	Mean of A and D, =	334° 3′ 35
Mean of all, =	27° 3′ 28″	Mean of all, =	334° 3′ 27

February 6.—For part of Passage Floor extending from 426 to 1085 Southward and below the basement-beginning North.

Distance of centre of clinometer from basement-beginning.	Circular clinometer. Angle at Western side of floor.	Angle at Eastern side of floor.	Mean angle of floor.	Remarks.
426	26° 29′ 38″	26° 30′ [illegible]	26° 30′ 12″	
475	26 29 43	26 31 37	26 30 40	
524	26 27 2	26 26 37	26 26 50	
574	26 32 12	26 32 37	26 32 45	
623	26 28 28	26 30 12	26 29 20	Bad standing for cross level.
672	26 29 3	26 [illegible] 7	26 30 5	
722	26 [illegible] 43	26 22 12	26 32 48	
771	26 32 8	26 24 37	26 28 22	
820	26 37 23	26 32 52	26 30 8	
870	26 16 46	26 19 57	26 [illegible] 22	
919	26 33 46	26 37 12	26 35 0	Next stones below this much broken.
1085	26 30 48	26 30 47	26 30 48	Under granite portcullis.
		Mean, =	26° 27′ 55″	

February 7.—For the higher part of the Entrance Passage, or from 134 to 572, Southward from basement-beginning. Index correction = 35′ 42″,—applied to West, and + to East observations.

Distance of clinometer from basement-beginning, nearly.	Circular clinometer. Angle of dip Southward of floor, West side.	Circular clinometer. Angle of dip Southward of floor, East side.	Mean angle of floor.	Remarks.
134	26° 17′ 12″	26° 25′ 12″	26° 21′ 15″	
177	26 [illegible] 50	26 31 9	26 33 0	A hole on East side, below this.
227	26 27 53	26 23 27	26 25 40	
276	26 29 51	26 23 9	26 27 28	
325	26 22 18	26 23 57	26 23 8	
373	26 33 3	26 24 51	26 30 56	
424	26 26 31	26 30 57	26 28 43	
473	26 27 41	26 33 21	26 30 32	
523	26 [illegible] 21	26 33 43	26 30 2	
572	26 37 33	26 24 17	26 31 55	No place for cross feet below this, on the East side.
		Mean, =	26° 28′ 16″	

Mean of both sets by circular clinometer. = 26° 28′ 7″.

OPTICAL MEASURE WITH PLAYFAIR ALT-AZIMUTH INSTRUMENT.

April 3.—The Playfair instrument was mounted over the beginning of the basement sheet, northwards, by means of a stand specially prepared for the place by measure; and the centre of its vertical circle was placed in the line of axis of passage produced up northwards, as well as I could judge by eye, and referring to measures on either side.

The signal was the light of an oil-lamp, shining through a hole, 0·3 inch in diameter, and with bevelled edges, in a board fixed over the slide under granite portcullis; and found by measure, to be 25·9 inches distant from floor, and 25·9 from roof; or on level of axis of passage at that place.

The depression, or angle of dip of this signal from the Playfair instrument, was then observed as follows :—

Time of observation	Face of circle turned to	Microscope A.	Microscope B.	Angle with index-error	Mean angle.
h. m. 8·15 p.m.,	East,	63° 27′ 51″	63° 27′ 36″	26° 32′ 6″	26° 25′ 41″
	West,	26 18 27	26 18 45	26 18 36	
Re-levelled,	West,	26 18 23	26 19 21	26 18 32	26 25 16
	East,	63 29 2	63 28 6	26 31 57	
9·5 p.m.	East,	63 27 58	63 28 5	26 31 58	26 25 10
	West,	26 18 18	26 18 25	26 18 22	
				Mean, =	26° 25′ 21″

This determination would probably be preferable to either of the two preceding, on account of the great calibre of the Playfair circle, had it not the drawback that the placing of the instrument in the line of the passage produced outwards, was a difficult matter, and perhaps not very accurately accomplished. Hence I am inclined to give equal weight to the mean determination of the several methods employed, which then stand as follows :—

ANGLE OF DIP OF ENTRANCE PASSAGE FROM NORTH TO SOUTH.

By sextant-horizon,	=	26° 27′ 0″
By circular clinometer,	=	26 28 7
And by Playfair altitude-azimuth,	=	26 25 20
Mean, to nearest minute,	=	26° 27′ 0″

FIRST ASCENDING PASSAGE.

SEXTANT-HORIZON INSTRUMENT.

February 16.—This passage begins the perfectly dark parts of the Pyramid: a lamp-holder was therefore arranged, so that a dark lamp might illuminate the level-horizon bubble; the signal was likewise an artificial light, *i.e.*, a candle shining through a hole in a board; which board was wedged in to upper end of this passage, close to where it enters the Grand Gallery. Both hole in the board at upper, and index-mirror of sextant on a stand at lower end of passage just above the granite portcullis, were tested by measure to be 23·7 inches perpendicularly from inclined floor; and the limits of error were thought to be ± 0·2 inch. Then subtracting 1° 12′ for index-correction, the following results were obtained, for angle of ascent of this passage from north to south :—

First measure,	=	26° 10′
Second ,,	=	26 5
Third ,,	=	26 4
Fourth ,,	=	26 6
Fifth ,,	=	26 5
Sixth ,,	=	26 5
Seventh ,,	=	26 4
Eighth ,,	=	26 4
Mean,	=	26° 5′

March 2.—Repeated the measures, with index-correction = 1° 11′, and found angle = 26° 6′.

April 7.—The floor of this first ascending passage was too much broken to employ the circular clinometer upon it with advantage. But upon this day, an important check upon the above measures was obtained, by observing the depression of the lower northern end, from the upper or southern end, of the passage, with the Playfair altitude-azimuth instrument.

The signal below, was a lamp shining through a small bevelled hole in an upright board, attached to a long plank foot, which butted against the upper end of the granite portcullis; while the Playfair instrument was mounted on its own strong tripod-stand on the level floor of the horizontal passage leading to the Queen's chamber, or 103 inches beyond the south end of the first ascending passage, measured in its own incline.

On carefully testing the positions of both instrument and signal when the angular observations were over,—the signal was found to be 0·3 inch too high, and the

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instrument 0·4 too low, as referred to the inclined floor-line of the passage; and as the distance from instrument to signal was 1395 inches, there is a correction of + 1′ 43″ to be applied to the observed dip; and it has been applied accordingly in the last column of the following table :—

Face of circle turned to	Microscope A.	Microscope B.	Angle with index-error.	Mean angle, corrected also for residual errors in position of instrument and signal.
West,	63° 46′ 0″	63° 49′ 0″	26° 13′ 30″	26° 6′ 40″
East,	23 56 2	23 56 47	23 54 24	
West,	63 49 2	63 48 44	26 11 33	26 6 43
East,	23 58 4	23 58 36	23 55 20	
West,	63 46 6	63 44 36	26 11 40	26 6 40
East,	23 58 6	23 54 23	23 58 14	
				26 6 40

Whence, angle of first ascending passage rising from North to South, is, by sextant horizon. . = 26° 5′ 30″
And by Playfair alt-azimuth, *mutatis mut.* = 26 6 40

And mean = 26° 6′ 0″

HORIZONTAL PASSAGE TO QUEEN'S CHAMBER.

ON March 3d the level of the floor of this passage (for the part extending from the north end towards the south, but only to the edge of the deep step, or 1303 inches in length), was tested with the sextant-horizon by means of reciprocal angles, with the result of finding a dip southward = 0° 7′.

On March 10th, the level was again tested, and by the circular clinometer on its long 126-inch foot; but as the floor is very rough and uneven,—no proper passage flooring at all,—it could only be brought to bear between the distances 200 and 1300, from the north end of the Grand Gallery: the results, corrected for index-error = 24′, were as follows :—

Clinometer length.	Instrument against West wall.			Instrument against East wall.			Mean angle of Passage.
	Dip.			Dip.			Southward dip
1	South,	0°	19′	South,	0°	6′	0° 12′
2	,,	0	10	,,	0	28	0 19
3	,,	0	13	,,	0	16	0 14
4	,,	0	7	,,	0	6	0 4
5	,,	0	4	,,	0	2	0 3
6	,,	0	29	North,	0	2	0 14
7	North,	0	4	South,	0	23	0 10
Mean dip southward, ... =							0° 11

The two instruments seem tolerably confirmatory of each other; but when I tested afterwards the whole length of the passage, by looking along its ceiling from the Queen's chamber, to a scale set up by the north wall of the Grand Gallery, there was a dip northwards indicated, amounting to several inches, and equivalent to not less than 0° 8′. It is possible, however, that part of this apparent quantity, is owing to the ceiling bending down somewhat in the middle of its length.

GRAND GALLERY ANGLE.

SEXTANT-HORIZON.

March 3.—This instrument was placed on a stand previously prepared to suit the spot, and to stand partly on the sloping floor of top of first ascending passage, and partly on flat floor leading to Queen's chamber; the instrument was then nearly in the plane of the doorway, or north wall of the Grand Gallery; and its position as to height, was 28·5 inches above floor, and 24·5 below ceiling, of first ascending passage, or two inches vertically too high.

At the other or south end of Grand Gallery the signal was a candle shining through a 1·1-inch hole in a board; first naked and afterwards through oiled paper. The board was held by hand in plane of south wall, or in south doorway of Grand Gallery; and the board was cut to such a length that when resting on the floor there, the hole was 18 inches above the ground,—equivalent to 25·0 inches above the line of the Gallery floor, continued up to the south wall, or through the substance of the 'great step;' and 25·0 inches below roof of short horizontal passage leading to antechamber: it was therefore in the concluded axis of that passage.

Above the first hole, by 3·5 inches, was a smaller one of 0·6 inch diameter, similarly illuminated. The mean of the two holes was therefore 1·75 inch too high; or 0·25 lower than it should have been, to be similar to the error of the instrument at the other end.

The observations then commenced as follows; but were only rendered fully satisfactory in the taking, when I had rigged up a cross plank and rope holdings, to prevent the otherwise inevitable sliding away of myself from the instrument, by reason of the steep slope of the passage.

	Top of level bubble.	Bottom of level bubble.	Centre of level bubble, − 1° 10′ 56″ index-correction.
LOW LIGHT SIGNAL—			
First observation, .	26° 58′	27° 32′	26° 14′ 34″
Second ,, .	27 52	26 36	26 13 4
Third ,, .	27 56	26 50	26 13 4
And single observation,	...	...	26 17 4
HIGH LIGHT SIGNAL—			
First observation, .	27° 58′	27° 1′	26° 18′ 34″
Second ,, .	27 8	27 54	26 18 34
Third ,, .	27 1	27 57	26 15 4
And single observation,	...	...	26 22 4
	Correction for mean place of signals,		+ 0° 0′ 30″
Mean angle of Grand Gallery, rising from North to South by sextant horizon, =			26° 17′ 36″

The index-correction above given was determined by two series of star observations the same night, one of them giving—1° 11′ 0″ and the other—1° 10′ 52″.

CIRCULAR CLINOMETER.

March 9.—To prepare the instrument for this work, I made it a new and longer foot, cutting up its former mahogany 50-inch foot into three pieces, and fastening them to the lid of the long box of the reference-scale in such a manner, by means of powerful screws, that a joist-shaped stand was formed of the following size,—

Total length of foot, or beam,	=	129· inches.
Length between two longitudinal bearing points,	=	126·
Breadth, total,	=	8·5
Breadth between the line of the two longitudinal bearing points and the middle bearing for cross level,	=	6·8
Vertical depth of beam through the 115· inches of its middle length,	=	7·5

To the above were further fastened four angular lamp-holding blocks, two of them acting when beam was used face west, and two face east; while the whole structure was prevented from slipping when on the incline, by a rope fastened to a wooden anchor, and placed in a ramp-hole above it. This arrangement was found to work well; the level and tangent screws were easy to turn, and the verniers to read off. (See Plate 31.)

The observing method followed was, to take a series of readings stepping up the east ramp, by steps the length of the clinometer foot, = 126 inches, wherever there was a fair ramp-surface for it to stand on; and then, having reached the top of the Gallery, the clinometer was taken into the King's chamber, turned round there, and next made to descend the western ramp of the Grand Gallery, also by steps.

When the ramp permitted, these steps were made exactly equal to the distance between the bearings of the clinometer foot, as before; but occasionally large deviations were obligatory, by reason of severe fractures of the ramp.

The ramp-surface is nowhere smooth, or nicely true; but is corrugated in a manner, from the decay of the stones; and has therefore inequalities which produce large differences in the angle. It is expected, however, that the mean of the whole observations east, will give the mean east inclination, so nearly, that compared with the similar mean inclination west (and trusting to the equality of the two ramps on the whole), the index-correction of the instrument may be obtained,—and also the angle of inclination of the Grand Gallery. It should, however, be remarked, that the index-error of the instrument is not the same as when last used in the entrance passage, in consequence of its now standing on a new foot.

GRAND GALLERY CLINOMETER ANGLE.

Stepping up *East* Ramp, March 9.—9 A.M. to Noon.

Distance of centre of clinometer from North wall of Grand Gallery, nearly	Clinometer readings.		Mean reading, – 23′ 30″ index-correction.	Remarks.
	Vernier A.	Vernier B.		
Inches.				
400	26° 37′ 50″	37′ 0″	26° 14′ 45″	Lowest foot of clinometer above sixth ramp-hole from North.
530	26 34 20	39 40	26 15 30	Up one length.
660	26 25 40	26 50	26 2 45	Up one length.
790	26 54 10	57 0	26 [illegible] 5	
920	26 46 0	47 0	26 23 0	Cross level of ramp much out, viz., dipping to East.
1005	26 26 40	27 50	26 3 45	Up about 90 only, on account of a great break in ramp.
1240	26 36 50	[illegible] 20	26 14 5	Skipped over the great break of ramp by ten inches.
1370	26 39 20	40 40	26 16 20	
1500	26 41 20	43 0	26 18 [illegible]	
1630	26 51 20	52 20	26 28 20	
1720	26 39 30	41 0	26 16 35	Advanced only 90 inches, or with upper foot near upper end of first inclined ramp-hole below great step.
Mean of East ramp,		=	26° 17′ 4″	

Stepping down *West* Ramp, March 9.—Noon to 3 P.M.

Distance of centre of clinometer from North wall of Grand Gallery, nearly	Clinometer readings.		Mean reading, + 23′ 30″ index-correction.	Remarks.
	Vernier A.	Vernier B.		
Inches.				
1720	334° 7′ 40″	8′ 50″	26° 15′ 15″	Upper end of clinometer half-way between South end of ramp, and first inclined ramp-hole.
1600	334 5 0	6 10	26 17 55	Down one step or length of the clinometer.
1470	334 2 50	4 [illegible]	26 20 0	
1370	334 7 20	8 40	26 15 25	Not down a full length on account of a broken ramp.
1170	333 47 40	48 50	26 35 [illegible]	Down more than a length past the broken ramp.
1040	334 0 10	1 20	26 22 45	
910	334 9 0	10 20	26 13 40	
780	334 20 40	21 50	26 2 [illegible]	
650	334 13 50	15 0	26 9 5	
520	334 3 0	4 20	26 19 50	
390	334 7 0	8 10	26 15 55	
Mean of West ramp,		=	26 17′ 8″	

PLAYFAIR ALT-AZIMUTH INSTRUMENT.

April 7.—On this occasion there had been prepared carefully beforehand a lamp-signal apparatus, to be used either above or below instrument; and consisting of a plank 40· inches long, 10· broad, and 0·7 thick, carrying two solid angular shelves, and between them a board with a 0·3-inch hole, worked to an edge inside. (See Plate 31.) The height of the centre of the hole above what the plank rested on, was 6·2 inches; and

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the hole was well illumined by a lamp placed in turn on either shelf,—when looked to, at an angle of 26° or 27° to the horizon, and from the opposite side to the illuminating lamp for the time being.

For measuring angle of Grand Gallery,—above apparatus was taken to upper end of Gallery, and pinned to the ledge of a chance hole in the floor, close in front of great step; front lamp being then of course removed, and hole in board illumined by back lamp; hole being then about 1755 inches from north wall of Grand Gallery, measured along the slope, but only 1652 inches from the place selected for the Playfair instrument. Said hole being further, 6·2 inches vertically above the floor, and the ramp 21·0 inches perpendicular, or 23·4 vertically high,—the hole may be assumed as 17·2 *inches vertically below upper surface of ramp in its parallel.*

The Playfair alt-azimuth instrument was then set up on the level floor leading to Queen's chamber, but at only 103· inches, nearly, within, or south of, north wall of Grand Gallery; and was first adjusted so as to have, it was believed, its centre of horizontal axis, 6·2 inches vertical, above the trace which is visible there on either side of the ancient floor line produced, or base of ramps. But being dissatisfied with the difficulty of accurately performing the above adjustment,—I proceeded, after the angular observations were over, to test the position of the instrument with reference to the ramps in another manner. This was, to take the vertical depression of either pivot of horizontal axis, by measuring along a plumb-line, hanging from a straight-edge resting on the ramps on either side of the instrument, and so placed that the plumb-bob touched the end of the pivot. There was some trouble in getting the Arabs to hold the straight-edge steady on the steep slope, and the following various readings were obtained :—

Vertical depression of East pivot,	= 17·5,	of West pivot,	= 17·8
"	" 17·9,	"	17·9
"	" 17·6,	"	17·5
"	" 17·5,	"	17·5
Mean of all,	= 17·6		

Hence instrument was after all too low by 0·4 inch, and its angle for the upper signal requires a correction = −0′ 50″.

The angular observations began at 4 P.M., after careful levelling.

PLAYFAIR ALT-AZIMUTH INSTRUMENT IN GRAND GALLERY.

Reversals of circle.	Microscope A.	Microscope B.	Angle with index-error.	Mean angle corrected for index-error and position of instrument.
Zen. distance, .	63° 34′ 17″	63° 35′ 8″	26° 25′ 30″	26° 17′ 31″
Altitude, . . .	26 11 30	26 12 34	26 12 2	
Zen. distance, .	63 34 8	63 35 4	26 25 23	26 18 4
Altitude, . . .	26 12 4	26 12 46	26 12 25	
Zen. distance, .	63 34 26	63 35 11	26 25 12	26 17 43
Altitude, . . .	26 11 40	26 12 16	26 11 58	
Mean angle of elevation from North to South of floor of Grand Gallery,			=	26° 17′ 53″

Hence the three different methods of observation for the angle of Grand Gallery give—

Sextant-horizon, ...	=	26°	17′	38″
Circular clinometer, ...	=	26	17	4
Playfair alt-azimuth, ...	=	26	17	53

and giving them the respective weights of 1, 5, and 10, according to the calibre of each instrument, and care taken in the observation,—the final mean is

26° 17′ 37″.

KING'S CHAMBER LEVELS.

March 10.—The circular clinometer on its 126-inch foot, was employed to test on this day the levels of the short passage leading from Grand Gallery to King's chamber; and also the level of the floor of the latter room in two directions. But the stones composing these floors are so much risen in some places and sunk in others, that no accuracy of observation could be secured: and the full limit of the results seemed to be—that the north and south level both of said passage floor, and of King's chamber, and the east and west level of the latter,—are nowhere so much as half a degree in error.

The walls of the King's chamber were then tried, by rearing up the clinometer-foot vertically against them, and reversing it at each place; and their, the walls', surfaces were found much more smooth and appropriate to measure.

Similar observations were again made on the walls on March 29, the index-error of the clinometer having been in the meanwhile changed nearly five whole degrees; and three sets of complete observations were taken against every wall.

The final results for the mean surface of each wall between the heights of 1 and 127 inches above the general floor, are as follows :—

	March 10.	March 29.	Mean.
E. wall, leans towards at top, or to W.,	10′ 0″	9 30″	9′ 35″
W. wall, leans outwards at top, or to W.,	4 0	0 45	2 22
N. wall, leans inwards at top, or to S.,	8 0	11 44	9 [illegible]
S. wall, leans outwards at top, or to S.,	2 0	2 31	2 16
Mean of East and West walls, at top to West, . .			6′ 6″
Mean of North and South walls, at top to South, .			6 4

Hence the *quasi*-vertical axis of the whole room is tilted at the top, towards the south-west; and the different observed amount of tiltings of east *versus* west, and north *versus* south walls, indicate that every wall inclines towards its opposite wall at the top; the east and west walls by the amount of 3′ 46″ each; and north and south walls by the amount of 3′ 48″ each.

VENTILATING CHANNELS.

These ventilating channels, or long and very small-bore passages, being found hopelessly stopped up somewhere in their length,—I made no other trial of their angles, than merely to put, or have put, a little pocket-clinometer on the floor of them, just within their upper mouths, on the outside of the Pyramid,—and take the angle there within a degree. This being close enough to indicate, whether the angles were the same as those of the larger inclined passages, viz., 26° to 27°; or whether they were nearer to what I had hypothetically concluded in 1864; viz., the north one = 33° 42′, and the south one = 45°.

The result of my measure in this rude manner, in January 1865, on the northern air-channel, at its outlet high up the Pyramid side, was, 32° 45′.

And the result of a similar measure on the southern air-channel, kindly performed at my request by an enterprising traveller, Mr Smyth, from Lincolnshire, who visited the Pyramid in February 1865,—was, 46°.

EXTERIOR FACES OF GREAT PYRAMID.

April 7, 8.—Measured with sextant-horizon, the angles of ascent of Great and Second Pyramids; those of the former only, entered here; going consecutively to the top of the heap of rubbish lying against the middle of each side; and, after choosing some stone only slightly weathered, placing both eye and instrument in line of that and upper part of Pyramid foreshortened.

Tested each day the index-correction of instrument by reciprocal angles, observed in succession from two fixed stands, about 5000 inches asunder; and found it 1° 12′ on the 7th; and 1° 8′ on the 8th. Correcting the observations accordingly, we have for angle of ascent of each face of the Great Pyramid from the horizon:—

	April 7.	April 8.	Second observation.	Mean.
East face, . .	51° 46′	51° 44′	51° 49′	51° 46′
North face, . .	51 29	...	...	51 29
West face, . .	51 42	...	...	51 42
South face, . .	51 55	51 59	51 49	51 54
Mean of all, giving weight to each observation,				51° 45′

These measures have no pretence to being closer than a handful of minutes, on account of both the large weathering of the sides of the Pyramid, and the rudeness of the present denuded courses: but they will suffice to show that the 3°, 4°, and more of some travellers have no necessary place, touching the original unweathered Pyramid.

CASING-STONE FRAGMENTS.

After various preliminary trials, I had an apparatus made in March 1866, to measure the angles of the fragments of casing-stones brought home from the Great Pyramid in 1865. This apparatus was in the form of a double-pronged wooden compass, 25 inches long, 1·8 broad, and 1·1 in the collective thickness of its two moveable limbs. These were made in hard mahogany, and worked on a brass screw-bolt in the centre of their lengths; one limb, only 18 inches long, passing inside the other, which was therefore a double frame so far, but solid at either end. This machine having been opened, made to touch two sides of a casing-stone at their own angle, and clamped firm,—was then conveyed to a gun-metal circle 11·9 inches in diameter, and divided to every 20′ by Adie and Son,—to ascertain the angle. The screw-head of the compass-arms, entering a hole in centre of circle, gave a nearly concentric position; and the angle was then read off through small holes, in the central axis of each compass-arm at a radius of 5·7 inches. To correct residual error of eccentricity, the angle was read off on both ends of both arms, or on opposite sides of the circle's centre: and to correct index-error of the instrument, the angle of the stone was taken twice,—once on the right, and once on the left, of the principal bar of the compass. Hence each reading now given, is the result of four independent readings and two measures of the angle; and is free, I trust, from all sensible instrumental defects.

Indeed, the apparatus proved itself superior in accuracy to the fragments which it had to measure; where, the almost constantly prevailing fault was found,—that the surface of the stone which had formed part of horizontal course of masonry,—was more or less hollowed towards the central region: partly, from a purposed intention of the builders to cause the stones to rest on their edges only, not on their centres, which would make them unsteady; and partly, from the thin pointing of lime in the outer part of the joints, having tended to preserve the stone from decay along its angular edge, and to keep it high there; causing the measured angle, when straight-edges are applied to the *whole* surface indiscriminately, to give a too acute angle, by a quantity of a degree more or less. The original outer, or bevelled surfaces of the stones were nearly free from this defect; though three fragments from the northern rubbish-heap of the Pyramid had it rather severely, and indeed so evidently to the eye from their large decay, that they ought perhaps to have been thrown away at the place. But as they have been brought to this country, I give their angles with those of every other fragment brought home, though not allowing them to mix in the mean.

Of nineteen fragments, seven came from the north side of the Great Pyramid, five from the east, two from the south, and five from the west.

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And again, of the same nineteen,—fifteen were examples of the obtuse angle along the upper edge of every original casing-stone; and four of the acute angle at the lower edge. The angles observed in them run thus:—

OBSERVED ANGLES OF CASING-STONE FRAGMENTS.

Side of Great Pyramid found at	Number for reference.	Length of worked surface: In horizontal course, General.	Length of worked surface: In horizontal course, Trustworthy.	Length of worked surface: In the outer bevelled slope.	Angle.	Mean for each side.
		Inches.	Inches.	Inches.		
North,	1	3	1	1	(127° 18)	
"	2	4·	1·	3·	128 6	
"	5	4·	0·5	(?)	(128 50)	128° 6'
"	6	1·	0·5	3·	128 5	
"	7	3·	0·5	(?)	(127 15)	
East,	1	1·5	0·3	1·5	128 12	
"	2	1·	1·	2·	128 19	
"	3	6·	0·3	4·	128 6	128 5
"	4	1·	0·5	8·	128 6	
"	5	0·6	0·3	1	127 30	
South	1	1·		3	127 40	127 54
"	2	4·	0·2	2·	128 9	
West,	1	3	0·4	3·	128 4	
"	2	1·	0·7	3·	128 2	128 2
"	5	0·4	0·2	2·	128 0	
North	3	2		2·5	51 55	51 54
"	4	3·	1	2·	51 58	
West,	3	3·	1·5	3	51 26	51 42
"	4	4	4	6·	51 58	

Whence the mean of all the obtuse angles is 128° 2', yielding trigonometrically **51° 58'** as their inference for the acute angle, or angle of slope of the sides of the Pyramid with the horizon; and the mean of two of the same acute angles, actually observed, is **51° 49'**.

CORNER ANGLES OF GREAT PYRAMID.

ANGLES OF ALTITUDE OF CORNER-LINES OF GREAT PYRAMID.

April 25, 26, 1865.—These were measured with the Playfair altitude-azimuth, from the corner socket-holes of the casing, cut in the rock. The instrument therefore was powerful, the station marks below accurate, and if only there could have been obtained at the top of the Pyramid, a true memorial of its ancient surface, the observations would have been in the very highest degree important. But there is no such memorial there; and we must either supply on the present 400-inch-sided upper platform, a pole about 360 inches high to represent the masonry and summit casing-stones now removed; or, push out horizontally a signal from 100 to 150 inches to represent the *side casing*, now also removed.

Of the two methods, the latter was adopted—as containing the least amount of deduction from theory: and Mr Inglis kindly undertook each day to ascend the Pyramid; and hold out as required, an observing-signal at a distance of, first 100 inches, and then 150 inches, from each corner of the summit-platform in succession, and in the direction of a diagonal of the Pyramid.

In the meanwhile I marked off the Pyramid diagonal lines on the socket-floors below; and measuring from the outer corner of the socket, along that line a distance of 58·1 inches, marked that as the spot for erecting the Playfair instrument over, because then its centre was seen at an angle of altitude of 42° (the approximate vertical corner angle of the Pyramid), from said outer corner of socket floor. Hence, although the instrument stood near the middle of each floor, and high above it,—the angles may be considered as having been measured from the outer corner of the floor itself.

OBSERVATIONS AT NORTH-EAST SOCKET, OF THE 100-INCH DIAGONAL SIGNAL AT NORTH-EAST CORNER OF SUMMIT-PLATFORM OF GREAT PYRAMID.

Time.	Quantity observed.	Mean of opposite microscopes.	Mean altitude freed from index-error.
April 25, 4 P.M.	Alt., ...	41° 45' 6"	41° 51' 24"
	Zen. dist., ...	48 2 12	
	Alt., ...	41 44 22	41 51 2
	Zen. dist., ...	48 2 19	
Mean of both sets for a diagonal distance at top of 100 inches,		=	41° 51' 13"

N.B.—A strong north-east wind blowing at summit of Pyramid, making the signal-staff difficult to hold steadily; wherefore bisection with telescope-wire was found often varying.

OBSERVATIONS AT SOUTH-EAST SOCKET, OF SIGNAL AT SOUTH-EAST CORNER OF SUMMIT-PLATFORM, AND DISTANCE IN DIAGONAL OF PYRAMID OF 100 INCHES *virtual.*

Time.	Quantity observed.	Mean of opposite microscopes.	Mean altitude freed from index-error.
April 25, 6 P.M.	Zen. dist., ...	47° 58' 16"	41° 54' 56"
	Alt., ...	41 48 6	
	Zen. dist., ...	47 56 20	41 54 46
	Alt., ...	41 47 51	
Mean for South-east corner and socket,		=	41° 54' 50"

The 100-inch distance above is called *virtual*, because though it was actually 130 inches, yet the instrument below was pushed 30 inches outwards from its intended place of 58·1 inches inwards, on account of the small size of the floor of the south-east socket.

OBSERVATIONS AT THE NORTH-WEST SOCKET, ON TWO SIGNALS, ONE AT 100, AND THE OTHER AT 150 INCHES IN THE HORIZONTAL DIAGONAL FROM N.-W. CORNER OF SUMMIT-PLATFORM.

Time.	Signal.	Quantity observed.	Mean of opposite microscopes.	Mean altitude freed from index-error.
April 26, 4 P.M.	150 100 150 100	Zen. dist., Zen. dist., Altitude, Altitude,	47° 49' 26" 48 3 26 41 55 16 41 41 16	150 = 42° 2' 24" 100 = 41 48 40
Single reading of one microscope.	150 100 150 100	Zen. dist., Zen. dist., Altitude, Altitude,	47° 50' 20" 48 4 10 41 55 30 41 41 40	150 = 42° 2' 30" 100 = 41 48 45
Mean for 150 signal, . . . =				42° 2' 47"
Mean for 100 signal, . . . =				41 48 42

OBSERVATIONS AT SOUTH-WEST SOCKET, ON TWO SIGNALS, ONE AT 100, AND THE OTHER AT 150 INCHES IN THE HORIZONTAL DIAGONAL FROM THE NORTH-WEST CORNER OF SUMMIT-PLATFORM.

Time.	Signal.	Quantity observed.	Mean of opposite microscopes.	Mean altitude freed from index-error.
April 26, 5 P.M.	150 100 150 100	Alt., . Alt., . Zen. dist., Zen. dist.,	41° 53' 6" 41 39 46 47 52 28 48 6 0	150 = 42° 0' 10" 100 = 41 46 53
Single microscope.	150 100 150 100	Alt., . Alt., . Zen. dist., Zen. dist.,	41 54 0 41 40 20 47 52 10 48 6 10	150 = 42 0 55 100 = 41 47 5
Concluded mean at South-west socket— For 150 signal, . . . =				42° 0' 31"
And for 100 signal, . . . =				41 46 57

Hence, supplying places of the 150-inch signals to north-east and south-east sockets, from what was observed at the north-west and south-west sockets, we have—

As seen from socket.	Angular altitude at top of Pyramid— Of 100-inch corner signal.	Angular altitude at top of Pyramid— Of 150-inch corner signal.
North-east, . . .	41° 51' 13"	42° 5' 3"
South-east, . . .	41 54 50	42 8 40
North-west, . . .	41 48 42	42 2 47
South-west, . . .	41 46 57	42 0 51

But the floors of the sockets are not on the same level; nor apparently intended to be so, by their builders,—from the different depths to which they are cut into the rock. It will be proper therefore to reduce the above angles of altitude, to what they would have marked, had they all been observed from a *uniform level* pavement extending round the whole Pyramid; and a portion of such a grand pavement is to be seen near the north-west socket, about ten inches or more above that socket's bottom.

Hence, reducing Mr Inglis's levels of the socket-floors to above pavement (see page P 47),—we find each of them to have been too low by the quantities stated in the *second* column of the following table. Wherefore, if the *third* column gives the 150-inch signal as observed from the actual socket-floors, the *fourth* gives it as it would have been observed from the uniform pavement. And the *fifth*, gives the angles from the same pavement, due to a decreased distance from 150 to 143 inches for the signal, in the direction of a horizontal diagonal from the corner of present summit-platform; (143 inches being equivalent, in the diagonal, to a side, horizontal thickness of casing and backing stones of 101 inches.)

Socket floor.	Below pavement surface.	150-inch signal from socket floor.	Same signal reduced to pavement surface.	A 143-inch signal from pavement surface.
	inches.			
North-east,	6	42° 5'	42° 3'	42° 1'
South-east,	19	42 9	42 3	42 1
North-west,	10	42 3	42 0	41 58
South-west,	0	42 1	42 1	41 59
			Mean, =	41° 59' 45"

HORIZONTAL ANGLES AT THE CORNER OF THE BASE.

These angles cannot be directly observed at present, because the rubbish-heap in the middle of every side interferes with any one socket seeing any other. But by comparing two sides *successively* with the Pole-star, as will be described in the next department of angular measures,—it was concluded, that the horizontal angle at the outer corner of the north-east socket, subtended between the outer corners of the south-east and north-west sockets, is 90° 0' 44".

This observation, however, was made under such remarkably disadvantageous conditions, and on the last observing evening we had,—that it eminently requires repetition; while similar examinations should of course be also made at each of the other three Pyramid corner-sockets.

SECTION III.—ANGULAR MEASURES, ASTRONOMICAL.

TIME OBSERVATIONS.

ALL these observations were, with one or two exceptions, taken with the sextant-horizon; on account of the portability and expedition of that instrument: but its accuracy was usually considered somewhere, not nearer than 2' or 3'; though by care it might be brought within 1'. Latitude observations by various stars were occasionally taken as a check on the index-error; and though the time was usually obtained from the sun, it was also sometimes found from star observations; which last occasions may be distinguished in the following table, by the hours against which the quantity for the day is entered.

The chronometer alluded to was my pocket-watch, compensated for temperature, and going, as will be

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observed from the column of error on mean solar time, very fairly,—considering the amount of motion it was subjected to. The first column of errors on *apparent solar* time, was computed for the sake of having that sort of time certain for the meteorological observations; and the last, or the errors on *sidereal* time, for the sake of the astronomical observations with the Playfair alt-azimuth instrument; which, however, being only employed on the Pole-star, never required the time to be known with any very great degree of exactness.

In the first fortnight following January 24th, there was only one day on which weather prevented me from obtaining a time-observation of the sun; and the climate was so fine, that the series could have been kept up, probably for the whole four months, almost daily; but my time was too much limited by other work, to allow of doing more than what is given below:—

TIME OBSERVATIONS AT EAST TOMBS IN 1865.

Day	Hour	Chronometer's correction on time.		
		Apparent Solar.	Mean Solar.	Sidereal.
January	h.	m. s.	m. s.	h. m. s.
20	8 A.M.	− 7 49	+ 3 35	...
22	8 ...	− 8 27	...	...
...	7 P.M.	...	...	− 3 49 36
23	7 ...	...	...	− 3 44 21
24	8 A.M.	− 9 17	+ 3 10	− 3 42 30
25	8 ...	− 9 27	+ 3 14	− 3 38 34
26	8 ...	− 9 28	+ 3 24	− 3 34 30
27	8 ...	− 9 57	+ 3 16	− 3 30 39
28	8 ...	− 10 1	+ 3 15	− 3 26 46
29	8 ...	− 10 21	+ 3 3	− 3 22 50
30	8 ...	− 10 29	+ 3 11	− 3 18 20
31	8 ...	− 10 42	+ 3 3	− 3 15 10
February				
1	7 ...	− 10 49	+ 3 4	− 3 11 11
2	7 ...	− 10 57	+ 3 3	− 3 7 15
4	7 ...	− 11 22	+ 2 52	− 2 59 33
5	7 ...	− 11 37	+ 2 42	− 2 55 58
6	7 ...	− 11 29	+ 2 44	− 2 51 49
8	7 ...	− 11 36	+ 2 53	− 2 43 36
11	7 ...	− 12 5	+ 2 26	− 2 32 26
14	7 ...	− 11 53	+ 2 35	− 2 20 24
17	7 ...	− 11 55	+ 2 20	− 2 8 50
19	8 ...	− 11 42	+ 2 16	− 2 0 56
21	7 ...	− 11 49	+ 2 4	− 1 53 19
25	7 ...	− 10 29	+ 2 19	− 1 35 29
March				
1	7 ...	− 10 31	+ 2 5	− 1 21 57
3	10 P.M.	...	...	− 1 11 20
7	7 A.M.	− 8 15	+ 2 32	− 0 57 45
11	10 P.M.	...	...	− 0 39 52
13	7 A.M.	− 7 31	+ 1 50	− 0 34 43
...	9.47 P.M.	...	...	− 0 32 20
14	8.41 ...	...	...	− 0 12 48
20	7 A.M.	− 5 56	+ 1 44	− 0 7 17
April				
1	8 ...	− 2 13	+ 1 46	+ 0 40 16
2	7.30 A.M.	− 1 56	+ 1 43	+ 0 44 2
3	8.30 ...	− 1 51	+ 1 [illegible]	+ 0 47 58
4	8.45 ...	− 1 36	+ 1 28	+ 0 51 57
6	8.0 ...	− 1 6	+ 1 23	+ 0 59 31
7	8.40 ...	− 0 36	+ 1 36	+ 1 3 47
...	8.50 P.M.	...	...	+ 1 5 40
8	9 A.M.	− 0 31	+ 1 29	+ 1 7 33
10	7.40 A.M.	+ 0 13	+ 1 33	+ 1 15 36
12	6.40 ...	+ 0 26	+ 1 14	+ 1 22 51
25	7.33 ...	+ 3 11	+ 1 4	+ 2 14 2
26	7.37 ...	+ 3 9	+ 0 52	+ 2 17 58
27	7.37 ...	+ 3 33	+ 0 50	+ 2 21 51

LATITUDE OBSERVATIONS.

MARCH 11—APRIL 10.

WITH THE PLAYFAIR ALT-AZIMUTH INSTRUMENT. MOUNTED ON A FIRM TRIPOD.

On March 11, at East Tombs,—Barometer = 30·06, and Thermometer = 68·6 at 14h. 0m. per watch,—the following observations were taken for Latitude:—

Nos. for reference.	Time by watch.	Quantity observed.	Microscope A.	Microscope B.	Means of microscopes, still affected by index-error.
	h. m. s.				
1	12 0 0	Alt.	28° 36′ 22″	28° 33′ 50″	28° 36′ 8″
2	12 15 45	Z. dist.	61 6 22	61 9 54	28 51 62
3	12 24 30	Alt.	28 39 8	28 33 38	28 31 53
4	13 56 10	Alt.	28 26 45	28 27 10	28 20 54
5	14 7 20	Z. dist.	61 14 36	61 14 46	28 45 19
6	14 24 30	Alt.	28 27 52	28 23 15	28 24 4
7	14 31 40	Z. dist.	61 13 13	61 13 24	28 64 37

STEPS OF COMPUTATION.

Nos. for reference.	True sidereal time.	Mean of microscopes.	Refraction.	Reduction to meridian.	Resulting latitude of station.
	h. m. s.				
1 and 3	11 34 45	28° 34′ 0″	...	...	...
2	11 26 15	28 51 52	...	...	...
Mean,	11 25 30	28 42 56	− 1′ 42″	+ 1° 17′ 9″	29° 58′ 42″
4	13 10 35	28 20 50	...	...	...
5	13 26 5	28 45 19	...	...	...
Mean,	13 22 30	28 36 8	− 1 42	+ 1 26 15	29 58 41
6	13 45 15	28 28 4	...	...	...
7	13 52 25	28 46 37	...	...	...
Mean,	13 40 50	28 37 20	− 1 42	+ 1 23 9	29 58 47

On March 18, at East Tombs,—Barometer = 30·20, and
Thermometer = 62·8 at 13h. 11m. per watch,
And " = 62·5 at 13h. 30m. " ,—
the following observations were taken for Latitude:—

Nos. for reference.	Time by watch.	Quantity observed.	Microscope A.	Microscope B.	Means of microscopes, still affected by index-error.
	h. m. s.				
1	9 29 36	Alt.	29° 5′ 21″	29° 7′ 17″	29° 6′ 19″
2	9 38 7	Z. dist.	60 37 24	60 29 0	29 21 48
3	13 3 20	Alt.	28 26 24	28 28 10	28 27 17
4	13 11 13	Z. dist.	61 13 52	61 15 42	28 45 13
5	13 29 20	Alt.	28 26 18	28 27 49	28 27 4
6	13 38 20	Z. dist.	61 13 55	61 15 27	28 46 19

STEPS OF COMPUTATION.

Nos. for reference.	Sidereal time.	Mean of microscopes.	Refraction.	Reduction to meridian.	Resulting latitude of station.
	h. m. s.				
1	9 14 56	29° 6′ 10″	...	...	...
2	9 26 29	29 21 48	...	...	...
Mean,	9 21 11	29 14 4	− 1′ 46″	+ 0° 46′ 21″	29° 58′ 41″
3	12 51 20	28 27 17	...	...	...
4	12 59 12	28 45 13	...	...	...
Mean,	12 55 16	28 36 15	− 1 46	+ 1 20 16	29 58 45
4	13 17 20	28 27 4	...	...	...
5	13 24 20	28 45 19	...		...
Mean,	13 22 50	28 36 12	− 1 46	+ 1 24 19	29 58 45

The meridional distance between the parallels of East Tombs and the centre of Great Pyramid, being paced,—was found equal nearly to 10,000 inches; wherefore a correction of + 8″ is necessary to reduce the above latitude of East Tombs to that of Great Pyramid, Great Pyramid being north of East Tombs.

On April 10, 1865, on summit of Great Pyramid, Barometer concluded from East Tombs observation combined with height, = 29·75; correction of watch, or sidereal time, at

h.			h.	m.	s.
8 P.M.	=	+	1	17	22
10 P.M.	=	+	1	17	41
Midnight	=	+	1	18	0
2 A.M.	=	+	1	18	18

observed as follows with Playfair alt-azimuth instrument for latitude; instrument erected about 100 inches south of centre of summit-platform:—

Nos. for reference.	Time by watch.	Thermometer.	Quantity observed.	Microscope A.	Microscope B.	Mean of microscopes, still affected by index-error.
	h. m. s.	Fahr.				
1	8 37 10	...	Alt.	28° 57′ 22″	28° 51′ 6″	28° 57′ 14″
2	8 44 55	60·0°	Z. dist.	60 31 46	60 56 8	29 2 31
3	8 54 13	57·3	Alt.	28 52 [illegible]	28 52 16	28 52 31
4	9 7 20	56·0	Z. dist.	60 56 16	61 55 52	29 3 56
5	9 14 2	55·4	Alt.	28 46 0	28 47 24	28 42 42
6	12 23 4	54·3	Z. dist.	61 16 20	61 15 45	28 45 58
7	12 35 30	...	Alt.	28 20 28	28 29 46	28 31 7
8	12 46 42	53·9	Alt.	28 31 20	28 30 42	28 31 1
9	12 58 20	54·3	Z. dist.	61 13 26	61 13 2	28 46 41

STEPS OF COMPUTATION.

Nos. for reference.	Sidereal time.	Refraction.	Reduction to meridian.	Latitude, with index-error.	Latitude.
	h. m. s.				
1	9 54 38	− 1′ 42″	+ 0° 46′ 9″	29° 53′ 41″	29° 58′ 54″
2	10 2 25	− 1 42	+ 0 58 16	30 4 7	
3	10 11 44	− 1 43	+ 1 0 42	29 51 35	29 58 53
4	10 24 52	− 1 43	+ 1 5 58	30 4 11	
5	10 31 37	− 1 43	+ 1 6 32	29 51 31	29 58 51
6	13 43 7	− 1 45	+ 1 21 42	30 5 53	
7	13 53 36	− 1 45	+ 1 21 0	29 51 22	29 58 39
8	14 4 49	− 1 45	+ 1 22 5	29 51 21	
9	14 14 28	− 1 43	+ 1 20 56	30 5 52	29 58 37

Adding 8″ for geographical reduction to each of the East Tombs observations, we have then for the latitude of the Great Pyramid, the following series of results:—

March 11.	First set,	. . .	=	29°	58′	51″
	Second ,,	. . .	=	29	58	49
	Third ,,	. . .	=	29	58	55
,, 18.	First ,,	. . .	=	29	58	51
	Second ,,	. . .	=	29	58	55
	Third ,,	. . .	=	29	58	53
April 10.	First ,,	. . .	=	29	58	54
	Second ,,	. . .	=	29	58	53
	Third ,,	. . .	=	29	58	51
	Fourth ,,	. . .	=	29	58	39
	Fifth ,,	. . .	=	29	58	37

Considering that the strange anomaly of the two last must have been due to want of level adjustment, they deserve to have only half weight in taking the mean, in which case the final result for latitude north of Great Pyramid is

$$+ 29° \; 58' \; 51''.$$

ROUND OF AZIMUTHS.

This round was taken very hastily, and only intended to be approximate; chiefly also to settle whether second Pyramid was in diagonal of Great Pyramid, and whether a certain supposed distant Pyramid in the desert, spoken of by Dr Liesler, was really west of the Great Pyramid.

SUNRISE ON SUMMIT OF GREAT PYRAMID, WITH PLAYFAIR ALT-AZIMUTH INSTRUMENT.

APRIL 11.

South point of horizon (computed),	=	0°	0
Second Pyramid summit,	=	43	20
Diagonal Great Pyramid,	=	44	55
Distant Pyramid (?), reputed west,	=	77	35
Full moon near setting, about	=	78	35
West point,	=	90	0
Pyramid of Aboo-Roash,	=	135	56
Delta of cultivated land, begins,	=	161	0
North end of meridian,	=	180	0
Delta of cultivated land, ends,	=	211	0
Dome of Mehemet Ali's mosque in Cairo,	=	245	38
Sun rising,	=	260	10
East point of horizon,	=	270	0
Pyramids of Sakkara, begin,	=	323	36
,, ,, end,	=	325	25
A distant Pyramid, probably "the False Pyramid,"	=	337	25
Dashoor, sharp and straight Pyramid,	=	339	51
Dashoor, re-entering angle Pyramid,	=	340	53
Distant ruins of Pyramids,	=	345	0
Some very distant,	=	355	0
South point,	=	360	0

AZIMUTH TRENCHES.

MARCH 21, 23.

WITH THE PLAYFAIR ALT-AZIMUTH INSTRUMENT.

The observations of the 21st being only approximate as to signals, those of the 23d are alone preserved. The work began about 3 P.M. and finished at 8 P.M., in the shade of the Pyramid all the time from the sun; but exposed to a hot wind from the south-west, which

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made the temperature 94·2° at 5.18 P.M., and 91·0° at 6.0 P.M., and contracted the size of the level-bubble fearfully.

The azimuth trenches here observed upon, are described in the linear measures, p. 44.

The first step was, to place the Playfair instrument midway between the north and south trenches; and in the line of their mutual axes, as indicated by poles carefully planted at their outer ends. That done, the two inclined trenches, viz. the east-north-east and north-north-east, were looked at, and found not to converge precisely on the instrument, but on a point about 100 inches west; so that the correct line to have taken with the north and south trenches would have been,—not their central axes, as I had done,—but a parallel line 100 inches west of that; in fact nearly the west side of their *ends*. Instead, however, of moving the instrument and signals to that new western position, I preferred to move the instrument in the axial line of the north and south trenches. First northward, until it reached the intersecting point of the north-north-east trench, as shown by poles at its either end; and again southward, for the intersection of the east-north-east trench: separate observations of the north and south poles being made at each station. Hence we have for the crude observations—

AT CENTRAL STATION FOR NORTH-NORTH-EAST TRENCH.

Time.	Signals at	Mean of two opposite microscopes.
h. m.		
5 30 P.M.	North end of North trench,	30° 21′
	Axis of North-north-east trench,	54 52
	South end of south trench,	210 18
	North end of North trench,	30 18

AND AT CENTRAL STATION FOR EAST-NORTH-EAST TRENCH.

Time.	Signals at	Mean of two opposite microscopes.
h. m.		
6 0 P.M.	North end of North trench,	337° 21′ 46″
	Axis of East-north-east trench,	53 48 26
	South end of South trench,	157 22 21
	North end of North trench,	337 21 22
6 43 ...	Pole-star,	336 4 16
6 51 ...	"	336 4 24
6 58 ...	"	336 4 20
7 2 ...	"	336 4 18
7 8 ...	"	336 4 24

Hence azimuth angle of north-north-east trench, from north end of axis of north and south trenches, towards the east, is

$$54° \; 52' - 30° \; 19' \; 30'' = 24° \; 32' \; 30''$$

and azimuth of east-north-east trench from north end of axis of north and south trenches,

$$= 413° \; 48' \; 26'' - 337° \; 22' \; 34'' = 76° \; 25' \; 52''$$

But the east-north-east and north-north-east trenches being more accurately cut, or better preserved than the others,—should have their azimuths compared also with the line of the sockets defining the east side of the Pyramid's base, which may be accomplished thus,—

The Pole-star readings taken above, include the greatest elongation west for that evening, computed at 1° 37′ 30″; therefore 336° 4′ 18″ + 1° 37′ 30″ = 337° 41′ 48″; or Azimuth of celestial pole, when north end of axial line of north and south trenches reads 337° 22′ 34″. And, as the circle readings increase in going round west, north, east,—said axial line of north and south trenches is at its north end, 19′ 14″ west of the north point on the horizon.

But, by observations presently to appear,—the line of the sockets on the east side of Great Pyramid, deviates at its northern end 4′ 44″ west of the true north point, whence, line of north and south trenches points 14′ 30″ west at its north end, of the similar trending of socket line: and the *inclined* trenches have a less inclination from socket line, than from north and south trenches line; thus—

Azimuth angle of	From North end of North and South trench line	From North end of Socket line on East side of Great Pyramid.	Mean.
N.N.E. trench,	24° 32′ 30″	24° 18′ 0″	24° 25′ 15″
E.N.E. trench,	76 25 52	76 11 22	76 18 37
Whence	76° 18′ 37″ − 24° 25′ 15″	=	51° 53′ 22″
and	$\frac{74 \; 18 \; 37''}{2} - 10$	=	51 50 42
	Mean.	=	51° 52′ 2″

AZIMUTH OF ENTRANCE-PASSAGE OF GREAT PYRAMID.

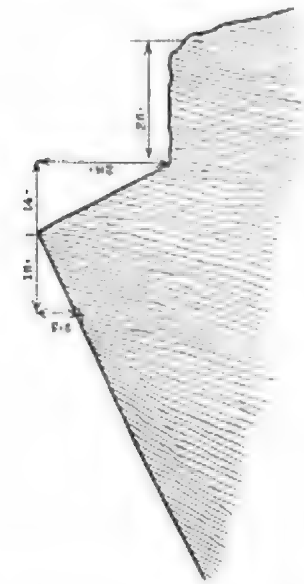
APRIL 3, 7, 1865.

The signal observed on April 3d was a lamp, placed on a box upon the sand-heap under the granite portcullis, about 1000 inches down the entrance passage; and viewed through a 0·3-inch hole, with bevelled edges, in a board fastened to same box; the hole being placed by measure—

25·9	inches from	floor,
25·9	"	roof,
21·4	"	east wall,
and 21.4	"	west wall.

The lamp flame was behind or southward, and rather below this hole,—in order to make said hole appear well illuminated when viewed from above and northward; *i.e.*, from the position of the instrument, at the top of passage, or rather of the basement sheet,—as this extends beyond either walls or roof.

A vertical meridian section of the upper end of the basement sheet appears thus—



A special tripod-stand was therefore prepared for the Playfair alt-azimuth instrument, having two legs 29 inches long, and one 10·5 inches long, with a breadth of 33 inches at the top. And, by shifting that stand about, it was finally so placed, that the centre of the telescope of the Playfair instrument, was considered to be in the line of the axis of the entrance passage produced outwards,—to within 0·2 inch. The following observations were then obtained for the azimuth, after others for the dip of the passage had been secured :—

Time per watch.	Object observed.	Microscope A.	Microscope B.	Mean of both azimuthal microscopes.
April 3. h. m. s.				
6 18 0 P.M.	Signal lamp in passage	57° 35′ 50″	39′ 34″	57° 37′ 12″
6 23 50	Polaris.	236 1 33	7 [illegible]	236 [illegible] 35
6 32 10	......	236 7 36	1 49	236 [illegible] [illegible]
6 41 15	......	236 8 14	2 31	236 8 19
	Signal lamp	67 39 50	35 38	57 39 16
6 53 0 P.M.	Signal lamp,	237 38 40	39 56	237 39 31
7 1 8	Polaris,	56 9 40	10 1	56 9 51
7 25 0	Signal lamp,	237 [illegible] [illegible]	...	......

the following being the steps of computation :—

Illumined end of telescope axis.	Object observed.	Azimuth angle.	Reduction to a North meridian.	Pole of passage and pole of sky.
East.	Lamp-signal south	57° 39′ 15″	180° 0′ 0″	237° 39′ 15″
h. m. s. 7 21 37 Sid. time.	Polaris.	236 7 50	1 37 20	237 45 10
West.	Lamp-signal.	237 39 51	180 0 0	57 39 51
h. m. s. 7 56 42 Sid. time.	Polaris.	56 9 54	1 35 11	57 45 5

Hence in one way of the illuminated end of the telescope axis, the north pole of the Pyramid entrance passage is 5′ 55″, and in the other 5′ 14″, west of the pole of the sky; or, on the mean = 5′ 34″ west.

April 7, 6 P.M.—On this day a new lamp-signal was duly centred in the entrance passage, under the granite portcullis, and observed with the Playfair alt-azimuth from above and northward as before,—

Time by watch.	Object observed.	Microscope A.	Microscope B.	Mean of both azimuthal microscopes.
	Lamp signal,	177° 36′ 21″	36′ 46″	177° 36′ 34″
h. m. s.	Telescope reversed,	357 36 52	37 36	357 37 14
6 48 0	Polaris,	356 6 30	6 18	356 5 54
6 54 20	......	176 6 18	6 32	176 6 25
7 1 40	......	356 7 0	7 24	356 7 12
	Lamp signal,	357 56 54	37 38	357 37 16

the following being the steps of computation, separating the observations with illumined end of axis east or west :—

Sidereal time.	Object.	Azimuth angle.	Reduction to North meridian.	Pole of passage, and Pole of sky.
h. m. s.	Lamp South,	177° 36′ 34″	180° 0′ 0″	357° 36′ 34″
7 [illegible] 20	Polaris,	356 5 54	1 35 30	357 41 24
8 7 0	......	356 7 17	1 34 8	357 41 25
7 50 40	Lamp South,	357 37 15	180 0 0	177 37 15
	Polaris,	176 6 25	1 34 54	177 41 19

Hence, in the two ways of the telescope, the pole of the passage is shown to be west of the pole of the sky, by 4′ 50″, and 4′ 4″; mean = 4′ 27″.

But result of April 3d, said 5′ 34″; therefore mean of both days = 5′ 0″, for azimuthal deviations of pole of entrance passage west of pole of sky.

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AZIMUTH OF PYRAMID CORNER SOCKETS.

EAST SIDE OF GREAT PYRAMID.

April 26, 27, 1865.—After trials on April 25, the Playfair instrument was taken on the 26th to a nick cut out by Mr Inglis in side of rubbish heap on eastern flank of Great Pyramid, and made there to observe, azimuthally, signals which had been duly centred over the outer corners of the north-east and south-east basal sockets,—a similar observation being afterwards made of the Polar star. After several trials and adjustments of the stand, to bring it into the vertical plane between the two signals, the instrument was well levelled, and the following observations were taken; the change of readings by 180° for the same object, showing when the telescope was reversed, and the opposite half of the azimuthal circle brought into play :—

Time per watch	Object observed.	Microscope A.	Microscope B.	Mean of both azimuthal microscopes.
	South socket.	350° 6′ 53″	6′ 64″	350° 6′ 58″
	North „	170 8 26	8 31	170 8 28
	South „	170 7 20	7 24	170 7 22
h. m. s.	North „	350 9 14	9 0	350 9 7
6 50 45	Polaris.	168 49 10	49 10	168 49 10
6 56 35	...	348 50 0	50 14	348 50 7
7 1 30	...	168 51 28	51 20	168 51 24

Applying then the correction + 2h. 20m. 0s. to reduce the watch time to sidereal time,—and computing for the time thus found, or 2h. 9m. 51s. after the greatest elongation west, that the reduction of the Pole star to the north meridian was = + 1° 22′ 29″,—the polar pointing, or trending of the line of the two socket corners on east side of Pyramid, is, 4′ 44″ west of the polar point of the sky, referred to the north horizon.

NORTH SIDE OF GREAT PYRAMID.

At 4h. 30m. P.M. on April 27, 1865, placed the Playfair alt-azimuth instrument on eastern half of northern rubbish heap, where a nick had been prepared, also by Mr Inglis, during the day,—expected in the vertical plane joining the outer corners of north-east and north-west sockets, but unfortunately found much out. The position was very difficult to attain in any way, on account of the steepness and looseness of the rubbish-heap, which owes its present compound shape and extra steepness of slope—to the excavations made by Colonel Howard Vyse on the original rubbish-heap; for that heap was previously of the same simple form, as those still to be seen on the other three sides of the Pyramid. The wind was violent, and the air often so filled with sand and limestone-dust, that I could seldom open my eyes with impunity, though holding them as close as I could to the telescope or microscope eyepiece. My right hand, by continual overtasking during the several last days, had become so sprained, that the Playfair instrument had to be lifted for me by Mr Inglis, in placing it on its stand. He likewise obligingly adjusted the observing signals over the outer corners of the two sockets; at the north-east socket, a camera-stand; and at the north-west socket, finally, an 18-inch rod, which he held vertical by hand.

Not until close upon seven o'clock, when daylight had almost entirely vanished, had we, after much work, obtained a place where the instrument was sufficiently in the line of the two signals, and could see them both,—so extensive and troublesome were found the necessary diggings into the side of the steep hill of loose rubbish and dust.

At length, after various trials, the instrument and its stand were erected in a new hole; hastily levelled; and the following observations obtained with single microscope—

West signal, = 256° 35′, and East signal, 76° 37′
Again, „ = 256 37 and „ 76 37

Now these notes show a discrepance of 2′ somewhere, and though I turned to the west signal immediately, the growing darkness prevented my seeing it again; while the east signal, on being looked for, was found to have been blown down in the interval. Directing therefore immediately to Polaris, the following observations were taken :—

	h. m. s.		
At	7 2 0	per watch, azimuth of Polaris,	= 165° 20′ 0″
	7 4 50	„ „ „	= 165 21 0
	7 6 30	„ „ „	= 165 21 30
Means, =	7 4 37,	or 9h. 28m. 12s. sidereal time,	= 165° 20′ 50″

The reduction to the meridian for the above sidereal time, or 2h. 21m. 50s. after time of greatest elongation of Polaris west, = 1° 19′ 40″ : making reading for celestial pole = 166° 40′ 30″ referred to north horizon.

And if we take a mean of the signal measures just as they stand, adding 90° to the degree-reading for the west end,—we obtain 166° 36′ 30″, for the azimuth of the polar direction of the Pyramid deduced from its north side, as defined by the terminal sockets' outer corners there,—indicating that such line, is

4′ 0″ West of celestial pole.

I need hardly remark that this observation requires repetition, and would have been repeated by me, but that another night was not possible. Similar observations, *mutatis mutandis*, should likewise be taken on the South and West sides of the Pyramid.

SECTION IV.—HEAT MEASURES.

INTRODUCTION.

THE instruments employed in these measures, including the meteorological, were—

1. An aneroid barometer, by T. Cooke and Son; compared by J. Hartnup, Esq., Director of the Liverpool Observatory, through 0·692-inch of barometer range, and through 25·5° of temperature, with the

result—that it is correct to ·001-inch at 83·0° temperature; but has a thermal correction of 0·00243-inch for one degree of Fahrenheit, + above, and − below the temperature of 83·0°.

2. Thermometer, 'Casella 0,' a mercurial travelling thermometer, scale engraved on glass tube, compared at the Liverpool Observatory on June 1, 1865, and found by three observations to be 0·1° too high, at or near 62°.

Therefore the correction to be applied to its readings is − 0·1°.

3. Thermometer, 'Casella 1500,' a mercurial, Phillips'-maximum thermometer, scale engraved on glass tube, and found to have top of *unbroken* mercurial column, 10·1° distant from top of broken part,—when this is being driven along slowly by expansion.

Adding therefore 10·1° to any reading of the column part, its readings are then found 0·3° too high; hence the correction for such readings is − 0·3°, at or near 62°.

4. Thermometer, 'Casella 1499,' a mercurial, Phillips'-maximum. Column correction = + 9·6°; with which added, the final correction on the Liverpool standard is − 0·2°, at or near 62°.

5. Thermometer, 'Casella 1834,' a spirit minimum thermometer, for whose corrections see Meteorological Journal.

6. Ayrton's Fastre's dry-bulb; a mercurial thermometer, scale Centigrade, and engraved on the glass tube; it reads too high, and requires a correction to its readings of − 1·1° Fahrenheit.

7. Ayrton's Fastre's wet-bulb; a mercurial thermometer, Centigrade scale engraved on the glass tube; it reads too high, and requires a correction to its readings of − 0·9° Fahrenheit. Both of these thermometers were of exquisite manufacture, and were kindly lent me by Mr Ayrton for Pyramid observations.

METEOROLOGICAL STATION.

This was established in our dining-room tomb, at East Tombs. Said tomb was very shallow in depth and large in opening,—not very different from two-thirds of a hollow sphere, worked out in the middle of the cliff, and towards the east-north-east. The sun only shone into it early in the morning, for a short time; and then the thermometer-box, of mahogany, with louvre-boarded sides, was always carefully placed in the shade. Every facility was given through the day, for the wind to blow freely on the thermometer bulbs; but I am afraid that at night, the minimum thermometer may possibly have been rather too well protected by the roof of the tomb or cavern; for, on the only night when we had simultaneous observations on the summit of the Pyramid and at East Tombs,—the depression of temperature at the former was much more than it should have been for the height; or, assuming the summit observations true, the minimum temperature at East Tombs was abnormally high.

Otherwise the station was a respectable one for its purposes, and in locality may be described as follows:—

EAST TOMBS METEOROLOGICAL STATION.

Latitude, . .	=	29° 58′ 45″ North.
Longitude, approximate,	=	2h. 5m. East of Greenwich.
Height, above the sea, . . .	=	1600 inches.
" well-water, . .	=	800 "
" neighbouring plain, .	=	520 "
Depth, below neighbouring hill-top, .	=	250 "
" Great Pyramid pavement,	=	980 "
" King's chamber floor, .	=	2668 "
" outcrop of air-channels, .	=	4210 "
" present Pyramid summit,	=	6420 "
Distance direct from Red Sea, . .	=	87 miles.
" " Mediterranean, .	=	110 "
Distance from Mediterranean along the course of the Nile, . . .	=	150 "
Distance from cultivated land, about, .	=	0·5 "
Distance from Great Pyramid, about, .	=	0·2 "

See also Map in Plate 18.

WELL TEMPERATURES NEAR CAIRO.

The wells, the temperature of whose water is here alluded to, are frequent in and about the city of Cairo,—sometimes single, and sometimes in a cluster of three,—but always fitted up with a sakeeah or water-raising apparatus turned by bullock, donkey, or other animal power,—and consisting finally of a vertical wheel, raising one side of an endless band garnished with earthen water-pots. The observations for temperature, were usually made in the stream of water flowing out of the basin into which the water-pots emptied their supply. But if the machine was not at work at the moment, I raised the water for myself with a glass tumbler and string,—measuring only the third or fourth tumblerful drawn up; and no temperature-difference between the two methods at the same well, could be detected,—though there was much difference, and apparently constant, between one well and another. The reason of this variation I could not make out, for there was very little difference generally in the depth of the wells; the country was flat on the surface; and it was to be presumed that all the wells drew upon the same subterranean sheet of water.

WELLS NEAR CAIRO.

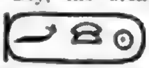
Date.	Hour.	Name of Well.	Temperature of		Depth of Well approximately
			Air.	Water.	
1864.	h. m.				inches
Dec. 21.	9 [illegible] a.m.	White well, Boolak road,	61·0°	71·2°	400
" "	9 30 "	Coppersmith's well, do.,	64·5	70·0	500
" "	11 30 "	" "	66·0	70·1	...
" 28.	3 6 P.M.	East side of Usbekeeah,	67·0	66·0	400
" 29.	9 30 A.M.	At Casr Nuzha, .	60·1	67·3	350
" "	10 30 "	Beyond Casr Nuzha, .	65·5	69·9	400
" 30.	9 20 "	White well, . .	64·0	71·0	400
" "	9 50 "	Coppersmith's well, .	63·0	70·2	500
" 31.	4 20 P.M.	Coppersmith's well, .	64·0	69·6	500
1865.					
Jan. 4.	6 55 A.M.	White well, . .	49·0	71·0	400
May 3.	5 0 "	At Casr Nuzha, .	68·0	69·4	350
" "	5 15 "	Beyond Casr Nuzha, .	69·0	70·4	400

OPEN WATER IN THE NILE, NEAR MIDDLE OF STREAM.

Date.	Hour.	Where.	Temperature of	
			Air.	Water.
1864. Dec. 31.	h. m. 4 0 P.M.	Between Boolak and Gezireh,	65·0°	56·3
1865. Jan. 2.	6 55 A.M.	,, ,,	64·0	58·8

WELL TEMPERATURES NEAR THE PYRAMID.

Date.	Hour.	Name of Well.	Temperature		Depth to surface of water.
			Air.	Water.	
1865.	h. m.				inches.
Jan. 26.	4 0 P.M.	King Shafre's well, .	69·5°	63·5°	105
,, ,,	4 10 ,,	,, ,, .	65·5	63·3	...
Feb. 15.	11 10 A.M.	King Shafre's well; this temperature appears low, but has noted under the observing-book that it was *exactly* measured.	66·0	61·0	...
April 23.	4 30 P.M.	King Shafre's well, .	66·2	66·3	105
,, ,,	4 55 ,,	Sand near well = 49,	...	66·7	...
,, ,,	4 13 ,,	Abdallah's well in field,	...	66·9	130 ?
,, ,,	,, ,,	A similar well, a few feet further North,	...	69·0	...
,, ,,	,, ,,	Another, . . .	...	69·2	...
,, ,,	,, ,,	Another, . . .	...	69·7	...
,, ,,	,, ,,	Another, . . .	...	71·1	...
,, ,,	,, ,,	Another, . . .	...	70·2	...
,, ,,	,, ,,	Another, . . .	...	69·3	...
,, ,,	,, ,,	Another, . . .	...	69·8	...
,, ,,	,, ,,	Another, . . .	...	70·3	...
,, ,,	6 0 ,,	Abdallah's well returned to, . .	...	67·3	...
,, ,,	6 34 P.M.	King Shafre's well, .	...	66·8	105

Of these wells near the Pyramid, the most remarkable one by far is that called King Shafre's, being a square, masonried, sepulchral-looking shaft,—105 inches deep from the alabaster floor to the water-surface, and with a depth of water of 70 inches below that again,—in the eastern room of the recently-discovered and excavated building called King Shafre's Palace or Tomb, south-east of the Sphinx; and in which well, was found by Mariette Bey, the broken, life sized statue of King Shafre , in diorite. Hence this well has really some claim to show, what the temperature of a water-well in the Great Pyramid *would* be.

All the rest of the wells noted under this heading, were agricultural wells in the alluvial flat east of the Pyramid hills. With reference to the observations of April 23, the following note appears in the observing-book:—

April 23.—No wind; dull hazy evening: sun coloured of an unwholesome primrose yellow; locusts appearing from the south-west. The water to be examined was drawn always from the wells in a small tin kettle at the end of a rope; and only after said kettle had been kept plunging in and out for some minutes, and then depressed for as long, to near bottom of well. The temperature was taken both by *fall and rise*; that is, the air being warmer than the water, the thermometer was plunged into the fluid, and kept in until it ceased to fall; then being taken out, evaporation lowered the bulb below its previous lowest,—in which state it was again plunged into the water, and rose up to, or very nearly to, what it had reached at first when descending from the warmer air.

The reason of the different temperatures of the waters of the different wells in the alluvial plain, we could not discover at the time, or since: for their construction and situation seemed all so very similar; viz., circular holes eight to twelve feet broad, and fifteen to twenty deep, lined about their lower parts with Indian corn stalks. The last four northward wells were being worked by the villagers with the shadoof: the first five, were not being worked in any way. In some of the extreme cases of anomalous temperatures, the kettle-ful of water experimented on was emptied upon the ground, and a new haul taken,—but in no case was the numerical result of the first experiment thereby sensibly altered, for *that* well.

GREAT PYRAMID TEMPERATURES.

Date.	Time.	Subject.	Dry bulb.	Wet bulb.
1865.	h. h. m.			
January 19.	10 to 10 35 A.M.	In dust under coffer in King's chamber, . .	75·0°	...
,,	,, ,,	In air, at intervals of five minutes, by Mr Ayrton's Fastre's thermometers, corrected for index-errors, ...	75·7 75·4 75·2	68·0° 68·3 68·0
,,	,, ,,	In dust on floor in Queen's chamber, . . .	74·3	...
,,	,, ,,	Again, ...	74·3	...

N.B.—Temperature of Queen's lower than that of King's chamber, though latter is more elevated.

Date.	Time.	Subject.	Temperature by Casella.
1865.	h. m.		
January 26.	10 37 A.M.	Floor of King's chamber in temperature, . . .	75·6° Fah.
,,	10 44 A.M.	Floor of Queen's chamber in temperature, . . .	74·8° Fah.

Temperature of Queen's, again lower than of King's, chamber.

Date	Time	Subject	Temperature by Casella 0
1865.	h. m.		
March 20	10 50 A.M.	South air-channel in King's chamber,	75·7°
"	1 0 P.M.	Do. do.	75·7
March 21.	10 37 A.M.	North air-channel in King's chamber,	75·0
"	0 0 P.M.	Do. do.	75·0
March 23.	9 0 A.M.	North air-channel in King's chamber,	75·0
"	11 0 A.M.	Do. do.	75·0
March 25	9 30 A.M.	In dust at descent into well from Grand Gallery,	73·2
"	9 50 A.M.	In dust in hole of floor of Queen's chamber,	74·3
"	10 13 A.M.	In dust of well-mouth of Grand Gallery repeated,	73·2
"	10 45 A.M.	South air-channel in King's chamber,	73·1
"	10 57 A.M.	North air-channel in King's chamber,	74·9
"	11 25 A.M.	Do., but meanwhile two travellers and their Arabs had entered and gone again,	75·3
"	0 15 P.M.	Still in same place,	75·2
"	0 20 P.M.	In further part of north air-channel, outside King's chamber, where it is entered by a forced passage from the antechamber,	74·2
March 29.	10 A.M. to 1 P.M.	In King's chamber,	75·0

NORTH AIR-CHANNEL.

On March 30, 1865, had six buckets of water poured in quickly one after the other at top of north air-channel,—where it crops out on the exterior of the Pyramid,—expecting that they would run through, carrying the mean-temperature with them,—and down to the excavated cross-passage, which meets said air-channel from north end of ante-chamber. But no water came through; the shaft being evidently plugged up somewhere,—as it was in Colonel Howard Vyse's day, before he cleared it. Meanwhile I was waiting at said cross-passage with a candle, two thermometers, and a tin mug,—and observed the following rise of temperature in the air of that confined locality, evidently from the effect of my own, and the candle's heat. At—

h. m.				
9 16 A.M., temperature by Casella 0		= 74·6°, by spirit min. Th		= 74·6°
9 30	"	75·0		
9 45	"	77·8	..	75·0
10 0	"	78·2	..	...
10 16	"	78·1	..	...
			..	77·0

h. m.				
10 30 A.M., temperature by Casella 0		= 77·6°, by spirit min. Th.		= 77·6°
10 45	..	77·8	..	77·4
11 0	..	70·8	..	76·8
11 15	..	77·9	..	77·6
11 30	..	77·6	..	77·4
11 45	..	77·2	..	76·8

SOUTH AIR-CHANNEL.

On April 1, at 10·45 A.M., six buckets of water were poured down the open, upper, outer end of south air-channel; and in half an hour afterwards it began to trickle, but only to trickle in drops, through the south air-channel mouth in the King's chamber, and on to the floor. At 11h. 27m. A.M., I began to catch it, as it thus came out of the mouth of the hole, in a one-ounce glass; and tested the temperatures of successive fillings, as follows—

First,	= 74·6°
Second,	= 73·5
Third,	= 74·2
Fourth,	= 74·5

When the thermometer, wet with any previous experiment, was held in the air while the glass cup was refilling, its column went down to 72° and 71°, pretty quickly; and with more time would go down as low as 66·3°. But this was an effect of evaporation; and the true temperature of the water, which went on trickling for more than half an hour through the air-channel hole—was close to 74·5°, as shown by the thermometer immersed in it, and kept there, on each occasion, upwards of one minute.

SUMMIT OF GREAT PYRAMID.

April 10, 1865.—Observed the following temperatures by 'Casella 0,' placed temporarily in windy, but shaded from sky, places,—

h. m.				
At 8 45 P.M. appar. solar time, temperature,			= 60·0°	Fahr.
8 54	..	..	= 57·8	..
9 8	..	..	= 56·0	..
9 14	..	..	= 55·4	..
April 11, 0 25 A.M.	..	..	= 54·3	..
0 47	..	..	= 53·9	..
0 58	..	..	= 54·3	..
Day-break,	..	..	= 50·0	..
Sunrise,	..	..	= 49·0	..
N.B.—Spirit minimum at day-break was at			= 51·0	..

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METEOROLOGICAL JOURNAL AT EAST TOMBS, GREAT PYRAMID HILL, IN THE YEAR 1865

Date	Hour	Air Shade Temperature and Moisture						Computed				Clouds		Wind		Remarks
												Quantity	Quality	Force	Direction	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Cirro-cumuli.	[illegible]	[illegible]	Heavy smoky haze over Cairo.
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	0	Cirrus.	1	[illegible]	
													Cirrus and cirro-cumuli.	0	0	
				[illegible]						[illegible]	1	Cirrus.	1	[illegible]	
				[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	Cirrus.	1	S.	Ibrahim and Smene near Thermometer-box.
				[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	10	Cirro-strati.	0	0	
				[illegible]	[illegible]						[illegible]	Cirro-strati and nimbus.	[illegible]	[illegible]	Blue, hazy, half fog half rain effect in distance.
					[illegible]	[illegible]				[illegible]	10	Cirro-strati and cirrus.	[illegible]	[illegible]	Slight shower of rain about 9 A.M.
									[illegible]	[illegible]	[illegible]	Cirro-strati.	[illegible]	[illegible]	
			[illegible]	[illegible]		[illegible]				[illegible]	[illegible]	Cirro-strati on cirrus.	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]			[illegible]	10	Nimbus.			Occasional rain drops.
[illegible]	[illegible]	[illegible]		[illegible]	[illegible]					[illegible]	[illegible]	"			
	[illegible]	[illegible]						[illegible]		[illegible]		"	[illegible]	[illegible]	Smoke hanging over Cairo.
	[illegible]	[illegible]							[illegible]				[illegible]	0	Smoke still hangs over Cairo.
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					[illegible]	[illegible]	A few stars shining faintly.
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]		[illegible]		[illegible]	0	0	
		[illegible]	[illegible]	[illegible]					[illegible]			[illegible]		[illegible]	[illegible] over S. end of [illegible] Hill. Visited Sphinx, and found it looking straight East, ridge of its back also East and West.
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]	[illegible]		"	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] ([illegible])	[illegible]		[illegible]				0	Bright star-light.
	7 A.M.	[illegible]	[illegible]	[illegible]	[illegible]		...	[illegible]	[illegible]	[illegible]	1	Cirrus.	1	[illegible]	Smoke and haze level over Cairo; the green plain also with much mist lying upon it.
	[illegible]	[illegible]		[illegible]	[illegible]		...	[illegible]	[illegible]		1	Cirrus.	1	[illegible]	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] and cirro-strati.	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	[illegible]			...	[illegible]	[illegible]	[illegible]	5	Cirrus and cirro-cumuli.	[illegible]	0	
	[illegible]	[illegible]	61·2	[illegible]	54·1	63·0	[illegible] ([illegible])	...	[illegible]	2·9	10	Cirro-cumuli.	1	[illegible]	Visited the third Pyramid, and at 3 P.M. was in the interior of the Great Pyramid.
[illegible] 19th.	8 A.M.	30·21	59·1	58·5	48·6	(56·0)	...	2·7	44	2·3	[illegible]	"	0	0	Haze level over Cairo.
	0 P.M.	[illegible]	65·2	66·0	53·8			3·3	44	4·0	0	"	1	[illegible]	Took aneroid levels at Great Pyramid. (See Journal.)
	3 "	30·10	70·1	70·0	56·6			3·0	37	5·0	0	"	1	N.W.	Smoke haze clearing away over Cairo before North-west wind.
	7 "	30·14	65·5	65·2	54·2	70·0	63·0 (14·0)	3·1	47	3·6	0	"	1	N.W.	
♀ 20th.	7 A.M.	30·25	53·6	55·6	47·6	(55·0)	...	2·8	58	2·2	0	"	0	0	Dense level haze over Cairo, and along Nile.
	10 "	30·26	44·2	63·3	53·6	...		3·3	49	[illegible]	0	"	1	N.	The same dense haze continues.

METEOROLOGICAL JOURNAL AT EAST TOMBS—*Continued.*

January 1865		Air Pressure at Station	Air Shade Temperature and Moisture								Clouds		Wind		Remarks
			Dry-bulb												
Day.	Hour, App. Solar time.		By Max. Th.	By Min. Th.	Wet-bulb.	Self-registering Maximum and Minimum	Mean Temperature [illegible]	Weight of Vapour in a cubic foot	Humidity (Sat. = 100)	Weight of Vapour required to saturate a cubic foot of Air	Quantity	Quality.	Velocity	Direction	Remarks.
		Inches.	Fah.	Fah.	Fah.	Fah.	Fah.	Grains.		Grains.					
♀ 20th.	0 P.M.	30·21	70·0	69·8	51·4	...	...	3·2	31	5·6	0	⊙	3	N.E.	Haze clearing away.
	3 ..	[illegible]	72·9	72·4	55·1	...	...	3·9	32	5·8	1	Cirrus,	4	N.E.	Haze almost gone.
	7 ..	[illegible]	[illegible]	61·2	58·9	73·0	64·3 (11·5)	4·0	61	2·6	3	Cirrus,	2	N.E.	A few stars shining
♄ 21st.	7 A.M.	30·13	56·2	56·0	52·8	...	...	4·0	78	1·0	4	Cirrus and fog,	0	0	Heavy fog before sunrise, and still over central line of Nile valley.
	9 ..	30·14	57·1	57·0	53·8	(56·0)	...	4·1	79	1·1	10	Fog,	0	0	Fog driving from North to South
	0 P.M.	30·12	63·1	63·0	58·6	...	...	4·8	75	1·6	8	Cirro-cumuli,	1	N.	Fog almost concealing the last green of the valley
	3 ..	30·10	64·1	65·5	60·4	...	...	4·9	70	2·1	9	Cirro-cumuli,	1	N.	The plain visible, but fog over Cairo and Nile valley. At 4 P.M. Mazara Hill visible.
	7 ..	30·11	63·5	63·1	60·4	66·3	61·4 (9·9)	5·3	82	1·2	4	Cirrus,	2	N.	Stars shining out.
☉ 22d.	8 A.M.	30·13	58·1	58·1	55·8	(56·3)	...	4·8	84	0·9	10	Cirro-strati,	1	N.E.	
	9 ..	30·13	60·0	59·3	57·0	...	...	4·7	89	1·1	10	Cirro-strati,	2	N.E.	Haze fog in distance.
	0 P.M.	30·13	64·4	64·0	58·6	...	...	4·6	68	2·1	0	⊙	3	N.E.	Haze all gone. ⊙ shines brightly.
	3 ..	30·10	64·7	68·2	59·0	...	...	4·1	53	3·6	0	⊙	3	N.E.	
	7 ..	30·13	64·3	63·8	57·6	69·5	62·8 (11·2)	4·3	64	2·3	1	Cirrus,	1	N.	
☾ 23d.	8 A.M.	30·14	55·3	55·2	54·1	...	...	4·6	92	0·4	10	Fog,	2	N.	Dense fog.
	9 ..	30·15	55·1	56·0	57·1	(55·0)	...	4·9	88	0·3	8	Cirrus,	2	N.	Fog decreasing.
	0 P.M.	30·13	63·1	65·0	60·0	...	...	5·1	70	1·2	6	Cirrus,	2	N.	
	3 ..	30·09	67·7	67·5	61·5	...	...	5·0	64	2·4	5	Cirro-strati,	4	N.	
	8 ..	30·13	62·8	62·1	60·0	64·5	62·2 (12·7)	4·8	73	1·7	2	Cirrus,	2	N.	
♂ 24th.	7 A.M.	30·16	60·6	60·2	59·1	...	...	4·5	80	1·7	3	Fog,	1	N.	Fog over Nile valley to ground.
	8 ..	30·17	58·1	57·0	55·5	...	...	4·6	88	0·6	10	Fog,	0	0	Fog over hill, and heavy on central Nile valley.
	9 ..	30·19	60·1	60·8	57·2	(56·2)	...	4·8	83	1·0	10	Fog,	0	0	Fog beginning to lift up
	0 P.M.	30·14	65·1	65·0	56·8	...	...	4·0	58	2·9	5	Cumulus and cirro-strati	1	N.	Fog disappeared
	3 ..	30·13	66·3	65·0	55·6	...	...	3·6	52	3·2	7	Cirrus,	1	N.	Very bright, with light cirrus clouds flying about.
	5.5 ..	30·11	63·3	63·0	53·6	68·3	59·9 (10·3)	3·4	52	3·1	4	Cirrus,	1	N.	Brilliant rosy sky after sunset.
	8 ..	30·12	62·3	61·6	53·7	...		3·5	56	2·8	2	Cirrus	1	N.	
☿ 25th.	7 A.M.	30·15	52·6	52·4	48·5	...	...	3·3	74	1·2	3	Cirro-cumuli,	0	0	
	9 ..	30·16	60·1	60·0	50·8	(51·2)	...	3·1	53	2·8	7	Cirro-cumuli,	2	N.	Haze gathering over Cairo.
	0 P.M.	30·12	67·1	66·5	54·6	...	...	3·2	44	4·1	8	Cirro-cumuli,	[illegible]	[illegible]	Haze increasing in density over Cairo.
	3 ..	30·10	66·0	65·6	56·0	...	...	3·6	54	3·2	6	Upper cirro-cumuli and lower cirro-strati,	1	N.	Remarkably clear towards South and West.
	7 ..	30·12	63·6	63·2	58·0	67·2	56·7 (15·1)	3·9	61	2·6	7	Cirro-strati,	[illegible]	[illegible]	
♃ 26th.	7 A.M.	30·11	[illegible]	[illegible]	[illegible]	...	...	3·6	82	0·8	9	Cirrus,	[illegible]	[illegible]	
	9 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	3·0	61	2·4	0	⊙	[illegible]	[illegible]	Aneroid levels taken to-day between East Tombs and interior of Pyramid.
	0 P.M.	[illegible]	[illegible]	[illegible]	[illegible]	...	...	3·7	52	3·4	1	Cirrus and cumulus,	0	0	
	3 ..	[illegible]	[illegible]	[illegible]	[illegible]	...	...	3·7	46	3·0	2	Cirro-strati,	2	N.	Gust of wind blew sand into East Tombs.
	7 ..	[illegible]	[illegible]	[illegible]	[illegible]	66·5	61·6 (12·3)	4·3	63	2·6	8	Cirro-strati,	2	N.	
♀ 27th.	7 A.M.	30·16	[illegible]	[illegible]	[illegible]	...	...	4·5	80	1·1	2	Cirro-cumuli,	0	0	Thin mist over line of Nile.
	9 ..	[illegible]	65·1	[illegible]	[illegible]	[illegible]	...	4·8	71	2·0	1	Cirro-cumuli,	0	0	

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METEOROLOGICAL JOURNAL AT EAST TOMBS—*Continued.*

Date	Hour	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Clouds	Clouds: Quality	Wind: Velocity in miles per hour	Wind: Direction	Remarks
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Moon and stars very bright and making sharp shadows on the desert sand.
[illegible]	7 A.M.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	0	0	0	[illegible]	Rather hazy horizon.
	9 ..	[illegible]	[illegible]	[illegible]	[illegible]	...		[illegible]	41	[illegible]	0	0	3	N.	
	0 P.M.	29.97	69.1	69.9	55.8	...	...	3.4	43	4.5	1	Cirrus.	7	N.	Maximum probably to come by 4-0 ... clouds, cirro-strati and nimbus.
	3 ..	29.84	69.6	69.5	55.5	...	...	2.2	41	4.7	9	Cirro-strati and nimbus.	5	N.	
	7 ..	29.84	44.2	62.7	52.0	26.5	64.0 (21.5)	3.6	44	3.3	3	Cirrus.	5	N.N.W.	Atmosphere becoming ... clear.

METEOROLOGICAL JOURNAL AT EAST TOMBS—*Continued.*

Date	Hour	Barometer	Dry	Wet	[illegible]	[illegible]	[illegible]	Computed: Weight of vapour in a cubic foot of air	Computed: Humidity	Computed: Weight of vapour required to saturate a cubic foot of air	Clouds: Quantity (0–10)	Clouds: Quality	Wind: Velocity in miles per hour	Wind: Direction	Remarks
								Grains		Grains					
[illegible]								[illegible]	[illegible]	1·[illegible]	[illegible]	Cirrus and cirro-cumuli	[illegible]	[illegible]	Dry sand haze on Eastern side of Nile.
								3·3	[illegible]	3·2	1	Cirrus	12	s.	Cairo enveloped in a sand haze; occasional drifting of sand in the desert.
								[illegible]	[illegible]	4·[illegible]	[illegible]	Cirrus and cirro-cumuli.	15	s.s.w.	Everything in the tomb getting covered with fine sand
								3·2	[illegible]	4·1	1	Cirro-strati.	20	s.s.w.	Sand haze all round.
						[illegible]	[illegible]	...	[illegible]	[illegible]	1	Cirrus.	[illegible]	s.w.	A sand storm.
								...	...	...	2	Cirro-strati.	15	s.w.	
	6 a.m.				[illegible]										
	7	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	2·1	1	Cirro-strati.	14	s.w.	Sand haze obscuring all the distance.
	8	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	5	Cumuli and nimbus.	20	s.w.	Colouring very pale
	9		[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	3·2	[illegible]	Cirro-strati.	20	s.w.	Sand in constant motion.
	10				[illegible]			[illegible]	[illegible]	[illegible]		Cirrus and nimbus.	20	s.w.	
								...	...	...	7	Sand haze.	20	s.w.	
	11	29·77	[illegible]		[illegible]			[illegible]	[illegible]	3·2	10	Sand haze.	20	s.w.	Sun shining pale through the sand haze.
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			5·3	45	1·5	10	Sand haze.	20	s.w.	Pyramids very indistinct through the hazy air.
	1	[illegible]						[illegible]	[illegible]		10	Sand haze.	20	s.w.	Sand haze evidently thicker, and air darker.
	[illegible]	[illegible]		[illegible]	[illegible]			[illegible]	40	1·5	10	Sand haze.	20	s.w.	Visitors entering.
	3	[illegible]			[illegible]			[illegible]	45	1·5	10	Sand haze.	12	s.w.	
	[illegible]				[illegible]			[illegible]	[illegible]	1·5	9	[illegible]	1	[illegible]	Break in the clouds
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	8	[illegible]	2	w.	A little blue sky
						...	...	[illegible]	[illegible]	[illegible]		Cirro-strati.	10	w.	
[illegible] 4th.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			1·2	[illegible]	[illegible]	1	Cirro-strati.	6	w.	Distant banks of cirro-strati on East horizon, air clear of sand, and Eastern hills clearly visible
	8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	1	Cirro-strati.	4	w.	
	9	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	2·0	0	0	3	w.	Haze covering over Cairo and the Nile
	0 P.M.	[illegible]	[illegible]	[illegible]	[illegible]	...		1·5	[illegible]	[illegible]	2	Cirro-cumuli.	3	w.	Haze decreasing.
	3	[illegible]	[illegible]	[illegible]	[illegible]	...	...	1·5	[illegible]	[illegible]	1	Cirro-strati.	2	w.	Haze merely on horizon.
	7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2·5	[illegible]	3·1	0	0	0	0	Moon and stars very bright.
	9	[illegible]	[illegible]	[illegible]	[illegible]	...	([illegible])	2·4	[illegible]	3·1	0	0	0	0	
[illegible] 5th.	6 A.M.	30·12	[illegible]	[illegible]	[illegible]	[illegible]									
	7	30·12	51·5	51·0	[illegible]		...	2·1	59	1·4	0	0	2	s.w.	
	9	30·17	[illegible]	[illegible]	[illegible]	...	...	[illegible]	51	1·9	0	0	2	s.w.	
	0 P.M.	...	...	...	...	...		3·3	48	2·2	0	0	3	s.	
	3	30·06	73·1	72·5	67·0	...	...	...	...	...	...	...	...	...	Absent from East Tombs at noon
	7	30·11	67·0	[illegible]	[illegible]	73·6	63·3	3·5	40	5·4	3	Cirrus.	4	s.w.	
							(119·6)	3·7	55	3·6	3	Cirrus.	7	s.w.	
[illegible] 6th.	6 A.M.	30·12	56·5	56·1	50·5	(64·0)									
	7	30·13	67·8	67·2	60·2		...	3·1	66	1·8	2	Cirrus.	0	0	
	8	30·14	61·1	60·3	52·6	...	...	3·2	59	2·2	2	Cirrus.	0	0	
	9	30·14	64·1	64·0	54·0	...	...	3·4	56	2·7	1	Cirrus.	0	0	
	10	30·13	68·3	68·0	54·6	...	...	3·4	51	3·2	4	Cirrus.	0	0	
	11	30·10	70·3	70·0	54·3	...	...	3·1	40	4·5	1	Cirrus.	2	s.	
	0 P.M.	30·07	72·3	72·0	56·4	...	...	3·0	37	5·1	1	Cirrus.	2	s.	
	1	30·06	74·3	74·0	56·6	...	...	3·2	35	5·7	1	Cirrus.	2	s.	
	2	[illegible]	75·2	75·0	57·0	...	...	3·1	34	6·1	1	Cirrus.	2	s.	
	3	[illegible]	76·5	75·0	56·0	...	...	3·1	32	6·4	3	Cirrus.	2	s.	
	4	30·02	74·8	74·5	56·5	...	...	3·1	32	6·5	7	Cirrus and cirro-cumuli.	1	s.	
						...	...	3·1	33	6·3	7	Cirrus and cirro-cumuli.	2	s.	
													0	0	

METEOROLOGICAL JOURNAL AT EAST TOMBS—*Continued.*

FEBRUARY 1865		Air-Shade Temperature and Moisture.									Clouds.		Wind.		Remarks.
Day	Hour, App. Sc. Time	Air Pressure at Station	Dry-bulb Ex. Max. Th.	Dry-bulb Ex. Min. Th.	Wet-bulb	Self-Registering Maximum and Minimum	Mean Temperature and Daily Range from self-registering Therms.	Computed: Weight of Vapour in cubic foot of Air	Computed: Humidity relative Sat. = 100	Computed: Weight of Vapour required to saturate a cubic foot of Air	Quantity 0–10	Quality	Velocity in miles per hour	Direction	
		Inches	Fahr.	Fahr.	Fahr.	Fahr.	Fahr.	Grains.		Grains.					
6th.	5 P.M.	[illegible]	72·3	72·0	[illegible]	...	...	3·3	37	5·4	7	Cirro-strati and cirro-cumuli.	1	s.	
	6 ,,	[illegible]	71·0	71·4	55·1	[illegible]	67·5 (17·0)	3·3	37	5·2	10	Cirro-strati.	0	0	
	7 ,,	[illegible]	70·0	69·8	54·8	...	...	3·3	38	4·9	8	Cirro-strati.	1	s.	
	8 ,,	[illegible]	68·7	68·5	54·0	...	...	3·0	38	4·7	4	Cirro-cumuli.	1	s.	
	9 ,,	[illegible]	68·0	67·4	54·0	...	...	3·0	40	4·5	5	Cirrus.	1	s.	
	10 ,,	[illegible]	67·4	66·8	53·7	...	...	3·0	41	4·4	9	Cirrus and cirro-strati.	1	s.	
	11 ,,	[illegible]	67·1	67·0	53·9	...		3·0	42	4·1	9	Cirrus and cirro-strati.	1	s.	
	0 A.M.	[illegible]	[illegible]	[illegible]	[illegible]	...		3·0	42	4·2	9	Cirro-cumuli.	0	0	
7th.	6 A.M.	[illegible]	[illegible]	...	49·5		...	2·5	41	3·8	3	Cirro-strati and cirro-cumuli.	2	s.	
	9 ,,	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	44	[illegible]	1	Cirro-strati.	2	s.	Error of 5° in dry-bulb.
	0 P.M.	[illegible]	72·1	72·0	[illegible]			4·6	52	4·9	0	,,	4	w.	Haze enveloping Cairo and Nile valley.
	1	[illegible]	72·5	71·0	[illegible]			1·7	45	5·0	0	,,	2	s.w.	Haze less dense than at noon.
	7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (11·0)	[illegible]	40	3·0	0	,,	1	n.e.	Haze much decreased, stars shining.
8th.	7 A.M.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	40	2·6	0	,,	0	0	Haze on horizon.
	9 ,,	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	40	3·7	0	,,	0	0	Haze coming over the valley.
	0 P.M.	[illegible]	[illegible]	[illegible]	[illegible]	...		[illegible]	[illegible]	4·8	0	,,	1	s.	Haze continues in the distance.
	3 ,,	[illegible]	[illegible]	[illegible]	[illegible]	...		[illegible]	[illegible]	4·6	0	,,	1	s.w.	Still hazy over the valley.
	7 ,,	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (14·3)	2·6	44	[illegible]	0	,,	0	0	Haze decreased; very bright moonlight.
9th.	7 A.M.	[illegible]	[illegible]	[illegible]	[illegible]		...	2·2	[illegible]	2·3	0	,,	0	0	Hazy under sun.
	9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		2·3	[illegible]	[illegible]	0	,,	2	s.	Very cold morning, haze over Cairo and Nile valley.
	0 P.M.	[illegible]	69·1	67·8	[illegible]	...		2·3	31	5·2	0	,,	3	s.	Sand haze and sand-drift for about an hour.
	3	[illegible]	[illegible]	[illegible]	[illegible]	...		2·3	37	5·1	1	Cirrus.	2	s.w.	
	7	[illegible]	62·1	[illegible]	[illegible]	[illegible]	[illegible] (15·4)	2·3	41	3·6	0	,,	1	w.	
10th.	7 A.M.	[illegible]	51·8	52·0	[illegible]	...	...	2·5	54	1·8	0	,,	0	0	Hazy and dull-coloured eastward.
	9 ,,	[illegible]	58·1	[illegible]	47·0	[illegible]	...	2·6	48	2·8	3	Cirro-cumuli.	3	s.	
	0 P.M.	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	41	4·0	0	,,	2	s.w.	Haze much increased since 9 A.M.
	3 ,,	[illegible]	[illegible]	63·1	[illegible]	...	...	2·6	37	4·3	1	Cirrus.	2	s.w.	Haze decreased.
	7 ,,	[illegible]	[illegible]	[illegible]	49·6	[illegible]	56·2 (16·0)	2·5	40	3·0	0	,,	1	s.	Clear moonlight night.
11th.	6 A.M.	[illegible]	[illegible]	49·6	40·4	(38·5)	...	1·9	42	2·2	0	,,	0	0	Fine clear morning.
	7 ,,	[illegible]	51·6	51·0	[illegible]	...	...	2·2	52	2·2	0	,,	0	0	
	8 ,,	[illegible]	[illegible]	56·2	45·2	...	...	2·2	42	2·9	0	,,	2	s.	
	9 ,,	[illegible]	[illegible]	[illegible]	[illegible]	...	...	2·2	37	3·8	0	,,	1	s.	
	10 ,,	[illegible]	62·3	62·2	47·9	...	...	2·2	34	4·1	0	,,	2	s.	
	11 ,,	[illegible]	[illegible]	66·6	[illegible]	...	...	2·2	31	4·6	0	,,	3	s.	
	0 P.M.	[illegible]	[illegible]	[illegible]	[illegible]	...	...	2·1	32	4·7	0	,,	3	s.	
	1 ,,	[illegible]	[illegible]	[illegible]	49·7	...	...	2·2	31	5·0	0	,,	3	s.	
	2 ,,	[illegible]	67·9	67·4	50·5	...	...	2·4	31	5·1	0	,,	2	s.	
	3 ,,	[illegible]	69·4	69·2	51·0	...	...	2·5	32	5·1	0	,,	2	s.	
	4 ,,	...	...	...	...	...	...	...	...	...	...	...	...	...	Out photographing at King Shafre's tomb.
	5 ,,	...	...	...	...	...	...	...	...	...	...	...	...	...	
	6 ,,	30·01	64·0	61·8	50·0	(70·5)	59·4	2·6	39	4·0	0	,,	2	s.	Remarkably clear night.
	7 ,,	30·02	63·1	63·0	50·0	...	(18·3)	2·6	41	3·8	4	Cirrus.	1	s.	Full moon shining brightly.
	8 ,,	30·04	59·7	57·5	49·6	...	...	2·8	49	2·9	2	Cirrus.	0	0	
	9 ,,	30·03	58·8	57·4	49·0	...	...	2·7	47	3·0	1	Cirrus.	1	s.	
	10 ,,	30·01	59·6	59·2	47·6	...	...	2·5	43	3·3	0	,,	2	s.	
13th.	6 A.M.	30·07	54·2	56·0	47·5	...	...	2·6	47	2·9	10	Fog.	3	w.	
	9 ,,	30·06	60·2	60·0	48·1	(31·0)	...	2·5	42	3·4	10	Fog.	4	w.	

METEOROLOGICAL JOURNAL AT EAST TOMBS—*Continued.*

February 1865.		Air Pressure at Station	Air Shade Temperature and Moisture								Clouds		Wind.		Remarks
			Dry-bulb					Computed							
Day.	Hour, App. Solar time.		By Max Th.	By Min. Th.	Wet-bulb	Self-Registering Maximum and (Minimum)	Mean Temperature and (Daily Range) from Self-Registering Thermo.	Weight of Vapour in cubic foot of Air	Humidity relative Sat. = 100	Weight of Vapour required to saturate a cubic foot of Air	Quantity 0 – 10	Quality	Velocity in miles per hour	Direction	
		Inches	Fah.	Fah.	Fah.	Fah.	Fah.	Grains		Grains					
12th,	0 P.M.	30·12	65·1	65·5	50·8	...	...	2·6	38	4·2	0	0	5	W.	Fog gone from the desert, but still hangs over Cairo
	1 „	30·10	65·2	64·1	50·8	...	...	2·6	38	4·2	0	0	5	W.	Horizon hazy
	7 „	30·15	61·4	61·0	47·8	66·3	57·7 (17·7)	2·3	40	3·7	8	Fog.	4	W.	
♃ 13th,	6 A.M.	30·22	47·0	46·8	39·6	...	...	2·0	54	1·7	0	0	1	N.	Haze along horizon
	7 „	30·21	50·8	50·6	41·0	(46·5)	...	1·9	47	2·3	0	0	1	N.	
	9 „	30·27	55·0	55·8	42·8	...	...	1·8	31	2·8	1	Cirrus.	1	N.	
	0 P.M.	30·25	64·4	64·2	48·1	...	...	2·2	33	4·5	0	0	2	S.W.	
	3 „	30·22	64·8	64·5	53·4	...	...	3·2	47	3·5	0	0	3	W.	
	7 „	30·27	62·1	61·8	45·8	63·2	57·1 (16·2)	2·0	31	4·2	0	0	3	W.	
♀ 14th,	6 A.M.	30·35	52·7	52·3	46·5	...	...	2·8	64	1·6	0	0	0	0	
	9 „	30·38	50·9	59·7	51·6	(51·5)	...	3·2	56	2·5	0	0	0	0	
	0 P.M.	30·36	64·0	64·8	52·6	...	...	3·1	47	3·5	0	0	0	0	
	3 „	30·31	65·1	65·0	50·8	...	...	2·6	38	4·2	0	0	1	N.W.	
	7 „	30·34	62·1	62·0	50·1	65·5	58·0	2·3	44	3·5	0	0	1	W.	
	9 „	30·36	55·1	50·2	52·0	...	(11·4)	3·6	59	2·2	0	0	1	N.	Stars very bright.
													1	N.N.E.	
♄ 15th,	6 A.M.	30·31	53·9	52·6	49·2	...	...	3·2	70	1·3	0	0	0	0	
	7 „	30·34	55·6	55·0	51·0	(42·3)	...	3·3	72	1·3	0	0	0	0	Level smoke over Cairo
	9 „	30·37	62·4	61·9	51·5	...	...	3·5	55	2·8	0	0	0	0	Clear morning.
	0 P.M.	...	...	...	...	...	...	...	...	...	...	...	...	...	Photographing and observing the ☉ for true Noon, and measuring levels in King Shafre's tomb.
	3 „	30·25	69·9	69·4	55·3	...	...	3·4	40	5·9	0	0	2	N.E.	
	7 „	30·24	65·3	64·9	54·8	67·0	62·9	3·4	50	3·4	0	0	1	N.E.	
	9 „	30·25	61·3	61·0	54·0	...	(14·7)	3·5	58	2·0	0	0	1	N.E.	
☉ 16th,	6 A.M.	30·20	54·1	54·1	46·9	...	...	2·3	58	2·0	8	Cirrus and cirro-cumuli.	0	0	
	7 „	30·21	58·1	57·8	51·6	(37·3)	...	3·4	61	2·1	3	Cirrus and cirro-cumuli.	0	0	
	9 „	30·23	63·1	62·9	52·5	...	...	3·4	53	3·0	3	Cirrus and cirro-cumuli.	0	0	
	0 P.M.	30·17	71·3	70·9	55·4	...	...	3·1	37	5·2	1	Cirrus.	0	0	
	3 „	30·10	73·2	72·9	55·6	...	...	3·0	33	5·9	3	Cirrus and cirro-cumuli.	0	0	
	7 „	30·10	69·2	69·0	54·6	73·3	66·2 (14·6)	3·1	39	4·7	5	Cirrus and cirro-cumuli.	0	0	
	10 „	30·11	67·5	67·2	54·8	...	...	3·2	44	4·2	6	Cirrus and cirro-cumuli.	0	0	
☽ 17th,	6 A.M.	30·05	61·5	61·2	51·9	...	...	3·0	48	3·2	10	Cirrus and cirro-strati.	0	0	
	7 „	30·06	61·5	61·5	51·9	(60·5)	...	3·0	48	3·2	8	Cirrus and cirro-strati.	0	0	
	9 „	30·07	65·1	65·1	52·1	...	...	3·0	43	3·9	8	Cirro-cumuli.	3	N.E.	
	0 P.M.	30·02	74·1	74·0	54·8	...	...	2·8	30	6·4	5	Cirro-cumuli.	3	N.	
	3 „	29·95	74·5	74·1	55·0	...	...	2·8	30	6·5	2	Cirro-cumuli and cumulus.	2	W.	Appearance of thunder and lightning
	7 „	29·99	71·2	71·0	[illegible]	[illegible]	[illegible] (14·[illegible])	[illegible]	[illegible]	[illegible]	0	0	1	N.	
	9 „	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	0	0	[illegible]	N.	
[illegible] 18th,	7 A.M.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
	9 „	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4·[illegible]	[illegible]	[illegible]	1	Cirro-strati.	[illegible]	[illegible]	
	0 P.M.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Cirro-strati.	[illegible]	[illegible]	
	3 „	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	4·2	[illegible]	[illegible]	1	Cirro-strati.	[illegible]	[illegible]	
	7 „	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	1	Cirro-cumuli.	1	N.	Clear over Cairo and Mokattam Hills
	9 „	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	47	[illegible]	0	0	[illegible]	[illegible]	Stars very bright
[illegible] 19th,	7 A.M.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	0	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	4	Cirrus and cirro-cumuli.	[illegible]	[illegible]	
	9 „	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	5	Cirrus and cirro-cumuli.	[illegible]	N.W.	A little gust of wind from S.E., and two showers of rain during the night
	0 P.M.	[illegible]	[illegible]	[illegible]	[illegible]	...		[illegible]	[illegible]	[illegible]					
	3 „	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	2	Cirro-cumuli.	1	N.W.	
	7 „	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	43	[illegible]	[illegible]	[illegible]	[illegible]	W.	
	9 „	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	44	[illegible]	0	0	[illegible]	W.	[illegible]
							([illegible])	[illegible]	[illegible]	[illegible]	9	Stratus.	[illegible]	W.	

METEOROLOGICAL JOURNAL AT EAST TOMBS—*Continued.*

Date	Hour	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Clouds: Amount	Clouds: Kind	Wind: Velocity in miles per hour	Wind: Direction	Remarks
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Heavy bank of cloud eastward.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Sand-drift and dense haze.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Less of sand-drift, but haze very dense. Haze still more dense.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Haze and fog.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Haze and fog, density increasing, with immense whirlwinds of sand.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Cirro-strati.	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Cirro-strati.	[illegible]	[illegible]	Sand drift; haze over. Calm.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] cirro-cumuli.	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Cirro-cumuli.	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Cirrus.	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	A very little [illegible] during the night.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Cirro-cumuli.	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Cirro-strati.	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4·5	[illegible]	Cirro-cumuli.	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2·0	[illegible]	Cirro-strati and nimbus.	[illegible]	[illegible]	A few drops of rain falling.
	7	29·27	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	56	2·6	[illegible]	Cirro-strati and nimbus.	[illegible]	[illegible]	
[illegible]	[illegible]	29·24	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	1·2	2	Cirrus.	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	2·3	1	Cirro-strati.	[illegible]	[illegible]	
	[illegible]	29·21	[illegible]	[illegible]	[illegible]		...	[illegible]	[illegible]	[illegible]	1	Cirrus.	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		...	[illegible]	[illegible]	[illegible]	2	Cirrus.	[illegible]	[illegible]	
	7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	Cirrus.	[illegible]	[illegible]	[illegible] very bright.
	9	[illegible]	[illegible]	55·2	[illegible]		(11·7)		[illegible]	2·5		"	[illegible]	[illegible]	
25th.	7 A.M.	[illegible]	[illegible]	[illegible]	44·5		...	2·4	51	2·0	1	Cirro-strati.	0	0	
	[illegible]	[illegible]	52·1	[illegible]	46·4	[illegible]	...	2·8	51	[illegible]		[illegible]	1	w	
	11 A.M.	[illegible]	58·5	[illegible]	46·8		...	2·4	46	[illegible]	0·1	Cirro-strati.	1	w	
	3 ,,	29·20	61·1	[illegible]	49·0	...	...	2·8	44	3·4	1	Cirro-cumuli.	1	w	
	[illegible] ,,	[illegible]	[illegible]	57·4	47·1	11·4	[illegible]	2·3	46	[illegible]	0	"	0	0	
	9 ,,	29·16	54·5	58·1	46·9	...	(11·6)	2·8	54	2·4	0	"	[illegible]	0	
26th.	9 A.M.	29·22	55·2	55·1	47·6	150·0	...	2·8	6[illegible]	2·1	0	"	[illegible]	w	Strong wind blew during the night.
	9 ,,	29·25	57·7	57·1	49·0		...	2·3	54	2·4	0	"	1	w	
	0 P.M.	29·22	62·4	62·0	51·0		...	2·3	46	3·4	4	Cirrus.	2	w	
	3 ,,	29·19	62·5	62·0	49·8	...	...	2·6	41	0·2	3	Cirrus and cirro-cumuli.	1	w	

METEOROLOGICAL JOURNAL AT EAST TOMBS—*Continued.*

February 1865. Day	Hour. App. Solar time.	Air Pressure at Station.	Air-Shade Temperature and Moisture. Dry-bulb. By Max. Th.	By Min. Th.	Wet-bulb.	Self-Registering Maximum and (Minimum).	Mean Temperature and (Daily Range) from Self-Registering Therms.	Computed. Weight of Vapour in a cubic foot of Air.	Humidity relative Sat. = 100.	Weight of Vapour required to saturate a cubic foot of Air.	Clouds. Quantity 0 – 10.	Quality.	Wind. Velocity in miles per hour.	Direction.	Remarks.
		Inches	°Fah.	Fah.	Fah.	Fah.	Fah.	Grains.		Grains.					
26th.	7 ..	30·24	62·0	59·8	51·5	63·0	57·4 (11·2)	3·2	56	2·6	9	Cirro-strati and cumulus.	2	W.	
	10 ..	30·29	57·8	57·5	51·0	...	...	3·3	62	2·0	7	Cirro-strati.	1	W.	
27th.	7 A.M.	30·27	53·6	53·0	48·0	...	...	3·0	66	1·6	3	Cirrus.	0	0	Thin haze and stratus on Nile valley.
	9 ..	30·29	64·2	44·0	50·7	(53·0)	...	2·7	41	3·9	5	Cirrus.	0	0	
	0 P.M.	30·22	66·3	66·0	51·1	...	...	2·6	37	4·5	5	Cirrus.	2	N.E.	
	3 ..	30·14	63·3	61·0	51·1	...	...	2·8	44	3·6	2	Cirrus.	1	N.E.	
	7 ..	30·16	61·2	61·0	48·6	68·3	58·0 (14·7)	2·7	45	3·3	0	0	0	0	Bright stars and new moon.
28th.	7 A.M.	30·10	53·4	52·8	46·5	(50·2)	...	2·8	60	1·8	0	0	0	0	Eastern hills clear and dark.
	8 ..	30·11	56·4	55·7	47·5		...	2·7	51	2·4	0	0	0	0	
	9 ..	30·12	59·2	59·0	49·0	...	...	2·7	46	2·9	1	Cirrus.	0	0	
	10 ..	30·10	64·0	63·8	50·5	...	...	2·7	40	3·9	6	0	2	S.	
	0 P.M.	30·00	66·0	65·9	51·6	...	...	2·7	39	4·3	6	0	2	S.	
	3 ..	30·05	67·8	67·0	52·4	...	...	2·7	36	4·5	2	Cirro-strati.	0	0	
	7 ..	30·10	64·1	63·5	49·0	64·2	60·0	2·5	38	4·1	0	0	3	S.	
	10 ..	30·13	61·3	61·0	48·8	...	(16·5)	2·7	46	[illegible]	0	0	2	S.	
March 1st.	6 A.M.	30·20	56·0	52·4	49·4	...	...	3·4	71	1·3	0	0	1	S.	
	7 ..	30·13	57·2	56·4	52·1	(52·2)	...	3·7	70	1·5	0	0	1	S.	
	8 ..	30·15	59·2	58·6	52·6		...	3·8	63	2·0	2	Cirrus.	0	0	
	9 ..	30·27	62·1	61·5	54·1	...	...	3·0	56	2·6	2	Cirrus.	0	0	
	10 ..	30·26	63·2	62·6	55·1	...	...	3·7	59	2·7	4	Cirro-cumuli.	0	0	
	11 ..	30·24	64·1	64·0	55·6	...	...	3·7	53	2·2	8	Cirro-strati and cumulus.	2	S.	
	0 P.M.	30·26	66·0	65·8	55·8	...	...	3·6	51	3·4	7	Cirro-strati and cumulus.	2	S.	
	1 ..	30·21	65·4	65·2	54·5		...	3·4	49	3·5	5	Cirro-strati and cumulus.	3	S.	
	2 ..	30·19	66·7	66·2	54·0	...	...	3·1	44	4·1	7	Cumulus.	4	W.	
	3 ..	30·18	66·1	65·7	53·5	67·3	60·2	3·1	43	3·9	5	Cumulus.	5	S.W.	
	4 ..	30·18	65·1	64·5	53·1		(14·7)	3·1	45	3·7	8	Cirro-cumuli.	5	W.S.W.	
	5 ..	30·20	64·3	64·0	52·8		...	3·1	46	3·6	6	Cirro-strati.	4	W.S.W.	
	6 ..	30·22	63·0	62·5	52·4	...	...	3·1	49	[illegible]	4	Cirro-strati.	3	W.S.W.	
	7 ..	30·24	62·0	61·5	51·3	...	...	3·0	49	3·2	2	Cirrus.	4	N.W.	
	8 ..	30·26	61·1	60·5	52·6	...	...	3·4	56	2·6	0	0	3	W.	
	9 ..	30·27	60·1	59·8	51·6	...	...	3·2	64	2·8	0	0	1	W.	
	10 ..	30·26	59·0	58·8	51·8	...	...	3·4	60	2·2	0	0	2	W.	
2d.	6 A.M.	30·31	53·5	53·0	48·4	...	...	3·2	68	1·4	2	Cirrus.	3	N.W.	
	7 ..	30·32	54·8	54·0	49·6	(53·0)	...	3·3	69	1·5	4	Cirrus.	0	0	
	8 ..	30·31	58·6	58·1	52·3	...	...	3·6	65	1·9	3	Cirrus.	0	0	
	9 ..	30·34	61·2	60·9	54·1	...	...	3·7	62	2·3	2	Cirrus.	0	0	
	0 P.M.	30·29	64·3	64·0	55·0	...	...	3·8	56	2·9	6	Cirro-cumuli.	0	0	
	2 ..	30·25	65·4	65·0	54·0	...	...	3·3	47	3·6	5	Cirro-cumuli.	0	0	
	3 ..	...	...	...	...	...	...	...	—	—	...	...	0	0	Absent at the second Pyramid at 3 P.M.
	7 ..	30·29	62·4	61·8	53·2	67·4	60·4	3·4	55	2·8	6	Cirro-strati.	...	...	
	9 ..	30·30	61·1	60·9	53·0	...	(13·9)	3·5	58	2·5	3	Cirro-strati.	0	0	
3d.	6 A.M.	30·27	55·0	54·8	49·6	...	...	3·3	68	1·6	0	Cirrus and cirro-strati.	0	0	
	7 ..	30·28	55·6	55·1	50·3	...	...	3·4	68	1·6	0	0	0	0	
	9 ..	30·28	62·6	62·5	52·1	(54·0)		3·5	48	3·3	0	0	0	0	
	0 P.M.	30·21	66·4	66·0	52·6			2·9	38	4·7	0	0	0	0	
	2 ..	30·17	66·8	66·4	53·1	...	...	3·0	38	4·7	0		2	S.	Occasional little whirlwinds sending up the sand.
	3 ..						...	...	—	—	...	...	0	0	Absent at 3 P.M. visiting the Fossil-shell hill, about three miles distant.
	7 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	61·9 (14·7)	2·9	45	3·6	0	0	0	0	
	11 ..	[illegible]	[illegible]	[illegible]	[illegible]			2·9	40	3·1	0	0	0	0	

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METEOROLOGICAL JOURNAL AT EAST TOMBS—*Continued.*

March 1865.		Air Pressure at Station.	Air Shade Temperature and Moisture.								Clouds.		Wind.		Remarks.
			Dry-bulb.		Wet-bulb.	Self-Registering Maximum and Minimum.	Mean Temperature and Daily Range, from Self-Registering Therms.	Computed							
Day.	Hour, App. Solar time.		By Max. Th.	By Min. Th.				Weight of Vapour in a cubic foot of Air.	Humidity relative Sat. = 100.	Weight of Vapour required to saturate a cubic foot of Air.	Quantity 0 – 10.	Quality.	Velocity in miles per hour.	Direction.	
		Inches.	Fah.	Fah.	Fah.	Fah.	Fah.	Grains.		Grains.					
[illegible] 4th.	7 A.M.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	2·4	[illegible]	2·5	0	0	0	0	Light haze over Nile valley, hill tops clear
	[illegible]	...	...	...	...	...	...	...	...	...	...	...	...	...	Neglected 9 o'clock observation.
	10 ..	[illegible]	[illegible]	[illegible]	[illegible]		...	2·9	42	3·9	0	0	0	0	
	0 P.M.	[illegible]	[illegible]	[illegible]	[illegible]	...	...	3·1	[illegible]	[illegible]	1	Cirro-strati.	2	S.	
	3 ..	[illegible]	[illegible]	[illegible]	[illegible]	...		3·1	[illegible]	4·7	0	0	0	0	Sky very deep blue, and stars very bright.
	7 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3·1	[illegible]	[illegible]	2	Cirro-strati.	0	0	
	11 ..	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	2·2	3	Cirro-strati.	1	S.W.	
[illegible] 5th.	7 A.M.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	2	Cirrus and cirro-strati.	0	0	Low level haze over the Nile.
	9 ..	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	1	Cirrus.	1	S.	
	0 P.M.	[illegible]	[illegible]	[illegible]	[illegible]		...	[illegible]	[illegible]	[illegible]	1	Cirrus.	0	0	
	3 ..	...	...	...		...		...	...	...	...	...	...	...	Absent at 3 P.M.
	4 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	Cirrus.	2	S.	
	7 ..	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	5	S.W.	
	9 ..	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	[illegible]	0	5	S.W.	
[illegible] 6th.	6 A.M.	[illegible]	[illegible]	[illegible]	[illegible]		...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	0	
	9 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	
	0 P.M.	[illegible]	[illegible]	[illegible]	[illegible]		...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
	3 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	15	[illegible]	[illegible]	[illegible]	2	W.	
	7 ..	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	S.W.	A brilliant shooting star passed from S.W. to N.E. at 7h. 15m. P.M.
	9 ..	[illegible]	[illegible]	[illegible]	[illegible]		...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	S.W.	
[illegible] 7th.	6 A.M.	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	S.	
	9 ..	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	2	Cirrus.	0	0	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	3	Cirrus and cirro-cumuli.	2	S.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Cirrus and cirro-cumuli.	3	S.	
	7 ..	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4	S.	
	10 ..	[illegible]	[illegible]	[illegible]	[illegible]		...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5	S.W.	
[illegible] 8th.	6 A.M.	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Haze over Cairo and Nile valley.
	8 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	N.E.	
	9 ..	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5	[illegible]	Haze quite blown away.
	10 ..	[illegible]	[illegible]	[illegible]	[illegible]		...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	10	[illegible]	The sand, which for weeks past has been permanently ribbed N.E. and S.W., is this morning flattening itself into a broad general jangle.
	11 ..	[illegible]	[illegible]	[illegible]	[illegible]	...		[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	E.	
	0 P.M.	[illegible]	[illegible]	[illegible]	[illegible]	...		[illegible]	[illegible]	[illegible]	0	[illegible]	10	E.	
	1 ..	[illegible]	[illegible]	[illegible]	[illegible]		...	[illegible]	[illegible]	4·7	[illegible]	[illegible]	[illegible]	E.	Occasional severe gusts of wind.
	2 ..	[illegible]	[illegible]	[illegible]	53·8	[illegible]	[illegible] ([illegible])	3·0	[illegible]	4·2	0	0	8	N.E.	Wind still coming in gusts.
	3 ..	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	0	0	6	N.E.	
	4 ..	30·17	[illegible]	[illegible]	[illegible]	...	...	[illegible]	40	4·5	0	0	3	N.E.	
	5 ..	30·17	67·4	67·4	[illegible]	...	...	[illegible]	41	4·4	0	0	3	N.E.	
	6 ..	30·15	66·3	[illegible]	[illegible]	...	...	[illegible]	44	4·0	0	0	6	N.E.	
	7 ..	30·17	61·3	[illegible]	52·4	...	...	[illegible]	45	3·6	0	0	8	N.E.	
	8 ..	30·17	[illegible]	48·0	51·6	...	...	2·9	45	3·5	0	0	8	N.E.	
	9 ..	30·18	60·1	59·5	52·5	...	...	[illegible]	60	2·4	0	0	7	N.E.	
	10 ..	30·18	59·8	59·5	53·0	...	...	[illegible]	63	2·1	0	0	7	N.E.	
[illegible] 9th.	6 A.M.	30·[illegible]	52·9	52·4	49·0	...	...	3·4	74	1·1	0	0	2	S.	Distant hills remarkably clear.
	9 ..	30·12	62·3	62·0	54·6	(52·0)	...	3·8	59	2·5	0	0	0	0	Smoke haze over Cairo.
	0 P.M.	30·08	71·6	71·3	55·1	...	...	3·0	35	5·4	0	0	0	0	
	3 ..	30·03	72·6	72·2	55·4	73·3	61·8	3·0	34	5·7	0	0	0	0	
	7 ..	30·06	69·1	68·6	53·6	...	(15·8)	2·9	37	4·9	0	0	0	0	
	10 ..	30·10	65·3	60·2	56·0	...	...	[illegible]	[illegible]	[illegible]	0	0	1	N.E.	

METEOROLOGICAL JOURNAL AT EAST TOMBS—*Continued.*

March 1865.		Air Pressure at Station.	Air Shade Temperature and Moisture.								Clouds.		Wind.		Remarks.
			Dry-bulb.					Computed.							
Day.	Hour, App. Solar time.		By Max. Th.	By Min. Th.	Wet-bulb.	Self-registering Maximum and (Minimum).	Mean Temperature and Daily Range from Self-registering Thermometers.	Weight of Vapour in cubic foot of Air.	Humidity relative Sat. = 100.	Weight of Vapour required to saturate a cubic foot of Air.	Quantity 0–10.	Quality.	Velocity in miles per hour.	Direction.	
		Inches.	Fah.	Fah.	Fah.	Fah.	Fah.	Grains.		Grains.					
♀ 10th,	7 A.M.	30·15	62·1	61·8	56·6	(56·9)	...	4·3	70	3·0	6	0	0	0	Fog haze over Nile valley, tops of the hills clear.
	9 „	30·17	64·4	64·5	58·1	...	...	4·4	64	2·4	0	0	0	0	
	0 P.M.	30·15	71·3	71·2	62·9	...	...	6·0	71	2·4	0	0	0	0	
	3 „	29·99	74·1	74·0	60·1	74·5	66·4	3·7	41	5·4	0	0	2	N.E.	
	7 „	30·11	71·2	70·7	58·0	...	(16·1)	3·7	44	4·7	0	0	0	0	
	10 „	30·13	68·5	68·0	57·6	...	...	3·8	49	3·8	0	0	0	0	
♄ 11th,	7 A.M.	30·17	63·3	62·0	52·0	(49·6)	...	3·1	49	3·2	8	Cirrus,	0	0	Level haze over the Nile valley, hill tops clear.
	9 „	30·19	64·0	63·5	56·5	...	...	3·6	48	3·9	6	Cirro-strati,	0	0	
	0 P.M.	30·13	80·5	80·0	54·5	...	...	3·0	28	8·1	2	Cirrus,	0	0	Haze quite cleared away
	3 „	30·10	80·5	80·2	54·5	81·0	71·9	3·0	28	8·1	1	Cirrus,	0	0	
	7 „	30·07	75·4	75·0	55·6	...	(18·7)	2·8	30	6·7	0	0	0	0	
	10 „	30·10	71·2	70·8	56·0	...	...	3·2	38	5·2	0	0	1	W.	
	0 A.M.	30·08	69·5	69·2	56·0	...	...	2·8	36	4·9	3	Cirrus,	1	W.	
☉ 12th,	8 A.M.	30·06	73·0	72·5	54·4	(62·5)	...	2·9	31	6·0	1	Cirrus,	0	0	
	9 „	30·06	76·2	75·4	57·0	...	...	3·1	32	6·7	1	Cirrus,	0	0	
	0 P.M.	30·00	86·8	86·0	60·4	...	...	2·7	19	10·4	0	0	15	S.	Sand flying along in haze dust.
	3 „	29·97	87·5	87·1	60·1	88·0	73·5 (24·8)	2·4	17	10·8	2	Cirrus,	10	S.	Sand-drift ceased, atmosphere clear.
	6 „	30·07	75·0	74·8	62·0	...		4·3	46	5·1	10	Sand fog.	12	N.W.	From 4.10 P.M. a severe gale from N.W., with sand-drift.
	9 „	30·17	67·5	67·4	56·8	...	...	4·3	47	3·1	8	Haze,	5	N.	
	10 „	30·20	67·2	66·7	59·0	...	...	4·4	49	3·0	4	Cirrus,	3	N.	
☽ 13th,	6 A.M.	30·21	61·2	60·8	56·6	...	...	4·4	74	1·6	2	Cirrus,	2	N.	
	7 „	30·31	62·8	62·3	56·8	...	...	4·2	64	2·1	2	Cirrus,	3	N.	Hazy horizon.
	9 „	30·28	66·5	66·2	58·1	(61·0)	...	4·2	59	3·0	0	0	5	N.	
	0 P.M.	30·24	71·1	71·0	58·0	...	...	3·8	46	4·5	0	0	3	N.	
	4 „	30·16	72·4	72·2	58·6	...	...	3·7	43	4·9	0	0	5	N.	
	7 „	30·18	67·6	67·2	57·0	72·5	63·9	3·7	40	3·7	2	Cirrus,	2	N.	Absent at 3 P.M.
	10 „	30·18	65·0	64·8	55·0	...	(13·5)	3·5	41	3·2	3	Cirrus,	3	N.	
♂ 14th,	7 A.M.	30·12	60·7	60·5	54·4	(57·0)	...	4·0	70	1·8	1	Cirrus,	5	N.	Haze over Nile valley.
	9 „	30·14	66·3	66·0	56·6	...	...	4·4	62	2·7	1	Cirrus,	5	N.W.	Sand in plain now ribbed in direction transverse to the N.W.
	0 P.M.	...	...	...	...	...	...	...	...	...	...	...	...	...	Absent in the interior of the Pyramid.
	3 „	30·08	71·1	71·0	62·8	...	...	5·0	60	3·3	5	Cirro-strati and nimbus,	0	0	Rain in Cairo; wind towards N. of S., a few drops fell in the desert.
	4 „	30·06	72·8	72·0	61·1	72·8	66·5	5·0	58	3·6	7	Cirro-strati,	0	0	
	7 „	30·09	71·4	71·6	63·5	...	(15·0)	5·2	62	3·2	5	Cirro-strati,	0	0	
	9 „	30·05	69·7	69·3	61·4	...	...	4·8	59	3·2	9	Cirro-strati,	0	0	
☿ 15th,	7 A.M.	30·10	67·1	66·9	58·6	(64·0)	...	4·3	55	3·0	2	Cirrus	0	0	Low level haze on Nile valley; hill tops clear.
	9 „	30·09	73·2	72·9	62·1	...	...	4·7	54	3·8	1	Cirrus,	0	0	
	0 P.M.	30·04	80·2	80·0	64·6	...	...	4·3	39	6·8	1	Cirrus,	0	0	
	3 „	29·97	84·0	83·4	64·2	...	...	4·0	32	8·4	7	Cirrus,	0	0	
	7 „	29·98	80·6	80·0	63·6	84·3	75·2	4·2	37	7·0	3	Cirrus,	0	0	
	10 „	30·00	78·0	77·8	63·5	...	(18·3)	4·4	42	5·9	4	Cirro-cumuli,	0	0	
♃ 16th,	7 A.M.	29·95	78·2	78·0	64·1	(68·0)	...	4·5	44	5·8	8	Cirro-cumuli,	0	0	
	9 „	29·90	81·1	80·8	62·2	...	...	3·8	36	7·6	9	Cirro-strati and nimbus,	1	S.	
	0 P.M.	29·91	93·0	92·5	65·2	...	...	3·7	21	12·4	10	Sand haze,	4	S.	Sand-drift since 10 A.M., air quite filled with sand.
	3 „	29·85	94·3	94·0	61·0	...	...	3·7	21	13·2	10	Sand haze,	15	S.	Sand-drift increasing in density and quantity.

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METEOROLOGICAL JOURNAL AT EAST TOMBS—*Continued.*

March 1865		Air Pressure at Station	Air Shade Temperature and Moisture								Clouds		Wind		Remarks
			Dry-bulb		Wet-bulb	Self-Registering Maximum and Minimum	Wet-bulb temperature and Dew Point by Self-Registering Thermo.	Computed							
Day	Hour Mean Solar time		By Max. Th.	By Min. Th.				Weight of Vapour in a cubic foot of Air	Humidity relative Sat. = 100	Weight of Vapour required to saturate a cubic foot of Air	Quantity 0–10	Quality	Velocity in miles per hour	Direction	
		Inches	Fahr.	Fahr.	Fahr.	Fahr.	Fahr.	Grains		Grains					
♃ 16th	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	12·4	10	Sand haze,	15	E.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	12·2	10	Sand haze,	10	E.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Haze.	5	E.	
	11 ..	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	[illegible]	10	Haze.	5	E.	
♀ 17th	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...		[illegible]	[illegible]	[illegible]	4	Haze	5	W.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	47	[illegible]	[illegible]	Cirrus and haze,	4	W.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	4	Cirrus and haze,	4	N.W.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	7	Cirrus and haze,	2	N.	
	10	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	10	Haze,	2	N.	
	11	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	7	Cirrus and haze,	2	N.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	7	Cirrus and haze,	2	N.	
	1	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	7	Cirrus and haze,	3	N.W.	
	2	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	Cirrus and haze,	5	N.W.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	10	Haze,	5	N.W.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	10	Haze,	5	N.W.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	10	Haze,	4	N.W.	A few drops of rain.
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible] haze	4	N.W.	
	[illegible]		...	...				...	...	...	...	...	...	...	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	41	[illegible]	[illegible]	[illegible]	2	[illegible]	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	N.N.E.	
	10 ..	[illegible]	[illegible]	[illegible]	[illegible]		...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	N.N.E.	
	11 ..	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	47	[illegible]	[illegible]	[illegible]	[illegible]	N.N.E.	
♄ 18th	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	Haze.	0	0	Dense haze over Nile valley.
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	0	"	2	N.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	0	"	1	N.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	"	2	N.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	"	2	N.W.	
☉ 19th	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	[illegible]	Cirrus,	0	0	Haze on horizon.
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	2	Cirrus,	1	N.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...		[illegible]	[illegible]	[illegible]	[illegible]	Cirro-strati,	2	N.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	Cirro-strati,	2	N.	
	2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	"	1	N.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	0	"	2	N.	
☽ 20th	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	0	"	0	0	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	"	0	0	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...		[illegible]	[illegible]	[illegible]	[illegible]	"	2	N.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	"	3	N.E.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	"	0	0	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	"	3	N.N.E.	
♂ 21st	6 A.M.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	[illegible]	"	1	N.E.	Haze over the line of the Nile.
	7 ..	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	62	[illegible]	0	"	1	N.E.	Haze all along the east horizon.
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	64	[illegible]	0	"	1	N.E.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	51	4·1	0	"	5	N.E.	
	10 ..	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	47	[illegible]	0	"	10	N.E.	
	11 ..	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	46	4·2	0	"	15	N.E.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	42	[illegible]	0	"	10	N.E.	
	1 ..	[illegible]	71·8	71·2	[illegible]		...	3·4	39	5·2	0	"	10	N.E.	
	2 ..	30·27	75·2	75·0	[illegible]	...	...	3·1	37	5·6	0	"	9	N.E.	
	3 ..	30·25	75·0	72·5	[illegible]	...	...	3·1	37	5·5	0	"	9	N.E.	
	4 ..	30·24	[illegible]	72·4	[illegible]	...	...	3·2	36	5·7	2	Cirrus,	10	N.E.	
	5 ..	30·24	75·5	71·1	[illegible]	76·0	61·5	3·4	34	5·9	3	Cirrus,	10	N.E.	
	6 ..	30·27	71·3	71·0	[illegible]	...	(59·2)	[illegible]	35	5·6	9	Cirro-strati,	0	N.W.	Query wind's direction
	7 ..	30·27	69·7	69·3	[illegible]	...	...	3·5	44	4·4	5	Cirrus,	6	N.E.	
	8 ..	30·28	67·8	67·2	55·5	...	...	3·4	46	4·0	0	"	6	N.E.	
	9 ..	30·30	64·5	64·1	56·1	...	...	3·9	58	2·8	2	Cirrus,	6	N.E.	
	10 ..	30·31	63·3	63·0	56·2	...		4·0	63	2·4	3	Cirrus,	6	N.E.	
☿ 22nd,	8 A.M.	30·24	59·9	59·5	54·6	(51·0)	...	4·0	70	1·8	1	Cirrus,	2	N.E.	Haze over the line of the Nile.
	9 ..	30·25	64·1	63·8	56·0	...	...	3·9	59	2·7	1	Cirrus,	2	N.E.	
	0 P.M.	30·22	74·0	73·7	59·7	...	...	3·9	42	4·9	0	"	3	N.E.	

METEOROLOGICAL JOURNAL AT EAST TOMBS—*Continued.*

March 1865		Air Pressure at Stated.	Air Shade Temperature and Moisture.								Clouds		Wind.		Remarks.
			Dry-bulb					Computed							
Day.	Hour, App. Solar time.		Hr. Max Th.	Gr. Min Th.	Wet-bulb	Self-Registering Maximum and Minimum	Mean Temperature and daily Range from Self-Registering Therms.	Weight of vapour in cubic foot of Air	Humidity relative Sat. = 100.	Weight of Vapour required to saturate a cubic foot of Air.	Quantity 0–10.	Quality	Velocity in miles per hour	Direction	
		Inches	Fah.	Fah.	Fah.	Fah.	Fah.	Grains.		Grains.					
☿ 22d.	3 P.M.	30·11	80·4	79·5	64·0	...	...	4·7	39	5·4	0	0	3	N.E.	
	7 „	30·07	74·0	73·5	61·5	80·6	68·8	4·8	34	4·2	2	Cirrus	2	N.E.	
	9 „	30·06	69·0	68·5	60·2		(21·4)	4·5	37	3·3	2	Cirrus	0	0	
♃ 23d.	7 A.M.	29·96	63·1	62·8	51·6	(63·0)	...	2·9	28	4·6	1	Cirrus	0	0	Haze over the line of the Nile; hill-tops remarkably clear
	9 „	29·96	78·4	78·0	56·6	...	...	2·8	27	7·6	0	0	2	S.W.	
	0 P.M.	29·94	91·8	91·6	61·6	...	...	2·5	14	15·0	9	Cirrus	8	S.W.	Sand-drift, and sand-haze in the distance like mist.
	3 „	29·85	92·5	91·8	61·5	...	...	2·1	12	15·8	1	Cirrus	12	S.	Sand-drift abating
	7 „	29·82	84·5	84·0	61·6	92·5	80·4	3·4	27	9·2	4	Cirrus	0	0	
	9 „	29·80	80·8	80·6	60·0	...	(34·3)	3·3	30	7·9	2	Cirrus	0	0	
♀ 24th.	7 A.M.	29·90	77·4	77·0	56·1	(74·0)	...	2·8	29	7·3	0	0	0	0	Haze on the horizon
	9 „	29·91	85·5	85·0	60·1		...	3·0	24	10·0	0	0	0	0	
	0 P.M.	29·92	87·8	87·4	63·1	...	...	3·3	24	10·5	0	0	0	0	Haze all round, but clear at the Pyramids
	3 „	29·80	87·8	87·2	65·3	...	...	3·0	27	10·0	0	0	10	N.W.	
	7 „	30·02	75·0	74·0	65·2	...	...	4·7	50	4·7	0	0	12	N.W.	
	9 „	30·04	71·4	70·8	65·2	89·4	74·8 (21·1)	5·1	61	3·3	4	Cirrus	7	N.W.	
♄ 25th.	7 A.M.	30·05	65·5	64·8	59·4	(55·0)	...	4·7	68	2·2	2	Cirrus	2	N.E.	Dense haze.
	9 „	30·07	69·1	69·0	60·1		...	4·4	50	3·4	8	Cirrus	12	N.E.	
	0 P.M.	30·07	75·8	75·3	60·1	...	...	3·7	30	5·9	10	Haze	22	N.E.	
	3.5 „	29·99	77·1	76·7	59·5	...	...	3·4	34	6·6	10	Haze	20	N.E.	Sand-drift
	7 „	30·02	70·7	70·2	58·6	77·8	70·2	3·9	47	4·4	10	Haze	20	N.E.	
	9 „	30·06	67·5	67·0	58·2	...	(14·2)	3·6	48	3·8	10	Haze	15	N.E.	
☉ 26th.	8 A.M.	29·99	65·4	64·9	59·3	(64·1)	...	4·9	68	2·2	9	Nimbus & cirro-cumuli	10	N.N.W.	
	9 „	30·02	69·8	69·2	61·5		...	4·8	59	3·2	9	Cirro-strati	10	N.N.W.	
	0 P.M.	29·98	75·1	74·8	64·1	...	...	4·9	52	4·5	9	Nimbus & cirro-cumuli	10	N.N.W.	
	3 „	29·97	76·8	76·3	65·0	77·0	69·5	4·4	44	5·5	0	0	7	N.	
	7 „	30·01	72·4	72·0	62·2	...	(15·0)	4·7	54	3·9	0	0	5	N.	
☽ 27th.	8 A.M.	30·18	64·0	63·5	58·2	(60·0)	...	4·0	68	2·0	9	Cirro-strati	0	0	Haze over Nile valley, and hills obscured
	9 „	30·18	68·6	68·3	60·2		...	4·8	62	2·8	3	Cirro-strati	2	N.	
	0 P.M.	30·16	74·4	70·0	60·1	...	...	3·7	37	6·1	0	0	15	N.E.	
	3 „	30·12	79·4	79·0	58·6	80·0	69·2	3·1	29	7·6	0	0	20	N.E.	
	7 „	30·16	72·8	72·4	57·6	...	(21·5)	3·6	39	5·3	0	0	8	N.N.W.	
♂ 28th.	7 A.M.	30·26	61·5	61·0	54·8	(57·0)	...	3·9	64	2·2	0	0	0	0	Light haze all round, but clear on the Pyramid hill
	9 „	30·25	65·6	65·2	57·6			4·1	59	2·8	7	Cirro-cumuli	2	N.E.	
	0 P.M.	30·20	71·4	71·0	56·6	...	...	3·8	45	4·0	0	0	0	0	
	3 „	30·13	74·2	73·0	56·0	...	...	3·1	34	6·1	0	0	2	N.E.	
	7 „	30·14	70·0	69·5	56·0	73·0	65·0 (18·3)	3·4	43	4·6	0	0	0	0	
☿ 29th.	7 A.M.	30·19	60·5	60·0	54·1	(56·5)	...	3·8	64	2·1	6	Cirrus	0	0	Light haze over Nile valley.
	9 „	30·17	68·5	68·0	56·6		...	3·8	50	3·4	2	Cirro-strati	4	N.E.	
	0 P.M.	30·13	74·3	74·0	57·1	...	...	3·2	35	6·0	6	Cirrus	3	N.E.	
	3 „	30·04	79·7	79·0	56·4	...	...	2·7	25	7·9	8	Cirro-strati	2	E.	
	7 „	30·06	74·8	73·8	57·6	...	...	3·3	36	5·9	2	Cirrus	4	W.	
	9 „	30·09	71·6	71·1	55·7	80·0	70·3 (18·8)	3·1	38	5·3	0	0	5	W.	
♃ 30th.	7 A.M.	30·04	67·5	67·0	55·1	(65·0)	...	2·9	33	4·5	8	Cirro-strati	0	0	
	9 „	...	...	...	...	...	...	...	...	...	...	...	...	...	Absent at the Pyramid.
	0 P.M.	30·04	82·1	81·6	64·5	...	...	4·0	34	7·7	8	Cirro-strati	0	0	
	3 „	30·07	83·5	82·4	61·8	...	...	3·9	32	8·2	6	Cirro-strati	0	0	
	7 „	30·12	72·5	72·2	62·2	85·4	74·2 (18·4)	5·1	55	3·6	10	Cirrus and cirro-strati	16	N.W.	
♀ 31st.	6 A.M.	30·13	64·1	64·2	60·2	...	...	5·0	76	1·8	10	Nimbus and cirro-strati	4	N.E.	
	7 „	30·13	64·1	63·8	61·2	(64·0)	...	5·2	74	1·9	10	Nimbus and cirro-strati	3	N.E.	
	8 „	30·12	67·1	66·6	62·0	...	...	5·3	72	2·0	8	Nimbus and cirro-strati	3	N.E.	

METEOROLOGICAL JOURNAL AT EAST TOMBS—*Continued.*

March 1865. Day	Hour, App. Solar time	Pressure	Air Shade Temperature and Moisture. Dry-bulb Max.	Dry-bulb Min.	Wet-bulb	[illegible]	Sun Temperature [illegible]	Computed: Weight of Vapour in a cubic foot of Air	Humidity	Weight of Vapour required	Clouds. Quantity 0–10	Quality	Wind. Velocity in miles per hour	Direction	Remarks
		Inches	°	°	°	°	°	Grains		Grains					
1st	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	67	[illegible]	[illegible]	Cirro-strati.	10	S.E.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	Cirro-strati.	12	S.E.	
	[illegible]	[illegible]		[illegible]	[illegible]			[illegible]	[illegible]		[illegible]	Cirro-strati.	7	S.E.	
	[illegible]	[illegible]	[illegible]		[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	Cirro-strati.	8	S.E.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	10	Cirro-strati.	15	N.E.	
	[illegible]	[illegible]	[illegible]		[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	Cirro-strati.	15	N.E.	
		[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	Cirro-strati.	20	N.E.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	7	Cirrus and cirro-strati.	18	N.E.	
			[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	7	Cirrus and cirro-strati.	20	N.E.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Cirrus and cirro-strati.	22	N.E.	Clouds moving from N. [illegible]
	[illegible]	[illegible]		[illegible]					[illegible]	[illegible]	[illegible]	Cirro-cumuli.	10	N.E.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	Cirro-strati.	10	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]			[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	Cirrus and cirro-strati.	3	N.E.	
					[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	Cirro-cumuli and cirro-strati.	7	N.E.	
												Cirro-cumuli and cirro-strati.			
				[illegible]							[illegible]	Cirro-cumuli.			
											[illegible]	Cirrus and cirro-strati.			
											[illegible]	Cirrus.			
										[illegible]	[illegible]	Cirrus and cirro-cumuli.	[illegible]	[illegible]	
										[illegible]	[illegible]	Cirro-strati.	12	[illegible]	Whirls of sand-drift.
		[illegible]									[illegible]	Cirro-strati.	[illegible]		
		[illegible]	[illegible]								[illegible]	Cirro-strati.	[illegible]	[illegible]	
			[illegible]							[illegible]	[illegible]	Cirrus and cirro-cumuli.	[illegible]		The chief consequences of the rise of the barometer, which might have been marked in other countries by a cessation of rain, have developed themselves here in an increase of the wet and dry bulbs' difference, and an increase of the transparency of the air, and vividness of solar illumination.
									[illegible]			[illegible]	5	[illegible]	
		[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	4·6	[illegible]	Cirrus.	2	[illegible]	
	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]	[illegible]	4·6	2	Cirrus.	1	[illegible]	
		[illegible]			[illegible]			[illegible]	[illegible]	5·0	2	Cirrus.	[illegible]	W.	
		[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	2	Cirrus.	5	W.	Absent at the Pyramids.
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Cirrus.	[illegible]	N.W.	Cirrus and a halo round the moon.
5th.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	(56·0)		3·1	[illegible]	2·3	0	0	3	N.	Dense haze over Nile valley.
	9 ..	30·30	[illegible]	[illegible]	56·4			[illegible]	[illegible]	[illegible]	7	Cumulus.	12	E.S.E.	
	0 P.M.	[illegible]·47	65·7	60·5	56·0	...	...	[illegible]	18	3·5	1	Cumulus.	15	E.S.E.	
	3 ..	[illegible]·40	71·6	71·4	[illegible]	...	...	[illegible]	[illegible]	[illegible]	3	Cirrus.	7	S.E.	Between 3 and 6 o'clock a huge cloud of locusts, like a fall of snow in a strong wind, went past from N. to S.
	[illegible]	[illegible]	[illegible]	67·0	[illegible]	[illegible]	41·1 (26·2)	[illegible]	[illegible]	[illegible]	1	Cirrus.	12	N.E.	
6th.	8 A.M.	30·45	[illegible]	[illegible]	[illegible]	[illegible]	...	3·5	[illegible]	[illegible]	1	Cirrus.	6	N.E.	
	9 ..	30·46	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	2	Cirrus.	13	N.E.	
	0 P.M.	30·31	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	2	Cirrus.	12	N.E.	A few locusts seen flying variously from 1 to 3 P.M.
	3 ..	30·31	72·0	71·6	58·9	...	...	3·8	42	4·9	1	Cirrus.	7	S.E.	
	8 ..	30·35	66·3	66·3	57·2	72·0	65·6 (14·3)	3·9	55	3·3	0	0	12	N.	

METEOROLOGICAL JOURNAL AT EAST TOMBS—*Continued.*

April 1865.		Air Pressure at Station.	Air Shade Temperature and Moisture.								Clouds.		Wind.		Remarks.
			Dry-bulb.					Computed.							
Day.	Hour, App. Solar time.		By Max. Th.	By Min. Th.	Wet-bulb.	Self-Registering Maximum and Minimum.	Mean Temperature and (Daily Range) from Self-Registering Thermometers.	Weight of Vapour in cubic foot of Air.	Humidity relative Sat. = 100.	Weight of Vapour required to saturate a cubic foot of Air.	Quantity 0–10.	Quality.	Velocity in miles per hour.	Direction.	
		Inches.	Fah.	Fah.	Fah.	Fah.	Fah.	Grains.		Grains.					
☿ 6th.	7 A.M.	30·34	61·6	61·2	54·1	(56·6)	...	3·7	60	2·4	8	Cirro-strati and cirro-cumuli.	2	N.	
	9 „	30·40	64·4	64·0	54·6	...	...	3·5	52	3·2	8	Cirro-cumuli.	10	N.	
	0 P.M.	30·33	70·4	70·0	56·9	...	...	3·4	41	4·7	0	0	10	N.	
	3 „	30·24	71·0	72·6	57·0	73·5	63·8 (15·5)	3·4	32	5·4	0	0	5	N.	
	7 „	...	...	...	...	...	...	...	...	...	...	...	...	...	Absent at the second Pyramid.
	9 „	30·25	64·4	63·8	54·8	...	...	3·5	53	3·2	2	Cirro-strati.	4	N.	
♀ 7th.	7 A.M.	30·30	63·4	63·0	58·1	(50·5)	...	4·6	71	1·9	0	0	0	0	Hase over Nile valley
	9 „	30·32	68·0	67·6	59·2	...	...	4·3	57	3·2	4	Cumulus.	0	0	
	0 P.M.	30·27	72·6	72·2	58·6	...	...	3·7	43	5·0	0	0	0	0	
	3 „	30·19	79·1	78·8	56·6	...	...	3·1	29	7·5	0	0	1	N.	
	7 „	...	...	...	...	...	...	...	...	...	...	...	...	...	Absent at the Great Pyramid.
	9 „	30·21	66·3	64·0	60·8	79·2	64·9 (14·6)	5·0	71	2·1	0	0	0	0	
♄ 8th.	7 A.M.	30·22	65·3	65·0	57·6	(59·8)	...	4·7	60	2·7	0	0	0	0	
	9 „	30·22	69·5	69·1	58·1	...	...	3·9	44	4·1	0	0	0	0	
	0 P.M.	30·17	74·0	73·4	60·5	...	...	3·1	34	6·0	0	0	0	0	
	3 „	30·12	74·9	74·6	58·1	...	...	2·9	31	6·4	2	Cirrus.	0	0	
	7 „	30·12	69·5	69·5	55·6	75·3	67·0 (16·7)	3·4	40	4·7	0	0	7	N.E.	
☉ 9th.	8 A.M.	30·26	62·4	62·0	58·1	(57·5)	...	4·7	76	1·6	1	Cirrus.	2	N.E.	
	9 „	30·25	64·2	64·0	57·6	...	...	4·3	64	2·3	5	Cirrus.	6	N.E.	
	0 P.M.	30·20	69·0	68·5	55·3	...	...	3·3	42	4·5	1	Cirrus.	8	N.E.	
	3 „	30·18	71·5	71·5	56·6	...	...	2·8	34	5·6	1	Cirrus.	8	N.E.	
	8 „	30·25	64·5	63·0	53·0	71·8	64·3 (15·0)	3·2	46	3·0	0	0	10	N.E.	
☾ 10th.	7 A.M.	30·21	62·2	61·9	56·6	(56·0)	...	4·8	69	2·0	0	0	0	0	Whirlwinds of sand frequent over Cairo and in the Nile valley.
	9 „	30·31	65·0	64·3	53·2	...	...	3·1	46	3·7	5	Cumulus.	2	N.E.	
	0 P.M.	30·29	68·1	67·8	54·6	...	...	3·1	42	4·4	4	Cumulus.	2	N.E.	
	3 „	30·22	70·3	70·0	54·6	72·2	64·4 (15·8)	3·0	37	5·1	6	Cumulus.	2	N.E.	
	4 „	...	...	...	...	...	...	...	...	...	...		...	...	Start at 4 P.M. to spend the night on the top of the Great Pyramid.
♂ 11th.	7 A.M.	...	...	...	...	...	...	...	...	...	...		...	...	Thermometer on the top of the Great Pyramid at the lowest, 49°.
	9 „	...	...	...	...	...	...	...	...				...	...	Began to descend the Great Pyramid at 9 A.M.
	0 P.M.	30·22	71·4	71·0	57·6	...	...	3·5	42	4·8	5	Cumulus.	0	0	
	3 „	30·17	71·0	70·3	60·6	...	...	4·3	52	4·0	8	Cumulus.	2	W.	Min. Ther. not set at East Tombs, but found at 56°, temperature had not been lower there. A little rain fell between 6 and 7 P.M.
	7 „	30·20	60·8	60·4	56·7	...	...	4·4	62	2·7	8	Cumulus and nimbus.	0	0	
☿ 12th.	7 A.M.	30·31	63·4	62·3	56·5	(57·6)	...	4·1	63	2·4	0	0	0	0	
	9 „	30·33	67·3	67·0	57·6	...	...	4·0	53	3·4	2	Cumulus.	0	0	
	0 P.M.	30·33	70·6	70·3	58·6	...	...	3·9	47	4·3	6	Cumulus.	0	0	
	3 „	30·31	71·5	71·1	57·4	...	...	3·5	41	4·9	7	Cumulus.	0	0	
	7 „	30·35	67·6	67·3	56·1	73·5	64·6 (15·9)	3·6	46	3·9	4	Cirro-strati.	2	N.	

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METEOROLOGICAL JOURNAL AT EAST TOMBS—*Continued.*

April 18[illegible] Day	Hour App. Solar time	Air Pressure at station	Dry-bulb By Max. Th.	Dry-bulb By Min. Th.	Wet bulb	Self-registering Maximum and Minimum	Mean Temperature and Daily Range	Computed: Weight of Vapour in cubic foot of Air	Computed: Humidity relative Sat. = 100	Computed: Weight of Vapour required to saturate a cubic foot of Air	Clouds: Quantity 0–10	Clouds: Quality	Wind: Velocity in miles per hour	Wind: Direction	Remarks
		Inch.	Fah.	Fah.	Fah.	Fah.	Fah.	Grains.		Grains.					
[illegible]	7 a.m.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	4·1	[illegible]	[illegible]	0	0	0	0	Light haze on the horizon; very lovely effect.
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	2	Cumulus	2	S.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	1	Cumulus	1	W.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	1	Cumulus	8	N.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	Cirrus	10	N.E.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	[illegible]	1	Cirrus	7	N.E.	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	Cirro-strati	1	N.E.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	Cirro-strati	3	N.E.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	4	Cirrus	4	N.E.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	[illegible]	Cirrus	3	N.E.	
	10	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	3	Cirrus	7	N.	
	11	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	2	Cirrus	7	N.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	2	Cirrus	9	N.	
	1	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	1	Cirrus	12	N.	
	2	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	2	Cirrus	12	N.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	3	Cirrus	12	N.	
	4	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	[illegible]	1	Cirrus	15	N.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	1	Cirrus	15	N.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	2	Cirrus	20	N.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	0	0	10	N.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	0	0	10	N.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	0	0	10	N.	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	0	0	0	0	Haze over Nile valley.
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	0	0	7	N.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	0	0	4	N.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	[illegible]	Cumulus	2	N.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	0	3	N.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	0	3	N.	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	4·1	[illegible]	[illegible]	[illegible]	Cirro-strati	0	0	Haze over Nile valley.
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Cumulus	0	0	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4·1	[illegible]	[illegible]	[illegible]	Cumulus	0	0	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Cirrus	3	N.	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4·4	[illegible]	Cirrus	12	N.	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	4·1	[illegible]	[illegible]	0	[illegible]	0	0	Haze on horizon.
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	0	0	0	0	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	0	0	0	0	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	2	Cirrus	0	0	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	0	0	0	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4·4	0	0	0	0	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	[illegible]	[illegible]	[illegible]	0	0	[illegible]	[illegible]	Preparing to start for the interior of the Great Pyramid.
	[illegible]	[illegible]	...	...	...	...	...	...	...	...	...	...	...	...	
	[illegible]	30·21	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	5·7	0	0	0	0	Returned to East Tombs at 11.30 a.m.
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	...	...	[illegible]	[illegible]	[illegible]	0	0	0	0	
	8	30·25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] ([illegible])	[illegible]	[illegible]	4·3	0	0	0	0	
19th.	7 a.m.	[illegible]	67·1	64·8	56·6	[illegible]	...	4·5	66	2·4	10	Cumulo-strati	0	0	
	9 ,,	[illegible]	68·0	67·5	60·0	...	...	4·5	60	3·0	8	Cumulo-strati	0	0	
	0 ,,	[illegible]	74·1	73·0	60·2	...	...	4·9	47	5·2	4	Cumulo-strati	0	0	
	4 ,,	[illegible]	75·4	75·0	59·6	...	...	3·0	32	6·5	0	0	0	0	
	8 ,,	[illegible]	70·0	70·2	57·1	76·0	68·8	3·5	44	4·6	3	Cirrus	7	W.	
	10 ,,	[illegible]	67·0	66·3	57·7	...	(14·8)	4·0	55	3·3	3	Cirrus	5	W.	
20th.	6 a.m.	30·31	47·8	61·3	54·5	(61·0)	...	4·3	70	1·9	10	Cumulo-strati	2	W.	
	10 ,,	30·37	69·0	68·5	58·1	...	...	3·9	50	3·9	4	Cumulo-strati	4	N.	
	0 p.m.	30·33	72·4	72·0	57·0	...	...	3·3	39	5·3	4	Cirrus	6	N.	
	[illegible] ,,	30·26	72·0	71·7	54·7	...	...	3·2	38	5·2	0	0	8	N.E.	
	8 ,,	30·31	66·7	66·4	54·5	73·7	45·7 (15·1)	3·7	53	3·6	0	0	15	N.E.	

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METEOROLOGICAL JOURNAL AT EAST TOMBS—*Continued.*

April 1865		Air Pressure at Station.	Air Shade Temperature and Moisture.								Clouds.		Wind.		Remarks.
			Dry-bulb		Wet-bulb.	Self-Registering Maximum and (Minimum).	Mean Temperature and (Daily Range) from Self-Registering Therms.	Computed							
Day.	Hour, App. Solar time.		By Max. Th.	By Min. Th.				Weight of Vapour in cubic foot of Air.	Humidity relative Sat. = 100.	Weight of Vapour required to saturate a cubic foot of Air.	Quantity 0—10.	Quality.	Velocity in miles per hour.	Direction.	
		Inches	Fah.	Fah.	Fah.	Fah.	Fah.	Grains.		Grains.					
♀ 21st,	6 A.M.	30·31	58·0	57·3	51·9	(56·2)	…	4·5	61	2·1	0	0	2	N.E.	
	7 „	30·34	60·0	59·5	52·1	…	…	3·8	58	2·5	0	0	1	N.E.	
	8 „	30·33	62·5	62·0	52·6		…	3·2	51	3·1	0	0	7	N.E.	
	9 „	30·33	65·1	64·5	52·8	…	…	3·0	45	3·8	0	0	10	N.E.	Whirlwinds of sand frequent.
	10 „	30·15	67·1	65·8	53·3		…	3·0	42	4·3	0	0	15	N.E.	
	11 „	30·29	68·4	67·6	54·2		…	3·0	39	4·6	0	0	20	N.E.	
	0 P.M.	30·27	70·0	69·5	54·6	…	…	3·0	37	5·0	0	0	20	N.E.	
	1 „	30·25	71·4	71·0	55·4	…	…	3·0	36	5·3	0	0	20	N.E.	
	2 „	30·21	71·6	71·2	56·1	…	…	3·2	38	5·3	0	0	20	N.E.	
	3 „	30·21	71·4	70·9	57·5	…	…	3·5	42	4·9	0	0	18	N.E.	
	4 „	30·21	71·5	70·8	57·2		…	3·5	42	4·9	0	0	15	N.E.	
	5 „	30·21	71·0	70·1	55·1	73·6	64·6 (13·1)	3·0	36	5·3	0	0	15	N.E.	
	6 „	30·24	69·6	69·1	55·0	…		3·1	39	4·5	0	0	13	N.E.	
	7 „	30·29	67·4	67·0	54·2	…	…	3·1	42	4·3	2	Cirrus.	12	N.E.	
	8 „	30·32	65·5	65·0	54·2	…	…	3·3	47	3·6	3	0	12	N.E.	
	9 „	30·35	63·6	63·5	53·8	…	…	3·3	50	3·3	0	0	12	N.E.	
												0	10	N.E.	
♄ 22d,	8 A.M.	30·37	64·6	64·2	54·6	(55·5)	…	3·5	49	3·3	0	0			
	9 „	30·34	66·6	66·2	56·8	…	…	3·8	46	3·9	0	0	6	N.E.	
	6 P.M.	30·28	74·0	73·8	56·1	…	…	3·0	33	6·1	4	Cirrus.	10	N.E.	
	7 „	30·28	71·0	70·4	57·3	74·8	65·0 (13·1)	3·5	42	4·8	5	Cirrus.	8	E.N.E.	
													12	E.N.E.	
☉ 23d,	7 A.M.	30·28	62·0	61·5	56·0	55·6	…	4·1	67	2·1	0	0	8	N.E.	Hazy sky, white about sun.
	9 „	30·18	71·6	71·2	60·0	…	…	3·8	46	4·6	0	0	2	N.E.	
	4 P.M.	30·10	83·5	82·8	62·0	84·2	71·4 (23·5)	3·6	30	8·6	4	Cirrus.	0	0	Hazy.
☾ 24th,	6 A.M.	30·05	72·6	72·2	50·6	(62·0)	…	3·9	43	4·8	0	0	0	0	Hazy sky, and white about sun.
	9 „	30·08	85·5	85·0	63·6	…	…	3·7	29	9·3	0	0	0	0	
	0 P.M.	30·06	88·5	88·0	67·6	…	…	4·4	32	9·6	0	0	0	0	
	3 „	30·03	88·5	88·0	68·1	89·0	75·5 (27·0)	4·6	33	9·6	0	0	0	0	Atmospheric light bad.
													0	0	
♂ 25th,	8 A.M.	30·26	67·0	66·9	58·0	(63·0)	…	4·2	57	3·1	1	Cirrus.	4	N.E.	Haze all about.
	0 P.M.	30·23	75·6	75·2	59·6	…	…	3·7	38	5·9	0	0	6	N.E.	Atmospheric light improved.
	3 „	30·17	79·0	78·6	61·0	79·0	70·2 (17·5)	3·7	35	6·9	0	0	4	N.E.	
☿ 26th,	7 A.M.	30·34	64·5	64·0	57·6	(61·0)	…	4·8	63	2·4	0	0	0	0	Haze over Nile valley.
	9 „	30·34	69·5	69·0	59·0	…	…	4·0	52	3·8	2	Cirrus.	3	N.E.	
	3 P.M.	30·32	80·2	80·0	61·8	…	…	3·7	34	7·2	2	Cirrus.	4	N.E.	Atmospheric light good.
	9 „	30·34	72·7	72·0	61·0	81·0	71·0 (20·0)	4·5	49	4·4	0	0	15	N.E.	
♃ 27th,	7 A.M.	30·40	64·6	64·1	57·6	(61·0)	…	4·3	63	2·5	1	Cirrus.	2	N.E.	Haze over Nile valley.
	0 P.M.	30·36	77·0	76·5	59·6	…	…	3·5	35	6·5	0	0	4	N.E.	
	9 „	30·40	70·3	70·0	59·1	80·5	70·8 (19·5)	4·0	49	4·1	0	0	4	N.E.	
♀ 28th,	7 A.M.	30·44	66·1	65·8	58·0	(61·6)	…	4·2	60	2·8	0	0	2	N.E.	Haze over Nile valley.
	3 P.M.	30·33	78·1	77·8	62·6	…	…	3·0	29	7·3	0	0	1	N.E.	Air all day pleasant and balmy.

SUMMATION OF A METEOROLGICAL JOURNAL, KEPT AT EAST TOMBS, GREAT PYRAMID HILL, DURING PART OF 1865; LATITUDE = 29° 59′ N.; LONG. = 2H. 5M. EAST; AND ELEVATION ABOVE THE SEA = 1600 INCHES.

CYCLE OF A DAY.

FROM the hourly observations of the various meteorological elements, taken throughout almost a complete day, generally once a week,—mean representations for every hour have been deduced for each month; and from such monthly means, a grand mean for the whole four months has been obtained and is inserted in the following table.

The complete day thus instrumentally described at twenty-four equidistant points along its course, represents an average day in Egypt, between February and March; a period at and about which many travellers and invalids may desire to know the vicissitudes they will have to undergo. It may also assist them in ascertaining from their own observations *in those months* when any of the Egyptian meteorological elements are abnormal, and possible storms approaching.

N.B.—The mean barometrical height is unfortunately given too high and to an unknown amount, as the instrument employed, experienced an injury on the return, preventing its due comparison with a standard barometer. But the hourly periodic variations of the atmospheric pressure are probably represented by it exactly enough; and the large proportion that they bear to the irregular fluctuations which accompany changes of weather,—the former being much larger and the latter smaller than in Scotland, are duly to be considered when storms are impending or in progress.

METEOROLOGY OF A MEAN DAY AT EAST TOMBS, PYRAMID HILL, DURING THE MONTHS OF JANUARY, FEBRUARY, MARCH, AND APRIL 1865 (THE HOURS FROM 11 P.M. TO 5 A.M. INCLUSIVE, BEING SUPPLIED FROM AN INTERPOLATING CURVE.)

Hour Apparent Solar Time at the place.	Barometrical Pressure. (Approx. only.)	Correction to Mean of 24 hours.	Temperature in shade. (Fahr.)	Correction to Mean of 24 hours.	Temperature of evaporation.	Correction to Mean of 24 hours.	Difference between dry and wet bulb.	Computed: Elasticity of vapour.	Weight of vapour in cubic foot of air.	Weight of vapour required to saturate the same.	Relative humidity, saturation = 100.
	Inches.	Inches.						Inches.	Grains.	Grains.	
0 A.M.	30·18	0	59·8	+ 3·6°	52·6°	+ 1·2°	7·2°	0·31	3·5	2·2	62·
1 „	·18	0	58·5	4·9	51·8	2·0	6·7	·31	3·4	2·0	63·
2 „	·17	+ ·01	57·2	6·2	51·0	2·8	6·2	·30	3·4	1·9	64·
3 „	·17	+ ·01	56·2	7·2	50·0	3·8	6·2	·29	3·3	1·9	64·
4 „	·19	·0	55·6	7·8	49·4	4·4	6·2	·28	3·2	1·8	64·
5 „	·20	− ·02	55·3	8·1	49·2	4·6	6·1	·28	3·1	1·8	65·
6 „	·22	− ·04	56·5	6·9	50·2	3·6	6·3	·29	3·3	1·8	64·
7 „	·23	− ·05	58·6	4·8	51·9	1·9	6·7	·31	3·5	2·0	62·
8 „	·23	− ·05	61·2	+ 2·2	53·3	+ 0·5	7·9	·31	3·5	2·5	58·
9 „	·21	− ·05	64·0	− 0·6	54·5	− 0·7	9·5	·32	3·5	3·1	53·
10 „	·22	− ·05	66·2	− 2·8	55·3	− 1·5	10·9	·31	3·4	3·6	48·
11 „	·22	− ·04	68·0	− 4·6	55·7	− 1·9	12·3	·31	3·4	4·1	45·
0 P.M.	·19	− ·01	69·3	− 5·9	56·3	− 2·5	13·0	·31	3·4	4·7	42·
1 „	·16	+ ·02	70·1	− 6·7	56·7	− 2·9	13·4	·31	3·4	4·8	42·
2 „	·14	·04	70·3	− 6·9	56·6	− 2·8	13·7	·31	3·4	4·7	41·
3 „	·11	·07	70·5	− 7·1	56·8	− 3·0	13·7	·31	3·4	4·8	42·
4 „	·11	·07	70·3	− 6·9	56·6	− 2·8	13·7	·31	3·4	4·8	41·
5 „	·11	·07	69·1	− 5·7	56·1	− 2·3	13·0	·31	3·4	4·4	44·
6 „	·13	·05	67·8	− 4·4	55·8	− 2·0	12·0	·32	3·5	4·0	46·
7 „	·16	+ ·02	66·4	− 3·0	55·6	− 1·8	10·8	·32	3·5	3·6	48·
8 „	·18	·0	64·8	− 1·4	54·8	− 1·0	10·0	·32	3·5	3·3	51·
9 „	·19	− ·01	63·4	0·0	54·7	− 0·9	8·7	·32	3·5	2·9	55·
10 „	·19	− ·01	62·2	+ 1·2	54·1	− 0·3	8·1	·32	3·5	2·6	58·
11 „	·19	− ·01	61·0	+ 2·4	53·4	+ 0·4	7·6	·32	3·6	2·4	60·
Mean of 24 hours.	Inches. 30·18	...	63·4°	...	53·8°	...	9·6°	Inches. 0·31	Grains. 3·4	Grains. 3·1	Sat. = 100 54

METEOROLOGY OF THE MONTHS OBSERVED.

IN the following table, both the means and extremes from all the daily meteorological observations are entered for each month separately, as well as successively, to show something of the weather history for the time.

The chief anomaly may thence be seen to consist in the extra heat and drought of the month of March. For heat, the temperature of 96·1° Fahrenheit so early in the year, sufficiently realises that element; and was enough to awake, within a single 24 hour period, apparently all the innumerable snakes, lizards, &c., of Egypt from

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their long and death-like winter sleep under the earth; and set them marking the sands in all directions with their various sub-aerial tracts and new found activity. While for drought, the most instructive return to look at, is probably that of 'the weight of vapour required to 'saturate a cubic foot of air,'—for such return expresses closely, in its variations, the actual effects experienced on the human skin. In Scotland, the mean amount required in the same month of March, was 0·5 grain; and in June, the dryest month of the whole year, it was 1·1 grain; but at East Tombs, Great Pyramid Hill, in March, the mean quantity required there was close on four grains; while the maximum quantity, on one special occasion, was no less than 13·8 grains; and produced, in myself at least, the proverbially exhilarating influence of a bright, sun-illumined desert, very difficult to describe.

Hence there are peculiar effects attendant on Egyptian heat, if only by reason of its accompanying dryness, while even in the one element of "temperature in the shade," it may be interesting to point out that the coldest months, *i.e.* January and February, at the Great Pyramid, were 3° warmer than the warmest months,—July and September of the same year,—in Scotland. Also, that in mid-winter in Egypt the temperature is higher, though the sun is lower in the sky at Noon, than it is at mid-summer in Scotland, with a higher sun. But to enable the reader to judge more particularly of the differences between the two climates, a parallel table of the general Scottish, to the Egyptian tombic, meteorology is here introduced.

EAST TOMBS, GREAT PYRAMID. LAT. 29° 59' N.
ELEVATION ABOVE SEA = 1680 INCHES.
METEOROLOGICAL ABSTRACT OF EACH MONTH OBSERVED IN 1865
BY C. P. S. AND J. P. S.

Subjects. General.	Subjects. Particular.	Jan.	Feb.	Mar.	April.
		Inches	Inches	Inches	Inches
Barometrical Pressure,	Mean height,	30·11	30·11	30·14	30·29
	Greatest height on any occasion,	30·28	30·16	30·39	30·50
	Least height on any occasion,	29·89	29·69	29·74	29·86
	Extreme Monthly range,	0·37	0·49	0·61	0·64
	Mean semi-daily range,	0·05	0·07	0·08	0·09
		Fah.	Fah.	Fah.	Fah.
Temperature in shade.	Mean temperature,	61·2	61·4	65·5	67·5
	Highest temperature on any occasion,	76·8	74·5	96·1	89·0
	Lowest temperature on any occasion,	47·5	46·5	51·0	54·0
	Extreme monthly range,	29·1	30·0	45·1	35·0
	Mean semi-daily range,	6·9	7·5	8·5	8·7
Moisture in shade.	Mean weight of vapour in grains,	3·7	3·0	3·8	3·8
	Mean humidity relative,	60·0	49·0	50·0	49·0
	Mean required vapour, in grains,	2·6	3·1	3·8	3·7
	Greatest weight of vapour on any occasion, in grains,	5·2	4·8	6·0	5·1
	Greatest humidity on any occasion, in grains,	92·0	76·0	78·0	76·0
	Least required vapour on any occasion, in grains,	0·4	1·2	1·1	1·5
	Least weight of vapour on any occasion, in grains,	2·7	1·8	2·3	2·9
	Least humidity on any occasion,	32·0	24·0	12·0	29·0
	Greatest required vapour on any occasion, in grains,	5·8	6·6	13·8	9·8
Cloud,	Quantity of 0—10,	3·6	2·9	3·0	2·4
Wind,	Mean velocity in miles per hour,	1·6	4·6	5·2	5·4
	Mean direction,	N.	S.W.	N.	N.N.E.
Rain,	Number of days on which it fell,	1	1	1	0
	Depth fallen; insensible,	0	0	0	0

SCOTLAND, MEAN LATITUDE OF 55 STATIONS = 56° 30' N.
ELEVATION ABOVE SEA = 2072 INCHES.
METEOROLOGICAL ABSTRACT OF EACH MONTH, FROM THE PUBLISHED RETURNS OF THE METEOROLOGICAL SOCIETY OF SCOTLAND IN 1865.

Subjects. General.	Subjects. Particular.	Jan.	Feb.	Mar.	April.
		Inches	Inches	Inches	Inches
Barometrical Pressure,	Mean height at sea level,	29·41	29·90	29·85	30·11
	Greatest height on any occasion,	30·27	30·06	30·46	30·45
	Least height on any occasion,	28·55	28·34	29·30	29·77
	Extreme monthly range,	1·71	1·72	1·16	0·68
	Mean semi-daily range,	...	...	...	...
		Fah.	Fah.	Fah.	Fah.
Temperature in shade,	Mean temperature,*	34·6	35·9	37·1	44·5
	Highest temperature on any occasion,	57·8	52·1	58·8	77·0
	Lowest temperature on any occasion,	−4·0	−1·1	14·7	23·0
	Extreme monthly range,	34·7	53·9	28·6	39·4
	Mean semi-daily range,	4·6	4·0	5·4	8·0
Moisture in shade	Mean weight of vapour, in grains,	2·1	2·1	2·1	3·0
	Mean humidity, relative,	87·0	86·0	85·0	86·0
	Mean required vapour, grains,	0·2	0·2	0·5	0·5
Cloud,	Quantity of 0—10,	6·2	7·1	6·4	5·0
Wind,	Mean velocity in miles per hour,	20·0	16·0	15·0	15·0
	Mean direction,	W.	S.E.	N.W.	S.W.
Rain,	Number of days on which it fell,	17	14	13	5
	Depth in inches,	3·73	2·91	2·05	0·94

	June.	July.	Aug.	Sept.
	° Fah.	° Fah.	° Fah.	° Fah.
* The mean temperatures of the four warmest months of the year 1865 were as follows:—	57·1	58·6	56·1	56·0
And the mean weight of vapour in cubic foot of air, in grains,	4·1	4·4	4·4	4·5
Mean humidity, relative,	81·0	82·0	87·0	86·0
And mean required vapour to saturate a cubic foot of air, in grains,	1·1	1·0	0·6	0·7

MEAN DAILY TEMPERATURE, IN THE SHADE.

THE previous returns for mean temperature are from the simple mercurial thermometers observed hourly; but in the following table reference is made to the recorded indications of the self-registering thermometers giving the extremes only of day and night; and with them the precaution has been followed of comparing each day's maximum temperature—not with the low temperature of the previous night alone, or the following night—but with the mean of the two nights. The range thus obtained has been divided by two, in order to present the quantity, the simple addition or substraction of which will at once give either the maximum or minimum temperature.

Day of Month.	January.		February.		March.		April.	
	Mean temperature.	Semi-daily range.	Mean temperature.	Semi-daily range.	Mean temperature.	Semi-daily range.	Mean temperature.	Semi-daily range.
1	...		68·0	10·5	69·2	7·1	74·0	10·8
2	...	...	62·1	6·0	69·4	7·0	64·4	5·6
3	...		61·5	4·8	61·2	7·4	65·2	7·2
4	...		61·6	7·6	63·4	7·2	64·1	8·1
5	...	...	61·7	9·9	64·7	7·2	63·6	8·4
6	...	...	62·5	8·5	[illegible]	7·6	[illegible]	7·8
7	...	...	63·5	7·0	63·3	8·6	[illegible]	7·3
8	...		61·0	7·0	61·0	8·2	67·0	8·4
9	...		59·9	8·2	63·8	9·4	66·3	7·5
10	...		58·2	8·3	66·4	8·0	64·4	7·9
11	...		59·4	9·2	71·9	9·1		...
12	...		57·7	8·8	76·6	12·4	64·8	7·9
13	...		57·4	8·1	65·8	6·8	64·2	8·2
14	60·2	3·1	58·0	6·7	66·5	6·0	65·6	8·4
15	61·6	5·8	59·0	7·1	72·2	9·2	67·4	8·8
16	59·3	8·2	65·1	8·4	63·5	12·6	67·7	8·5
17	58·0	7·5	65·1	7·1	75·0	6·2	69·0	9·8
18	60·6	5·4	66·4	5·8	65·3	6·7	[illegible]	8·0
19	65·0	7·0	68·0	7·6	66·1	6·5	[illegible]	7·4
20	64·3	8·8	60·2	7·2	64·6	6·6	65·2	7·6
21	61·4	5·0	61·5	7·2	61·9	10·1	64·0	8·6
22	62·8	6·8	66·2	7·8	64·6	11·8	65·0	9·6
23	62·2	6·4	63·0	7·5	70·4	12·1	71·4	12·8
24	59·8	5·4	65·2	7·4	74·4	10·6	75·5	13·5
25	59·7	7·0	55·6	5·8	70·7	7·1	70·2	8·8
26	61·5	6·6	57·4	5·6	62·3	7·5	71·9	10·0
27	62·0	5·2	58·0	7·4	69·2	10·8	70·8	9·8
28	61·6	7·4	60·0	8·2	65·9	9·1	...	...
29	62·8	10·2	...	...	70·8	9·4	...	...
30	62·3	8·1	...	...	71·2	9·2	...	...
31	66·4	10·4	...	...	69·8	6·4	...	...
Mean of Month,	61·2	6·9	61·4°	7·5	68·5°	8·5°	67·3°	8·7°

The mean temperature for the whole of the four months observed would thus appear, from the self-registering thermometers alone, = 64·6°. But there are some causes which may make this result rather too high; as for example, that the minimum thermometer being of alcohol, and large-bulbed, is more sluggish than the mercurial maximum, and does not equally give the extremes of its curve.[1] There is the further uncertainty too with this method, that it is by no means necessary that the mean of the two extremes of every, or indeed any, daily curve, should give the true mean for the whole day; and in fact the Egyptian curve being more intense, but shorter, for the day than the night, cannot do so.

Hence the result from the maximum and minimum thermometers, observed every day, in the usual manner of the Scottish Meteorological Society,—is probably not so good as that from the simple thermometers observed hourly, about once a week, throughout the same four months; and this latter method gives 63·4°.

Assigning the latter number, therefore, double weight, the mean of the whole meteorological observations for the mean temperature at East Tombs during the months of January, February, March, and April, of the year 1865, = 63·8° Fahr.

[1] The mean diameter of the bulbs of all the mercurial thermometers employed was close to 0·25 inch; and of the alcoholic about 0·55 inch.

ANNUAL MEAN TEMPERATURE, IN THE SHADE.

TEN observations by myself in December and January of the temperature of wells in Cairo, gave 69°·8; and the mean of five whole years' observations on the air in the same place by an Austrian observer (recently communicated to me by Mr Buchan) gives 69°·9.

But East Tombs is rather higher than Cairo, as well as nearer to, or actually in, the Libyan Desert: and there, thirteen observations of temperature of neighbouring wells in April gave 68°·5; while six observations in the central chamber of the Second Pyramid close by, gave 74°·5; this latter quantity however requiring a large correction, probably not less than six degrees for the increase of rock temperatures according to their distance from the aerial surface, as proved in principle by the rock-thermometers on the Calton Hill, Edinburgh.

On the whole, then, we may perhaps be justified in concluding that the mean annual temperature of the Desert is a *little* less than that of the cultivated and inhabited valley of the Nile on the same parallel. But a far more important and decided particular deducible from our Pyramid observations compared with the Austrian Cairo series above mentioned is, that the winter months at East Tombs are several degrees warmer,—and the summer months necessarily at least as much cooler,—than the corresponding months in Cairo; or, that the Desert enjoys an insular, and the city a continental, climate, as touching range of temperature, and both to a most sensible degree, and practically important a quantity, or thus:—

	Jan.	Feb.	Mar.	April.	May.	June.	July.
Mean Temperature in Shade at Cairo,	55°·8	55°·6	61°·1	70·0	77·3	81·8	83·7
Mean Temp. in Shade at East Tombs, G. Pyramid,	61·2	61·4	68·5	67·3	—	—	—

CLIMATE TEMPERATURE.

ALTHOUGH in some respects I may now be enabled to say, looking to all the usual and orthodox meteorologic recognitions of heat (*i.e.*, divers returns about "temperature in the shade)," *liberavi animam meam*, yet I fear that Nature has been thereby but half described.

Temperature in the shade is no doubt very important, and is moreover the quantity or expression for atmospheric heat, which is most easily amenable to trustworthy instrumental observation: but temperature in the Sun is a mighty influence, and worthy of far more attention than it has yet received and doubtless would have obtained, had the savants of the North only known a little more what the Sun, *i.e.*, the Sun in the South, really is.

In Egypt its shining would be terrific but for the counteracting effects of wind, which carries off the heat almost as fast as it is generated in any exposed surface. But the wind sometimes fails, more too in certain localities than in others, and then comes the tug.

In the wall-enclosed English Cemetery in Cairo, where the wind is kept out and the sun let in, recent tombs, both of red Peterhead and grey Aberdeen granite, are perishing rapidly, like rotten disintegrated sandstone; while living Englishmen go about there in mid-winter with heaps of white cloths fastened round their hats as a protection, they say, from *coup de soleil*.

But in the open Desert, exposed like the ocean to every wind that blows, neither the integrity of rock nor the constitution of man suffers at that fearful rate. On some days too, chiefly owing to wind, we ourselves found at the Pyramid little difference between the temperature in the shade and that in the sun. Would then on such days a record of "temperature in the shade" be sufficient for all scientific purposes?

Certainly not; and least so for securing some of the highest attributes of climate. For more "temperature in the shade" might be accompanied by dun darkness, sickly hues, and negation of everything bright, joyous, and exciting both to vegetable and animal life; while temperature in the sun, as the sun is in Egypt, always proves to be something so innately glorious, that though it may be removed again immediately by cooling winds, yet all organic beings might well rejoice to say of it in the words of the poet, though *mutatis mutandis*,

Far better to have loved and lost,
Than never to have loved at all.

And in fact it is a totally different thing, to have been warmed up by the sun and cooled again, than merely to have felt a "shade temperature," and sometimes it does not end so innocently as that; a thing therefore for which new instruments of observation more certain than any that have yet been tried for its measurement and description should be invented, and new columns opened up in all the coming Meteorological Journals.

SPECIAL STORM.

THE severest storm experienced at the Pyramids during the first four months of 1865, was undoubtedly that which culminated on February 3, at 4h. A.M. The barometer steadily decreased during four days from 30·16 to 29·69, and then as steadily rose from that point to 30·17 in the course of the three following days. During the sinking of the barometer, the wind veered from south gradually to south-west, and during the rising from south-west to west, the maximum velocity occurring soon after the maximum fall of the barometer. Not a drop of rain fell in that "rainless land," during three days the sky was dark and obscured with sand, which seemed to fill all the air; and the difference between wet and dry bulb thermometers was occasionally 16°, at a shade-temperature of 65° Fahr.

But the storm was nevertheless most remarkable for the long period of uninterrupted fall, and then the almost equally long period of uninterrupted rise of the barometer, lasting altogether for a whole week,—and indicating a wide-spread and truly grand disturbance of the atmosphere. Seeing too, that such disturbances are always of a dynamical or locomotive order, we may ask whence did this storm come to Egypt?

From the southern parts of the North Atlantic, is the most natural idea. The admirable daily bulletins of the Imperial Observatory of Paris do indeed, so far as their maps go, prove that the Egyptian storm was not felt in Europe; but they show a centre of barometrical depression at 7h. A.M. on February 2, as being then Eastward of Sicily, and probably pursuing an eastward path soon to be beyond the range of the Parisian maps.

If in such path we assume a velocity of 40 miles an hour, the storm's centre should have been on the Longitude of the *Great Pyramid* at 4h. A.M. of February 3; and on the Longitude of *Jerusalem* six or seven hours afterwards. And this seems really to have taken place; for while our own observations have already given that date for the Great Pyramid, the corresponding date for Jerusalem is indicated by the following return kindly furnished for that station by the Meteorological Society of Scotland. At Jerusalem, indeed, the storm was different from the Egyptian one, by being accompanied with much rain, thunder, and lightning; but it was made up of similiar S. W. wind, and attended by the same long continued fall and rise of the barometer, extending there over eight days.

METEOROLOGICAL SOCIETY OF SCOTLAND. STATION—JERUSALEM.
Latitude, 31° 46′ 45″ N. Longitude, 35° 13′ East.
Distance from sea = 35 miles.
Height of station above sea = 2400 feet = Bar. corr. + 2·338 inches.
Observer—Dr THOMAS CHAPLIN.
Time of observation = 9h. A.M. What species of time this refers to, is not positively known; but the Society's printed instruction to their observers is to use "Railway" or Greenwich Mean Solar Time.

Date, 1865.	Barom.	Max. Th.	Min. Th.	Dry-bulb.	Wet-bulb.	Wind. Force.	Wind. Dir.	Rain, inches.	Notes.
	Inch.	Fahr.	Fahr.	Fahr.	Fahr.				
Jan. 29	27·532	[illegible]	42·5	52·0	49·5	1	E.	...	
30	·493	[illegible]	44·0	56·	50·0	0	N.E.	...	
31	·397	[illegible]	49·5	54·9	47·8	0	E.	...	
Feb. 1	·322	[illegible]	50·5	54·0	47·5	1	N.W.	...	
2	27·137	[illegible]	43·5	44·7	41·8	1	S.W.	...	
3	26·972*	55·1	44·0	49·0	41·2	3	S.W.	·060	Rain began at 2.30 P.M.—much lightning and thunder.
4	27·247	51·5	44·0	46·1	46·1	3	S.W.	1·735	
5	·363	56·0	45·0	55·8	47·1	3	S.W.	...	
6	·472	65·5	47·0	53·7	51·5	0	N.W.	...	
7	·422	61·5	50·0	54·9	48·0	0	N.W.	...	

* No other case below 27· inches, all through January and February.

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SECTION V.—MISCELLANEOUS AND COMMUNICATED MEASURES.

MEASURES OF THE SECOND PYRAMID.

ANGLE of elevation of each side of the casing near the summit of the second Pyramid, measured approximately from below; *i.e.*, with the sextant horizon from the top of the rubbish-mound in the middle of each side, on April 7 and 8:—

Angle of East face of casing, ...	= 52° 57′
" South "	= 52 52
" West "	= 52 49
" North "	= 52 42
Mean,	= 52° 50′

SARCOPHAGUS OF SECOND PYRAMID.

Situated near the western end of the grand chamber, which is close to the centre of the base of the Pyramid. Length of this chamber runs east and west; roof, angular; walls, of limestone, apparently excavated in rock of hill, and salt-incrusted. Floor near sarcophagus, is of granite, much broken up (by Mr Perring, in his search for an under chamber). Sarcophagus of red granite, with its length placed north and south; sunk originally in floor up to level of brim, quite or nearly; measures, excluding at present particular consideration of the grooves for a lid,—thus on March 2 and 14,—

SARCOPHAGUS OF SECOND PYRAMID.

Part observed at	Outside.			Inside.		
	Length.	Breadth.	Depth.	Length.	Breadth.	Depth.
	Inches.					
General, . . . =	103·6	41·5	36·0	...	...	...
Lowered part of West side, etc. =	...	...	36·4	...	...	...
West side, . . =	...	...	...	84·6	...	...
East side, . . =	...	...	...	84·6	...	...
North end, . . =	...	...	...	...	26·7	...
South end, . . =	...	...	...	...	26·7	...
North-east corner, =	...	...	...	...	...	29·4
Part of West side by reason of groove ledge, =	...	...	...	...	...	27·8

Transverse thickness of West side, all along, = 7·6 inches.
" East " below ledge, = 7·6 "
" North end, below ledge, = 9·8 "
" South end, " = 9·4 "

Had once a cover, still to be seen, which fitted on by sliding from the west, like a sliding-lid of a box. The grooves for such a sliding-lid are cut inside the top of the east side, and north and south ends; while the west side is entirely lowered—to the depth of the groove—all across and along its (the west side's) upper surface, except a small portion at each end, beyond the limits of the side grooves there.

Vertical depth of this groove, ...	= 1·6 inch.
Horizontal breadth of its base on East side, .	= 0·45 "
Do. on South end, South-east corner, . .	= 1·1 "
Do. do. South-west " . .	= 1·7 "
Do on North end, North-east " . .	= 1·1 "
Do. do. North-west " . .	= 1·9 "

The outer sides of the grooves overhang towards the top and to the centre of the sarcophagus; so that they may be described as being acute-angled or dovetailed, and, as such, would prevent the cover being pulled off upwards. It was further prevented from being pulled off horizontally westward, by having holes in the top of the west side, into which sliding-pins fell out of the bottom of the lid, when this was pushed on into its right place. There are two of these holes only, each about 1 inch broad, circular, and 1 deep, in the middle of the western side as regards breadth, and 6 inches within the inside ends of the interior of the sarcophagus as regards length.

The lid or cover was found lying amongst the broken stones of the floor; it is very thick; the full length and breadth of the whole vessel; and with a portion only of the under side chiselled into shape, to enter the grooves at the top of the sarcophagus sides. The lid measured 103·7 inches long; 42 inches broad; 8·2 inches thick to the cut-out part, to suit ledge or grooves; and 9·8 inches thick elsewhere.

The temperature of the room was found to be thus, by Casella 0:—

h. m.	
At 5 0 P.M. . . .	= 75·0° Fahr.
5 10 "	= 74·5 "
5 20 "	= 74·6 "
5 30 "	= 74·6 "

ENTRANCE PASSAGE OF SECOND PYRAMID.

This entrance passage, on the northern face of the second Pyramid, is merely lined with red granite; or formed of four sets of granite plates thrust into this very rude general masonry. Of these, the plates or blocks forming the roof and floor, are 112 inches broad, and 35 to 50 inches thick; while the plates forming the walls are much smaller blocks placed in between these large flat ones to keep them apart, and are each 35 inches broad, 47·3 inches high or thick, and 41·7 inches apart the one from the other at their internal faces, to form the breadth of the passage; which passage is therefore 41·7 inches broad, and 47·3 inches high transversely to the line of the floor.

Or, by a second measure—

	Inches.
Vertical height of said passage, ...	= 52·8
Height at right angles to incline, . . .	= 47·2 and 47·4
Breadth at top, ...	= 41·7
" bottom, ...	= 41·6
Distance of beginning of roof is south of the North end of basement, ...	= 70·0
West wall end from ditto, ...	= 50·0
East wall end from ditto, ...	= 8·0

The ends of the granite blocks on the east side and below, are not quite clear of the side rubbish.

ANGLE OF INCLINATION OF ENTRANCE PASSAGE OF SECOND PYRAMID.

On April 5, the Playfair altitude-azimuth-instrument was erected over basement beginning, or north end of this passage; and a lamp-signal was placed near bottom, or south end of the same, on a heap of rubbish, about 1250 inches from the instrument, measured on the passage's incline.

Before beginning the angular measures, the lamp-signal was examined and found to be sensibly in the centre of the passage, as regards roof and floor, and east and west wall. The Playfair instrument was also found to be correct between the east and west walls of the passage, but somewhat out in height; an error not measured quite so accurately as it ought to have been, but believed to amount very nearly to 0·8-inch too high; or that the horizontal axis of the vertical circle was 27·0 inches vertically above the floor of the passage, and 25·5 inches vertically below the roof produced optically to the instrument's position.

While taking some of these measures near the top of the passage inside, there was an involuntary testimony to the angle of the floor of the passage being greater than the angle of repose for wood resting on granite, with some sand sprinkled on it too,—by the measuring-rod sliding away of its own accord, and not stopping till it had got to the bottom of the whole passage.

DIP OF ENTRANCE PASSAGE, TO THE SOUTH.

Reversals of circle.	Microscope A.	Microscope B.	Angle with index-error.	Mean angle, corrected for index-error, and position of instrument, as below.
Direct, .	26° 25′ 44″	26′ 2″	26° 25′ 55″	26° 30′ 10″
Complement,	63 30 44	31 6	63 30 55	
Direct, . .	26 25 36	25 53	26 25 46	26 30 18
Complement,	63 30 36	30 62	63 30 50	
Direct, . .	26 25 44	25 61	26 25 52	26 30 15
Complement,	63 30 41	30 62	63 30 52	
			Mean, =	26° 30′ 17″

The corrections applied for the circle being 0·8-inch too high, on a signal 1250 inches distant, being − 2′ 12″.

AZIMUTH OF ENTRANCE PASSAGE OF SECOND PYRAMID.
Set telescope to Solar focus; lamp-signal, then a disk of 5′ in diameter, but with a bisectible luminous centre. Relevelled.

Time by watch.	Object observed.	Microscope A.	Microscope B.	Mean of azimuthal microscopes.
h. m. s.				
5 53 0 P.M.	Lamp-signal, .	57° 39′ 59″	40′ 18″	57° 40′ 9″
" "	Again, reversing, .	237 40 27	40 34	237 40 30
" "	Again, reversing, .	57 39 57	40 32	57 40 14
6 14 0 "	Polaris, near W. elongation, .	236 8 24	8 30	236 8 26
6 21 30 "	Do., reversing telescope, .	56 8 12	8 42	56 8 27
6 29 7 "	Do., reversing telescope, .	236 8 48	8 53	236 8 50
6 36 0 "	Lamp-signal, .	237 40 42	40 30	237 40 36

The following being the steps of computation:—

Lamp-signal, according to telescope reversal, . . .	=	57° 40′ 9″	or 237° 40′ 30″
		and 57 40 14	237 40 40
Lamp-signal, Mean places of,	=	57° 40′ 12″	and 237° 40′ 35″
h. m. s. Polaris at 7 11 27 sid. time,		236° 8′ 26″	...
" 7 18 53 "		...	56° 8′ 27″
" 7 26 29 " .		236 8 50	add 360 0 0
Mean, = 7 18 54 sid. time, . .	=	236° 8′ 41″	or 416° 8′ 27″
Az. elongation of star West of Pole computed for time as above,	=	+ 1 37 28	+ 1 37 28
Place of Pole, or North end of Meridian, . . .	=	237° 46′ 9″	and 417° 45′ 55″
But lamp-readings + 180°, . .	=	237° 40′ 12″	and 417° 40′ 35″
Therefore difference shows Pole of Pyramid West of Pole of sky by	=	+ 5′ 57″	and + 5′ 17″
		Mean, = + 5′ 37″.	

CASING-STONE FRAGMENTS, OF SECOND PYRAMID.

This fragment was picked up amongst the rubbish of the western side of the second Pyramid, and contains portions of three worked surfaces, viz., the base, the bevelled outside, and a vertical side-joint.

The angle of the base with the bevelled surface being measured with the reversing caliper apparatus and circle on March 7, 1866, in Edinburgh, gave 52° 45′; and on May 10, 1866, without looking at the former return, 52° 52′; mean = 52° 48′.

The angle of the base with the upright side-joint surface was found = 90° 5′; and the angle of the bevelled surface with the same side-joint was found = 91° 10′; the increase of this angle over the other of 90° nearly, being very marked.

PHOTOGRAPHS.

NEGATIVES.

These photographs were all taken with a view solely to procuring aids in scientific inquiry. Hence they were numerous; often rather peculiar, both in their subjects and stations (though the camera was never *tilted*, but on the contrary levelled by spirit-level), and were always on glass plates. The impressions were moreover '*thin*,' photographically,—as rendering them more suitable to copying and enlarging by a copying camera afterwards,—and small in size, for the sake of portability; one-half of them being taken on dry plates about three inches square, with a lens 4·8 inches in focus; and the other half on wet plates, of the unusually small size of 1 inch square,[1] with a lens by Mr

[1] *i.e.*, the impressed pictures were of that size; the glass plates themselves being three inches long and one broad, or the usual-sized slides for microscopes.

Dallmeyer, of London, 1·8 inches in solar focus. These smaller pictures were the work of an apparatus specially arranged by myself for the occasion, and with a view to securing several practical advantages as detailed in vol. i. chap. xvi. of "Life and Work at the Great Pyramid" by myself; but though successful in its objects, I do not burden these pages with an account of it, as the apparatus itself was exhibited (for me) by Mr J. Nicol, and described by him extremely well, before the Edinburgh Photographical Society on May 16th, 1866; besides being reported in the *British Journal of Photography* (No. 318) for June 8th, of the same year.

POSITIVES.

From the above-mentioned negatives,—of which there are, large and small, twelve boxes,—I prepared, with a copying camera, after returning home, a considerable number of positive copies. Occasionally, of the whole subject; but usually, some special portion only, of the original negative, was picked out, and magnified to such an extent as to fill the size of glass plate selected for the positives,—and in that way, exhibit sundry features of structural importance or theoretic interest, in a more striking and easily understandable manner than would otherwise have been possible.

On this principle there were first prepared, copies of sixty subjects,—on glass plates 7·75 by 4·25 inches,—with some idea of converting them into book plates: but the expense of so doing was soon found to be vastly beyond my limited means,—however desirable it might be otherwise, for Pyramid literature to receive so large an accession of accurate pictorial representation.[1]

Afterwards a series of copies was commenced on glass plates 6·75 by 3·25 inches,—as being more suitable to optical examination, micrometric measure, and public exhibition by the oxyhydrogen light,—and carried out to the extent of 166 subjects.

Finally, a series has been commenced on glass plates suitable for the stereoscope. Only fourteen subjects of this series have been realised as yet, and it will probably not extend to more than fifty, as only a portion of the original negatives were taken appropriately in duplicate. In preparing these proofs for the stereoscope, a standard was adopted at the beginning, and will be preserved throughout, of keeping the centres of the two pictures forming a stereoscopic pair 2·7 inches apart. With this distance, no prismatic power is required with the lenses of the stereoscope to enable an average pair of eyes to produce combination of the two subjects without strain on the optic nerves; and it has been possible, therefore, to employ, in some special stereoscopes recently manufactured on purpose, simple achromatic lenses, with much greater magnifying power than is usual; and with such an increased extent of realization of the mechanics composing the scene photographed, as to induce a regret now, that *every* subject was not taken in a stereoscopic manner.[1]

Still, such as they are, with numerous imperfections on their heads, the collection has been of invaluable service to me,—in keeping up the memory of the scenes; in furthering some examinations which had only been begun when upon the spot; and in commencing others which had not attracted my attention at the time, but yet had had their elements pictured with accuracy, in views which had been photographed for some other very different purpose. This is indeed one of the special uses of photography to a scientific traveller, viz., that it maps down not only what is required and understood, but everything else far and near, whether appreciated or not; but all with equal fulness, fairness, and accuracy: wherefore all scientific men, and travellers more especially, are indebted indeed to Fox Talbot and Daguerre for this remarkable instrument of help in their investigations,—and which their fathers knew not.

Deriving so much benefit then myself from having these photographs at my hand when writing "Life and Work at the Great Pyramid," and wishing to make others partakers of the same advantage, I was much disappointed to find, as already mentioned, that the expense of preparing good and large-sized paper prints from them for publication, was too expensive for me to contemplate. But I have since then lent many of the lantern series for public exhibition by the oxyhydrogen light; so that audiences of 800 individuals and upwards at a time, have seen them, and have had each of the original 1-inch square pictures magnified so as to cover square screens from 100 to 300 inches long in the side; or nearly to fill the end of a large hall.

In this manner thirty-six different pictures were shown in Manchester by Mr Mather in November 1865, to his friends interested in the production of magnesium metal; thirty-six by Mr Joseph Sidebotham in December, to the Photographic Section of the Philosophical Society in the same city; thirty-six at the Royal Scottish Society of Arts in Edinburgh, on April 23, 1866; forty-eight to a popular meeting of the Edinburgh Photographic Society on May 7; eighteen to an ordinary meeting of the same Society on May 16; fifty to a public conversazione in the Museum of Science and Art in Edinburgh in November; fifty during the same month at a public meeting in the City Hall, Glasgow, in aid of Scottish Church extension in Alexandria, in November also; fifty at Stirling in December, and fifty at Alloa in the same month, before local scientific societies; fifty at Montrose, in aid of working men's lectures, on January 5, 1867; fifty in the City Hall, Glasgow, in aid of the Alexandrian scheme again, on

[1] Of the above collection, thirty were lent to Mr Mather, of the Magnesium Metal Company, to exhibit at his 'stall' at a conversazione of the British Association for the Promotion of Science, at Birmingham, in 1865; and the rest have been chiefly given away to private friends, interested in the subject of the Pyramid.

[1] Six of the above-mentioned stereographs were exhibited in as many stereoscopes at the meeting of the Royal Society, Edinburgh, April 2, 1866, on occasion of a notice of the recent measures at the Great Pyramid being given at the request of the Council.

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January 11; and fifty in the Queen's Rooms of the same city, on January 15; while two more exhibitions are promised in Edinburgh in March before the Philosophical Institution.

On all these occasions, excepting only the two first, the pictures were placed in charge of, and exhibited by, Messrs Nicol and Slight, of the Edinburgh Photographic Society; who performed their part most efficiently.

Since then, or in 1871 and after several more public exhibitions, all of the lantern photographs have been given away by me to parties in India, America, and in England, for the illustration of their own lectures. I close this department, therefore, with a list which—though containing merely the names and described subjects of the plates—may yet allow of an idea being formed touching the accession to the means of obtaining a knowledge of the Pyramids, furnished on this occasion by photography.

GREAT PYRAMID PHOTOGRAPHS—*in six boxes.*

1. Three Pyramids of Jeezeh from Southern uplands.
2. Two greater Pyramids of Jeezeh from Southern uplands, with Fossil Shells in foreground.
3. Fossil Shells in foreground of No. 2, magnified.
4. Fossil Shells in the more immediate foreground of No. 2, magnified.
5. Bird's-eye View of Great Pyramid and its Sepulchral Hill from an eminence Southward.
6. Great Pyramid, and East Tombs Cliff from Eastern Sand-plain.
7. Great Pyramid and Northern Causeway, from the East.
8. Great Pyramid from the East Tombs Cliff.
9. Great Pyramid from the South-east; a Snake-track in foreground.
10. Great and Second Pyramids, from the Sand-plain North-east.
11. Great Pyramid and the Ancient Rubbish-heaps from the Sand-plain to the North-east.
12. Great and Second Pyramids from Sand-plain on the North.
13. Great Pyramid and Monuments from the South-east.
14. Great Pyramid from hills to the North-west.
15. Great Pyramid, old and recent Rubbish-heaps, and distant Egyptian cultivated fields, from the North-west.
16. Ancient Rubbish-heaps North of Great Pyramid, from the North-west.
17. Masonry of Southern and part Western sides of Great Pyramid.
18. Howard Vyse's Hole, in South face of Great Pyramid.
19. North-east corner of Great Pyramid and Hill.
20. Stone Ranges of Great Pyramid at North-east corner.
21. Slickensides marked Rock, below North-east corner of Great Pyramid.
22. Stone Ranges of Great Pyramid at South-west corner.
23. Masonry of North-east corner of Great Pyramid.
24. Masonry of North-east corner of Great Pyramid, from close by.
25. Large Fragment of a Casing-stone discovered by Alec Dobree in side of Northern Rubbish-heap, February 1865.
26. Nummulite Limestone, South-west corner of Great Pyramid.
27. The North Azimuth Trench, on East side of Great Pyramid.
28. The South Azimuth Trench.
29. The North-north-east Azimuth Trench.
30. East-north-east Azimuth Trench, looking outwards, Figures seated.
31. East-north-east Azimuth Trench, looking outwards, Figures standing.
32. East-north-east Azimuth Trench, looking inwards, Figure in shade.
33. East-north-east Azimuth Trench, looking inwards, Figure in sunlight.
34. Upper part of Great Pyramid from East-north-east Azimuth Trench.
35. Heap of Rubbish on Western side of Great Pyramid, rich in fragments of ancient Casing-stones.
36. South-east corner of Great Pyramid, with parts of Second and Third Pyramids.
37. Terminal Socket of Great Pyramid Casing at North-east corner, uncovered April 1865, by Messrs Aiton and Inglis.
38. Another edition of No. 37.
39. Socket at North-east corner of Great Pyramid, and Stones of Pyramid.
40. Socket at North-west corner of Great Pyramid, with a building stone found accidentally tumbled within it.
41. South-east corner Socket of Great Pyramid.
42. South-west corner Socket of Great Pyramid.
43. Entrance into North face of Great Pyramid: oblique view.
44. Closer view of No. 43.
45. Entrance into Great Pyramid from the North.
46. Closer view of No. 45.
47. Still closer view of No. 45.
48. View on the Pyramid side, representing one flank of general hole leading down to Entrance Passage of Great Pyramid, showing the finer Mokattam stone composing its walls and floor.
49. Closer view of No. 48.
50. Straightness and fineness of the Joints on one side of the Entrance Passage into the Great Pyramid.
51. Mouth of Entrance Passage into Great Pyramid.
52. Stone above roof of Entrance Passage into Great Pyramid.
53. All the Pyramids of Jeezeh from the South-west.
54. Closer view of No. 53.
55. Still closer view of the tops in No. 53.
56. The Granite Coffer in the King's Chamber of Great Pyramid, by magnesium light.
57. Another edition of the same.
58. Do. do.
59. Do. do.
60. Do. do.
61. Upper North-east corner of Coffer, by magnesium light.
62. Broken South-east corner of Coffer, by magnesium light.
63. Fissures locally formed in South-east corner of King's Chamber, Great Pyramid, by magnesium light.
64. Broken Ramp-stone near Well-mouth, in Grand Gallery of Great Pyramid, by magnesium light.
65. Magnesium and Mealed Gunpowder in North end of Grand Gallery, Great Pyramid.
66. Base of Niche in Queen's Chamber of Great Pyramid, by magnesium light.

SECOND PYRAMID PHOTOGRAPHS—*in two boxes.*

1. Bird's-eye View of Second Pyramid from Southern hill-top.
2. Second and Third Pyramids, from the North-east.
3. Second Pyramid from the North.
4. Second Pyramid from the East-north-east.
5. Second Pyramid from the East.
6. Second Pyramid with Clouds.
7. Second Pyramid and Groups.
8. North-west corner of Second Pyramid, and Third Pyramid.
9. View Northward from North-face heap of Second Pyramid.
10. Northern Enclosure of Second Pyramid: Great Pyramid in distance.
11. Figures on North Enclosure of Second Pyramid.
12. True and False Entrances into North side of Second Pyramid.
13. Western Enclosure of Second Pyramid.
14. Hieroglyphics on West Enclosure of Second Pyramid.
15. Close view of Entrance Passage of Second Pyramid.
16. Ruined Blocks near South face of Second Pyramid.
17. Summit-casing of Second Pyramid.

THIRD PYRAMID—*one box.*

1. Third Pyramid with Clouds.
2. Third Pyramid from North-east: White Stone Coffin in foreground.

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3. Third Pyramid of Jeezeh, from the South-east. *N.B.*—Sand-ribbings in the foreground.
4. South-east corner and Southern side of Third Pyramid.
5. Fallen Blocks of Granite-casing on Southern side of Third Pyramid.
6. Fallen Blocks of Granite-casing on Western side of Third Pyramid.
7. Granite Casing-stones *in situ* on North side of Third Pyramid.

SPHINX—*one box.*

1. Head of Sphinx and Sand-hills.
2. Head of Sphinx and Figure from East Tombs.
3. Head of Sphinx and Shafre's Tomb.
4. Near view of Sphinx, Third Pyramid in distance.
5. Near view of Sphinx and Sand-hills.
6. Sphinx from the West.

KING SHAFRE'S TOMB—*two boxes.*

1. King Shafre's Tomb, Sphinx, and Great Pyramid, from South-east.
2. King Shafre's Tomb, Sphinx, and Great Pyramid, from South-east, rather nearer than in No. 1.
3. King Shafre's Tomb, and Second Pyramid.
4. Entrance Passage into King Shafre's Tomb, and Temple before Second Pyramid.
5. King Shafre's Tomb, and Third Pyramid.
6. Western Entrance into King Shafre's Tomb, nearly blocked up by running sand.
7. Entrance Passage into King Shafre's Tomb, inside.
8. Interior Colonnade of King Shafre's Tomb, No. 1.
9. Interior Colonnade of King Shafre's Tomb, No. 2.
10. Interior Colonnade of King Shafre's Tomb, No. 3.
11. Interior Colonnade of King Shafre's Tomb, No. 4.
12. Well Room in King Shafre's Tomb.
13. No. 1 of Sepulchral Chamber in King Shafre's Tomb, tested for orientation, by Sun's shadow, four minutes before noon, apparent solar time.
14. No. 2 of Sepulchral Chamber, tested as in No. 13, at noon.
15. No. 3 of Sepulchral Chamber, tested as in No. 14, four minutes after noon.
16. Red Granite and White Arragonite in King Shafre's Tomb.
17. Closer view of No. 16.

TOMBS NEAR THE PYRAMIDS—*three boxes.*

1. East Tombs Cliff from North-east.
2. East Tombs Cliff from Eastern plain.
3. Day-guards' Tent at East Tombs, No. 1.
4. Day-guards' Tent at East Tombs, No. 2.
5. Day-guards' Tent at East Tombs, No. 3.
6. Day-guards' Tent at East Tombs, No. 4.
7. Base of Cliff at East Tombs, No. 1.
8. Base of Cliff at East Tombs, No. 2.
9. Base of Cliff at East Tombs, No. 3.
10. Interior of Tombs revealed, by breaking away of front of Cliff.
11. Tombs in East Face of Pyramid Hill.
12. Hieroglyphics on a Tomb Door-jamb.
13. Tomb Door and Arab at base of Cliff at East Tombs.
14. Group of Arabs at East Tombs.
15. Tombs on East Face of Pyramid Hill.
16. Tomb Entrance on East Face of Pyramid Hill.
17. No. 16 closer.
18. Tomb Mouth with bones, at East Tombs, Pyramid Hill.
19. Part of No. 18 magnified.
20. Part of No. 18, further magnified.
21. Stone-coffin Figure on Pyramid Hill.
22. Discussion over the Stone-coffin Figure on Pyramid Hill.
23. Utterly broken Tombs on Pyramid Hill.
24. Sarcophagus at bottom of Campbell's Tomb, viewed from above.
25. Shadow of Pyramid extending over Egyptian plain.
26. Sunset Shadow of Pyramid.
27. Ruined Tombs and Hills near the Sphinx.
28. Travellers' Road up East Face of Pyramid Hill.
29. Square Sepulchral Well on Pyramid Hill.

PORTRAITS AT THE PYRAMID—*one box.*

1. View at East Tombs.
2. Ibraheem, cook, dragoman, and head-servant.
3. Ibraheem, enjoying his *otium cum dig.*, after the service is over.
4. Alee Dobree on Guard at East Tombs, and dreaming of his own house and date-trees.
5. Alee Dobree annoyed that he was not allowed to desert to a party of Travellers one day, and receive baksheesh.
6. Sheikh Abdul Samud of the northern Pyramid village.
7. Smyne, Ibraheem's help, at East Tombs.
8. Alee, the Day-guard, at East Tombs.
9. The Lamb presented by Sheikh Murri.
10. Sheikh Murri, of the southern Pyramid village.
11. Arab Group on roof of Sheikh Abdul Samud's house.
12. Madame Abdul Samud and Family.

PYRAMID MOVING FIGURES—*one box.*

1. Village with Figures on the Sands, south of Pyramid Hill.
2. The Cultivated Land of Egypt from the Sand-plain.
3. The principal Pyramid Village, and the Eastern or Mokattam Hills in the distance.
4. The Northern Pyramid Village.
5. Travellers ascending the Hill towards the Great Pyramid, accompanied by Arabs.
6. No. 5 magnified.
7. Hawk on the wing.
8. The Slave-merchant.
9. Line of Camels.
10. Travellers returning from seeing the Pyramid.
11. Distant view of Pyramids of Abooseer, south from Jeezeh.
12. The Last Man.

NUMBER OF LANTERN PHOTOGRAPHS.

Great Pyramid,	66
Second Pyramid,	17
Third Pyramid,	7
Sphinx,	6
King Shafre's Tomb,	17
Tombs near the Pyramids,	29
Portraits at the Pyramids,	12
Pyramid Moving Figures,	12
Total, =	166

PHOTOGRAPHS PREPARED IN DUPLICATE FOR THE STEREOSCOPE.

1. North-east Socket of Great Pyramid, and Corner of Masonry.
2. North-east Socket and its Excavators.
3. North-west Socket of Great Pyramid, and part of Pavement.
4. South-east Socket of Great Pyramid
5. Upper part of Great Pyramid, viewed from East-north-east Azimuth Trenches.
6. North Azimuth Trench.
7. Outer end of East-north-east Azimuth Trench.
8. Same repeated.
9. Inner end of East-north-east Azimuth Trench.
10. Coffer in King's Chamber, by magnesium light.
11. Upper North-east corner of Coffer, by magnesium light.
12. Upper South-east corner of Coffer, by magnesium light.
13. Lower part of Niche in Queen's Chamber, by magnesium light.
14. Second and Third Pyramids, with South-east corner of Great Pyramid.

Out of about fifty general subjects.

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SPECIMENS BROUGHT HOME.

THESE were almost entirely hand-specimens of the rocks; for if some of them were parts of monuments, they were ancient fragments of them only, trampled under foot for ages, and now picked up off the ground merely to illustrate the material; and show what has been brought to the region by man, and what by nature. The series was as follows :—

1. Nummulite Limestones of the Pyramid Hill.
2. Fossils of various kinds, also Gypsum, and Sand, from the neighbourhood of the Second Pyramid, Third Pyramid, and Sphinx.
3. Rock of Fossil-shells from the top of the hill to the south of the Pyramid Hill.
4. Fossil-shells, Echini, etc., from hills about three miles farther south.
5. Nineteen Fragments of Casing-stones of the Great Pyramid, picked up out of the rubbish at its foot.
6. One ditto of the Second Pyramid.
7. Cakes of Salt, nearly an inch thick, from the Horizontal Passage in the Great Pyramid.
8. Salt Incrustations and a piece of stone from a fissure in the West Wall of the Queen's Chamber.
9. Fragments of Diorite picked up on the northern edge of Pyramid Hill.
10. Fragments of Basalt, Granite, and Arragonite picked up at various parts of the Hill.
11. Fragments of Pottery, Glass-beads, etc., in the rubbish outside many Tombs.
12. Jasper-pebbles, Quartz-pebbles (loose and in their matrix rock), together with portions of Petrified Wood from the neighbouring hills of the Libyan Desert.
13. Various Insects of the Region, including a large, brown, round-bodied Beetle from the Interior of the Great Pyramid, pronounced by W. R. M'Nab, Esq., Jun., to be without eyes, and to be 'a species of *heteromera*, apparently new, but not yet sufficiently examined.'

Examples of all the geological specimens, together with sixteen of the casing-stone fragments, have been presented to the Royal Society, Edinburgh, and are deposited in their Museum.

ANALYSIS OF PYRAMID MATERIALS, by WILLIAM WALLACE, Ph.D., Chemical Laboratory, Mechanics' Institution, 38 Bath Street, Glasgow.

THE following particulars are extracted from two letters by Dr. Wallace in 1866, dated February 2 and March 29, respectively,—after receiving some Pyramid specimens from the author.

1. Granite; small fragments picked up here and there about the Pyramid hill; a darker and duller red granite than that of Scotland, but apparently much more durable under an Egyptian climate.

This appears to be a syenitic granite containing very little mica, and therefore less likely to be affected by extreme changes of temperature than such granites, as the Peterhead. I have taken the specific gravity of various specimens for comparison, using pieces of half a pound to one pound.

From Pyramid neighbourhood,	=	2·731
" Peterhead (red),	=	2·646
" Ross of Mull (bright red),	=	2·646
" Summit of Ben Cruachan (red),	=	2·612

2. Basalt, picked up loose on Pyramid hill. Specific gravity of the following specimens:—

Large-grained basalt,	=	2·843
Medium size grained basalt,	=	2·919
Fine-grained basalt,	=	2·785

I have some doubt about the fine-grained specimen being basalt, and I am not quite satisfied that any of them are basalt. The two first of the above specimens contain a mineral which appears to be glassy felspar, and I am somewhat inclined to think they are syenitic.

3. Diorite? This stone, of which you state the earliest Egyptian statue is made, appears to me to be a hornblendic quartzite. It consists chiefly of quartz (at least the pieces you sent me), but there is some hornblende and also pearl-spar, clearly pointing out, I think, that it is a metamorphic rock, rather than an igneous one. It is extremely hard—having in fact the hardness of quartz,—and I really cannot suggest the probable means by which it was fashioned into a work of art. Specific gravity = 2·755.

4. Gypsum, picked up loose near the third Pyramid. We have here two specimens, one of selenite and the other of fibrous gypsum. These both consist of hydrated sulphate of lime, $CaO, SO_3 + 2\,HO$, very pure.

5. 'Alabaster or arragonite,' from the interior of King Shafre's tomb, and the neighbourhood of the 'temple' on the east of the second Pyramid. Two pieces, one massive, the other crystalline, both consist of *carbonate of lime* without any sulphate (therefore probably arragonite, and decidedly not alabaster). The crystalline specimen is, I think, calc-spar; it is too soft for arragonite.

6. Mortar. The white mortar referred to in your note does not appear to have been sent. The pink mortar is exactly the same as that I formerly analysed (see *Chemical News* for April 21st, 1865), consisting chiefly of hydrated sulphate of lime, with a little carbonate.

7. Casing-stone fragments picked up in the rubbish around the Great Pyramid.

I have estimated with great care the specific gravity of this—allowing for absorption while in the water, etc., and find it to be 2·0907; weight of a cubic foot = 130·3 lbs. This is not lighter than I would expect such a stone to be. It is a limestone, and contains silica and alumina, 8·489; carbonate of magnesia, 5·697; the remainder, 85·83, being carbonate of lime. It contains also a minute quantity (not estimated) of oxide of iron, which accounts for the brown coating upon the exterior surface of the casing-stones.

(On being struck sharply by a hammer, a fœtid odour, like that of sulphuretted hydrogen, is elicited; as Dr. Clark noticed in 1801.—C. P. S.)

8. Stone of the walls of the Queen's chamber with saline incrustations. I selected a piece of this stone

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containing no visible salt, and found in it 5·90 per cent. of salt, chiefly common salt.

9. Nummulite rock of the Pyramid hill, nearly white.

This is a limestone containing 0·4 per cent. of common salt, and 1·95 per cent. of sulphate of lime, also 0·15 per cent. of carbonate of magnesia; ·20 per cent. of organic matter; 1·00 per cent. of silica, and 2·4 per cent. of alumina, phosphoric acid and oxide of iron. The remainder is carbonate of lime, 93·9 per cent.

The darker coloured nummulite rock contains a little more organic matter and oxide of iron.

10. Rock of hill south of Pyramid hill.

This is also a limestone containing 5·03 sulphate of lime, and 0·23 per cent. of common salt; also 2·58 carbonate of magnesia; 1·2 organic matter; 4·8 silica and clays; the remainder being carbonate of lime, with a little oxide of iron.

11. Rock near second Pyramid, in loose blocks near its foot, with special fossils.

This is also, like the others, a limestone, but contains no common salt—or only the most minute trace, and very little sulphate of lime (0·8 per cent.); silica and clay, 3·40; organic matter, 0·44; oxide of iron, phosphoric acid, and a little alumina dissolved from the clay, 4·4 per cent. The remainder is carbonate of lime, with a little carbonate of magnesia not estimated.

W. W.

PYRAMID MEASURES BY F. AYRTON, Esq.

ANGLES of inclination of corner lines of Great Pyramid, taken from the top with a theodolite:—

North-East angle of Pyramid, 1st observation,	=	41°	19′	20″
„ „ 2d „	=	41	34	40
„ „ 3d „	=	41	11	0
North-West angle, „	=	41	39	40
South-West angle, „	=	41	41	0
South-East angle, „ . . .	=	41	40	0
Mean of North-West, South-West, and South-East angles, ...	=	41°	40′	18″
Mean of the six observations, . . .	=	41°	30′	57″
Mean of second observation of North-East angle, and of North-West, South-West, and South-East angles, ...	=	41°	38′	50″

Note to the three observations of the North-east angle.—The disaccordance arises from the great irregularity of the angular projections of the stones at this corner. It is very difficult not only here, but at all the angles, to select those points down the angular line, which may best coincide with the intersections of the general planes of the adjacent sides—themselves hardly planes.

ANGLES OF FACES OF THE GREAT PYRAMID.

North face:	theodolite in the centre on top .	=	52°	42′	20″
„	theodolite in another place on top,	=	51	51	40
„	theodolite in a third place on top,	=	51	53	11
West face:	in centre of top, ...	=	54	44	20
South face:	„	=	55	58	0
East face:	„ 1st observation,	=	52	38	40
„	„ 2d „	=	54	44	40
„	„ Mean, .	=	53	46	40
	Mean of all the facial observations,	=	53°	31′	49″

(*F. Ayrton*, in October 1841.)—East face of Pyramid, probably the least worn, in its present state has angle of inclination = 53° 46′ 40″.

(*Howard Vyse*, in 1837.)—Casing-stone angle = 51° 50′ and 51° 52′.

Supposing altitude of Pyramid to have been 11-16ths of base; then angle of elevation at foot would be 53° 58′ 28″;

Or, supposing altitude of Pyramid 2-3ds of base, then angle of elevation at foot would be 53° 7′ 48″;

Or, supposing altitude of Pyramid 5-8ths of base, then angle of elevation of foot would be 51° 20′ 25″;

Or, supposing angle of elevation of foot of Pyramid to have been twice the angle of inclination of the entrance passage, and this to have been the angle given by the incline formed by two horizontal and one vertical, then such foot angle of Pyramid should be 53° 7′ 48″.

Inclination of entrance-passage by Howard Vyse,	=	26°	40′	18″
Do. observed by F. Ayrton, with a theodolite at top of passage, and a lamp placed at bottom close to subterranean chamber,	=	26	41	0
Do. computed on supposition of being the incline formed by two horizontal and one vertical, ...	=	26	33	54

INCLINATION OF GRAND GALLERY (ASCENDING PASSAGE).

Measured by M. Jomard in 1800, . . .	=	25°	55′	30″
„ Howard Vyse in 1837, . .	=	26	18	0
„ F. Ayrton in 1841—				
by measurement of a base and perpendicular, . . .	=	25	17	36
by measurement of a hypothenuse and perpendicular, .	=	25	42	58

The combinations from linear proportions are very curious, particularly the result of double the angle of the sloping passage, derived from two horizontal to one perpendicular equalling the angle of inclination of the face of a Pyramid, whose height is 2-3ds of its base (length of side of base). I am persuaded that this view of the subject deserves consideration.[1]

(Signed) F. AYRTON.

CAIRO, *4th January* 1865.

[1] The above is little more than a hastily written memorandum, or short extract, out of a lengthy paper on the subject commenced by its author many years ago, but apparently never completely finished. Yet in as far as it goes, that paper, of which I was kindly allowed a reading, shows so perfect a comprehension of all the methods and details of mathematical mensuration, and such unflinching honesty, that Pyramid literature has lost much from the memoir not having yet been published. Pyramid literature, however, I would suggest, rather than our knowledge of the ancient form of the Pyramid; for the subject having been pursued perhaps too exclusively as a problem of pure science, the author has been led into several errors of conclusion, by applying his measures to decayed and therefore altered parts of the surfaces. Hence his largely erroneous angle of the faces of the Pyramid as measured from the top; and they are self-proved to be erroneous as applied to the whole *face or side*, when the angle of such side is computed from the observed angles at the *corner-lines* of the Pyramid; where the measures, too, are more accordant with each other on account of the greater hardness of the stone there, and the less amount of degradation and disrepair.—C. P. S.

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PYRAMID MEASURES BY MESSRS AITON AND INGLIS.

THESE measures were taken by Mr Inglis in April and May 1865, at the Great Pyramid, according to instructions from Mr Aiton, his employer; and they were afterwards drawn out in Mr Aiton's office in Glasgow, I believe by Mr Inglis, in form of a series of plans and sections arranged on one long roll of tracing-cloth, —a copy of which was kindly given to me by Mr Aiton in November of the same year. The measures taken, are mostly entered on the cloth against their respective subjects, and in feet and inches, which are here reduced to inches in the following extracts, from such numerical entries:—

Whole height of Pyramid = 5481 British inches above (as I, C. P. S., suspect) the floor of the north-eastern socket; whence, reduced to the Pyramid pavement, the quantity becomes 5475 British inches.

SPECIAL HYPSOMETRIC DATA.

Names of Subjects.	From level of general alluvial plain.	From Pyramid pavement, assumed
	British inches.	
Floor of King's Chamber,	+ 3360	+ 1714
Floor of horizontal passage,	+ 2537	+ 891
Floor of Queen's Chamber,	+ 2504	+ 858
Junction of floors of entrance-passage, and of 1st ascending passage, produced,	+ 1806	+ 160
Floor of North-East socket,	+ 1640	− 6
Floor of South-East socket,	+ 1627	− 19
Sand plain, variously,	+ 346	− 1300
Alluvial plain,	0	− 1646
Well-water in alluvial plain,	− 120	− 1766

THE FIRST FIFTY COURSES FROM BASE OF PYRAMID, THEIR HEIGHT IN INCHES.

Number of course from base.	Height in inches at South-west angle of Pyramid.	Height in inches at North-east angle of Pyramid.	Number of course from base.	Height, &c. South-west.	Height, &c. North-east.
1	...	...	26	37	31
2	45	26	27	32	33
3	54	51	28	31	...
4	45	57	29	29	34
5	45	46	30	29	14
6	..	11 (+32)†	31	28	58
7	76	33	32	28	29
8	46	40	33	28	...
9	34	39	34	27	57
10	40	41	35	26	28
11	31	34	36	27 (+24)†	52
12	32	35	37	24 (+24)†	20 (+22)†
13	37	38	38	24 (+25)†	49
14	32	36	39	41	43
15	30	27	40	35	38
16	26	...	41		60
17	29	57	42	49	36
18	26	27	43	46	...
19	31	31	44	32	64
20	39	33	45	31	29
21	... (+37)†	37	46	31	32
22	37	30	47	41	41
23	30	34	48	41	36
24	33	23	49	38	36
25	33	34	50	28	36
Corrected sums,	844	871	26—50	834	855
			1—50	1678	1726
Mean,	858			1702	

Some of the courses, in the drawing from which the above numbers are derived, are entered in pairs, as the 6th and 7th of the south-western angle, and the united height given at the 7th only. Others I fear are not entered quite correctly, for, on comparing them with my own measures, and with photographs,—it would appear that course 21 of the south-west angle is missed out; course 6 of the north-east angle, is in large error; while courses 36, 37, and 38 at the south-west angle, and course 37 at the north-east angle of the Pyramid, have altogether failed to notice (so far as these small figures are concerned, for the drawing itself seems more accurate) the very remarkable and sudden increase which in reality takes place there, in the thickness of the Pyramid courses. Wherefore, correcting for these several errors, as indicated,—we have the heights of the first twenty-five and first fifty courses of the Pyramid, at the south-west and north-east angles, as given at the foot of the columns above.

In the original drawing alluded to, the figures for the heights of all the rest of the courses up to the top of the Pyramid are given,—but as the anomalies seem to increase in ascending, I have not attempted to investigate them further.

KING'S CHAMBER.

The measures by Mr Inglis of the sizes and numbers of the stones composing the walls and ceiling of this chamber, appear to have been his final and most complete work at the Great Pyramid; and do him much credit, besides giving a completer account of them than has ever been published before. The following particulars are derived from the numbers entered by him on each stone, in his large and architectural drawing:—

NORTH WALL:

Lengths of stones, from joint to joint, in the several courses.

Number of Joint.	First course, or that next floor	Second course.	Third course.	Fourth course.	Top course, or near ceiling.
	Inches.	Inches.	Inches.	Inches.	Inches.
East wall,	0·0	0·0	0·0	0·0	0·0
First from East wall,	41·5	122·4*	122·4*	36·0	190·0
Second ,,	47·4	53·4	64·0	54·0	222·0
Third ,,	40·0	53·0	44·0	54·0	...
Fourth ,,	57·5	77·0	61·4	51·0	...
Fifth ,,	63·0	62·0	51·40	79·0	...
Sixth ,,	49·9	37·9	48·50	41·9	...
Seventh ,,	42·6	...	...	46·0	..
Eighth, or West side,	55·9	...	...	...	...
Sum, or length of room on North side, =	411·8	411·7	411·7	411·9	412·0

* The same block of stone here serves or fills up both these courses, making thereby a strong roof to entrance passage.

† These two blocks in my measures are 63·6 and 36·0 inches long.—(C. P. S.)

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SOUTH WALL;

Lengths of stones, from joint to joint, in the several courses.

Number of Joint.	First course, or that next floor.	Second course.	Third course.	Fourth course.	Top course, or next ceiling.
	Inches.	Inches.	Inches.	Inches.	Inches.
East wall, ...	0·0	0·0	0·0	0·0	0·0
First from East wall, .	37·4	79·8	48·0	81·0	60·0
Second " . .	63·0	35·2	53·0	67·0	193·0
Third " . .	37·4	60·0	72·0	45·0	159·0
Fourth " . .	46·1	39·0	120·0	42·0	...
Fifth " . .	47·5	53·6	63·8	72·0	...
Sixth " . .	39·6	47·5	56·1	43·0	...
Seventh " . .	40·0	41·0	...	42·0	...
Eighth " . .	40·1	36·8	...	49·9	...
Ninth " . .	43·0	35·3	...	...	...
Tenth, or West wall, .	18·0	...	...	...	...
Sum, or length of room on the South side, =	412·1	412·0	411·9	411·9	412·0

EAST WALL;

Lengths of stones, from joint to joint, in the several courses.

Number of Joint.	First course, or that next floor.	Second course.	Third course.	Fourth course.	Top course, or next ceiling.
	Inches.	Inches.	Inches.	Inches.	Inches.
South wall, . . .	0·0	0·0	0·0	0·0	0·0
First from South wall, .	43·9	74·0	51·0	49·0	205·9
Second " . .	65·0	53·9	62·0*	36·0	...
Third " . .	44·0	72·0	33·0*	40·0	...
Fourth " . .	31·0	...	52·9	37·9	...
Fifth, or North wall, .	16·0	...	...	43·0	...
Sum, or breadth of room at East end, =	205·9	205·9	205·9	206·9	205·9

WEST WALL;

Lengths of stones, from joint to joint, in the several courses.

Number of Joint.	First course, or that next floor.	Second course.	Third course.	Fourth course.	Fifth course.
	Inches.	Inches.	Inches.	Inches.	Inches.
North wall, . . .	0·0	0·0	0·0	0·0	0·0
First from North wall, .	34·1	49·9	51·9	58·8	205·9
Second " . .	51·9	60·0	58·1	41·0	...
Third " . .	42·0	35·0	67·9	41·0	...
Fourth " . .	41·9	37·0	48·0	65·0	...
Fifth, or South wall, .	36·0	14·0	...	...	...
Sum, or breadth of room at West end, =	205·9	206·9	205·9	206·8	205·9

* These blocks appear in my measures as 58·2 and 44·8 inches respectively.—C. P. S.

CEILING.

Formed of stone beams crossing from south to north wall in single lengths.

		Inches.
Broadth at West end, ...	=	205·9
And at East end, ...	=	206·9
Length of mean, ...	=	411·8

The length being thus made up of the breadths of the several beams.

		Inches.
From West wall to first joint, ...	=	28·0
From first joint to second joint, . . .	=	60·0
From second joint to third joint, . . .	=	57·0
From third joint to fourth joint, . . .	=	46·0
From fourth joint to fifth joint, . . .	=	56·0
From fifth joint to sixth joint, ...	=	51·8
From sixth joint to seventh joint, . . .	=	58·[illegible]
From seventh joint to eighth joint, . . .	=	46·0
From eighth joint to ninth joint, . . .	=	21·0
Sum, or length of ceiling, .	=	411·8

HEIGHT OF THE WALLS IN THE KING'S CHAMBER, AND OF THE COURSES COMPOSING THEM.

Courses.	East wall. North side of.	East wall. South side of.	Courses.	West wall. North side of.	West wall. South side of.
	Inches	Inches		Inches	Inches
First, or floor course,	41·6	41·6	First, or floor course,	40·9	40·9
Second course, . .	48·0	48·0	Second course, . .	46·1	46·1
Third course, . .	46·0	46·8	Third course, . .	45·6	45·6
Fourth course, . .	48·0	47·2	Fourth course, . .	48·0	48·0
Fifth, or top course,	47·0	47·0	Fifth, or top course,	48·0	48·0
Sum, or height of King's Chamber,	230·6	230·6	Sum, or height of King's Chamber,	228·6	228·6

Courses.	North wall. West end of.	North wall. East end of.	Courses.	South wall. West end of.	South wall. East end of.
	Inches	Inches		Inches	Inches
First, or floor course,	41·6	42·0	First, or floor course,	41·6	41·6
Second course, .	47·2	$\frac{94·2}{2}$	Second course, . .	46·8	46·0
Third course, .	46·8	$\frac{94·2}{2}$	Third course, . .	47·0	48·0
Fourth course, . .	46·0	46·8	Fourth course, . .	46·8	46·8
Fifth, or top course,	43·5	46·1	Fifth, or top course,	47·4	45·6
Sum, or height of King's Chamber,	229·1	229·1	Sum, or height of King's Chamber,	229·2	229·2

FRENCH MEASURE OF THE GREAT PYRAMID'S HEIGHT, IN 1800 A.D.

THE French *savants* of 1799 appear to have paid special attention to linear measures, particularly those of the Pyramid's height, both trigonometrically and by means of measuring each successive step, with a rectangular measuring-staff appropriately arranged. This latter mode of mensuration was performed firstly by MM. Jomard and Cecile before, and secondly by M. Le Père and Colonel Coutelle after, the discovery of the 'sockets;' hence the measures of the former are deficient at the starting-point, and I have replaced their imperfect idea of the two first courses at the ground in the following table by the same quantity derived from

the second pair of observers. This pair seem to have begun their measures, not from the bed or floor of the socket, but from its inner edge, rather more than eight inches above the same, and therefore practically identical with the 'pavement' surface which I have assumed as the datum-plane of Great Pyramid hypsometry.

From the *pavement* then below, the French step-measures extend up to the topmost stones on the summit of the Pyramid; but as these topmost stones consist of two small fragments only of courses, one on the other,—I have thought that M. Nouet the astronomer had more reason in terminating his trigonometrical measures for height, at the 'platform' of the summit. Hence to make the points measured between, similar in all cases, I have cut off the two uppermost registered courses, which are the fragments before alluded to, from both the sets of step-measures,—which then terminate above, also with the *platform*.

This platform is easily recognisable as being about 400 inches long in the sides, and being the 202d course from the pavement upwards. The eminent French authorities indeed mark it the 201st; but then they make only one course of really the two lower ones, without apparently having good reason. They have, for instance, actually entered them in two several portions, as in the column of Le Père and Coutelle, but yet have summed them up together as a single course only,—*because* the upper one is part of the solid and standing rock of the hill, and they imagined that it indicated a high base to have originally extended all round the Pyramid. But Colonel Howard Vyse has since shown that no such high base ever existed; and my own photographs of the north-east corner of the Pyramid show a second higher ledge of the same standing rock further *inside* than the shelf above alluded to; and in such a position of level with regard to the courses of masonry proper,—some of which are outside it,—as to show that it does not rule their number or heights. In addition to which, other photographs show, by the remains of coarse mortar outside the lower ledge of rock, that there were stones of Pyramid masonry courses outside that also, rendering its service in the structure solely to supply some of the *interior* bulk of building.

Hence there appears abundant reason, from the Pyramid itself, for giving force to the apparent separation which the French philosophers did see, in the whole height of their nominal lowest course; and for calling it now with certainty, 'two.' Whence also, the height from the pavement below to the platform above,—which in their own immortal work appears as 201 courses,—is represented in the following English edition of the same as 202 courses; though with the same total height.

But while modern photographs lead me to make this correction on the work of those eminent *savants*, they have led me also to bear testimony to the remarkable accuracy of their measures of heights of the courses, for a great extent up the Pyramid's side; and it would be most satisfactory to their *excelsior* spirits, could they behold those apparent anomalies which they chronicled so faithfully at the 36th, 37th, and other courses, completely borne out in one of the recent Nature-painted views of the Pyramid. In fact, their measures of the courses of the Pyramid are extraordinarily good, and stand far before all others which have ever been made, either before or since, my own included: all honour to them therefore. And yet, for practical purposes, it is necessary also to mention that in the pages of their measures in *Antiquités Memoires*, vol. i., there are no less than four errors of a whole metre, or near it, each in Le Père and Coutelle's measures as given in metres; errors, however, not of theirs in the measures, but of M. Jomard in reducing the old French feet and inches actually employed to metres; or perhaps they are only printer's errors, except that two of them are repeated in the large engraved section of the Pyramid at Plate 14 of their largest sized plates (vol. v.); and the only published Pyramid section I know of, which has attempted to give pictorially the true height of every course.

The errors alluded to are contained in pages 533 and 534 of *Antiquités Memoires*, vol. i.; and the corrections required to the figures printed there, are—

Courses as now numbered from the pavement upwards.

No. 87.	+ 1·0	metres.
" 101.	− 1·0	"
" 170.	− 0·9	"
And 186 and 187 combined.	+ 1·0	"

In my own reductions of Le Père and Coutelle's measures from metres to British inches, I have taken the liberty of dividing the several cases which he gives of only one measure for two small steps,—so that *every* step may be represented by figures; a proceeding which does not alter the whole height, while it makes errors of the above quoted nature easier to detect. At the same time, having only carried such reduction to the nearest inch, at every one of 202 steps, there arises a small difference between M. Jomard's and my summing up; and as he went to many more decimal places than I did, I prefer to take his final sums for the whole height; wherefore these are given at the end of the columns.

Touching the degree of trust to be placed on these measures, it will be interesting to all who respect the name of M. Fourier, to know, that he considered the mode employed,—that is, by the separate observations of 202 steps,—and gave it as his view of the probable error of the final result, as dependent on the error likely to be committed at each step,—that it would be bounded by *the known limit of error of one measure, multiplied by the square root (not the simple number) of the number of similar operations.*

Whence M. Jomard concludes the limits of error of his own observations dependent on having made each measure to a closeness of '6 lines' only, to be under 8 inches. But Le Père and Coutelle, he thinks, should

FRENCH MEASURES OF GREAT PYRAMID'S VERTICAL HEIGHT.

Number of course from Pavement upwards	As measured by MM. Jomard and Cecile			As measured by M. Le Père and Colonel Coutelle		
	Br. in.	Br. in.	Br. in.	Br. in.	Br. in.	Br. in.
1	[illegible]			[illegible]		
2	[illegible]			[illegible]		
3	[illegible]			[illegible]		
4	[illegible]			[illegible]		
5	[illegible]			[illegible]		
6	[illegible]			[illegible]		
7	[illegible]			[illegible]		
8	[illegible]			[illegible]		
9	[illegible]			[illegible]		
10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	[illegible]			[illegible]		
12	[illegible]			[illegible]		
13	[illegible]			[illegible]		
14	[illegible]			[illegible]		
15	[illegible]			[illegible]		
16	[illegible]			[illegible]		
17	[illegible]			[illegible]		
18	[illegible]			[illegible]		
19	[illegible]			[illegible]		
20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	[illegible]			[illegible]		
22	[illegible]			[illegible]		
23	[illegible]			[illegible]		
24	[illegible]			[illegible]		
25	[illegible]			[illegible]		
26	[illegible]			[illegible]		
27	[illegible]			[illegible]		
28	[illegible]			[illegible]		
29	[illegible]			[illegible]		
30	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	[illegible]			[illegible]		
32	[illegible]			[illegible]		
33	[illegible]			[illegible]		
34	[illegible]			[illegible]		
35	[illegible]			[illegible]		
36	[illegible]			[illegible]		
37	[illegible]			[illegible]		
38	[illegible]			[illegible]		
39	[illegible]			[illegible]		
40	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
41	[illegible]			[illegible]		
42	[illegible]			[illegible]		
43	[illegible]			[illegible]		
44	[illegible]			[illegible]		
45	[illegible]			[illegible]		
46	[illegible]			[illegible]		
47	[illegible]			[illegible]		
48	[illegible]			[illegible]		
49	[illegible]			[illegible]		
50	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
51	[illegible]			[illegible]		
52	[illegible]			[illegible]		
53	[illegible]			[illegible]		
54	[illegible]			[illegible]		
55	[illegible]			[illegible]		
56	[illegible]			[illegible]		
57	[illegible]			[illegible]		
58	[illegible]			[illegible]		
59	[illegible]			[illegible]		
60	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
61	25			27		
62	25			27		
63	28			23		
64	26			24		
65	27			24		
66	26			24		
67	28			26		
68	30			33		
69	32			31		
70	30	278	2211	32	279	2237

Number of course from Pavement upwards	As measured by MM. Jomard and Cecile			As measured by M. Le Père and Colonel Coutelle		
	Br. in.	Br. in.	Br. in.	Br. in.	Br. in.	Br. in.
71	[illegible]			[illegible]		
72	[illegible]			[illegible]		
73	[illegible]			[illegible]		
74	[illegible]			[illegible]		
75	[illegible]			[illegible]		
76	[illegible]			[illegible]		
77	[illegible]			[illegible]		
78	[illegible]			[illegible]		
79	[illegible]			[illegible]		
80	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
81	[illegible]			[illegible]		
82	[illegible]			[illegible]		
83	[illegible]			[illegible]		
84	[illegible]			[illegible]		
85	[illegible]			[illegible]		
86	[illegible]			[illegible]		
87	[illegible]			[illegible]		
88	[illegible]			[illegible]		
89	[illegible]			[illegible]		
90	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
91	[illegible]			[illegible]		
92	[illegible]			[illegible]		
93	[illegible]			[illegible]		
94	[illegible]			[illegible]		
95	[illegible]			[illegible]		
96	[illegible]			[illegible]		
97	[illegible]			[illegible]		
98	[illegible]			[illegible]		
99	[illegible]			[illegible]		
100	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
101	[illegible]			[illegible]		
102	[illegible]			[illegible]		
103	[illegible]			[illegible]		
104	[illegible]			[illegible]		
105	[illegible]			[illegible]		
106	[illegible]			[illegible]		
107	[illegible]			[illegible]		
108	[illegible]			[illegible]		
109	[illegible]			[illegible]		
110	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
111	[illegible]			[illegible]		
112	[illegible]			[illegible]		
113	[illegible]			[illegible]		
114	[illegible]			[illegible]		
115	[illegible]			[illegible]		
116	[illegible]			[illegible]		
117	[illegible]			[illegible]		
118	[illegible]			[illegible]		
119	[illegible]			[illegible]		
120	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
121	[illegible]			[illegible]		
122	[illegible]			[illegible]		
123	[illegible]			[illegible]		
124	[illegible]			[illegible]		
125	[illegible]			[illegible]		
126	[illegible]			[illegible]		
127	[illegible]			[illegible]		
128	[illegible]			[illegible]		
129	[illegible]			[illegible]		
130	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
131	26			24		
132	25			24		
133	24			24		
134	22			22		
135	22			22		
136	21			22		
137	24			22		
138	27			22		
139	27			26		
140	26	219	4074	26	234	4474

Number of course from Pavement upwards	As measured by MM. Jomard and Cecile			As measured by M. Le Père and Colonel Coutelle		
	Br. in.	Br. in.	Br. in.	Br. in.	Br. in.	Br. in.
141	25			22		
142	21			22		
143	22			22		
144	22			22		
145	30			20		
146	23			20		
147	24			23		
148	21			22		
149	21			22		
150	21	229	4303	22	213	4379
151	22			25		
152	23			25		
153	24			23		
154	22			23		
155	23			21		
156	22			21		
157	[illegible]			21		
158	[illegible]			21		
159	[illegible]			23		
160	[illegible]	225	4528	23	222	4631
161	21			21		
162	21			22		
163	21			22		
164	21			24		
165	21			24		
166	21			21		
167	21			21		
168	20			21		
169	20			19		
170	[illegible]	[illegible]	[illegible]	19	214	4745
171	21			20		
172	20			20		
173	21			20		
174	20			21		
175	20			20		
176	21			20		
177	21			20		
178	22			20		
179	22			20		
180	21	[illegible]	[illegible]	20	200	4945
181	25			23		
182	21			23		
183	21			24		
184	21			23		
185	22			22		
186	22			21		
187	21			21		
188	[illegible]			20		
189	21			20		
190	21	220	5175	20	222	5167
191	20			20		
192	20			21		
193	20			21		
194	21			20		
195	21			20		
196	21			22		
197	21			22		
198	21			22		
199	21			23		
200	21	214	5389	21	212	5379
201	22			23		
202	22	45		23	46	
			5434			5424
Fragmentary.						
203	21			22		
204	21	42		22	44	

have smaller limits of error, as they apparently measured to single lines.

If, however, in one place, from two step measures and one trigonometrical measure, the French *savant* thus gives the vertical height from pavement to platform at summit, or 202 courses of the Pyramid

= 5437 British inches,

we should caution our readers that he sometimes cuts off from this, the 72 inches of the first two courses from the ground; but on the erroneous theoretical idea we have already exposed, of the inclined surface of the ancient Pyramid having only begun at that upper level.

Summed up in metres in the French work, and reduced to British inches here—

MM. Jomard and Cecile. .	=	136·80 metres.	
+ Neglected portion at bottom,	=	·77 ,,	
— two top fragmentary courses,	=	1·08 ,,	
		137·49 ,,	= 5488 Br. in.
Le Père and Colonel Coutelle,	=	139·17 metres.	
— two fragments, . . .	=	1·13 ,,	
		138·04 ,,	= 5435 Br. in.

M. Nouet, astronomer, measures height of 'Platform' at top of Pyramid, and finds it from ground = 137·53 m. = 5415 in.; but his 'ground' is supposed to be 28 inches above the socket-edge or pavement *afterwards* discovered, therefore 5415 + 28 = 5443 British inches.

SOCKETS, DISCOVERY OF.

The discovery by the French *savants* of two, out of the four, corner sockets of the Great Pyramid, was so entirely original with them, and has proved of such infinite importance since in all studies of the Pyramid, either in theory or practice, that the two following extracts chronicling the circumstances may not be considered out of place:—

'In the month Pluviôse, year 9 (January 1801), 'MM. Le Père and Coutelle, in excavating at the foot 'of the Pyramid, towards the two angles of the northern 'side, found an esplanade which is the ancient "*sol*" 'or ground-plot of the monument; *i.e.*, of the pedestal, '"*socle*," on which it reposes. Upon this esplanade, 'and in front of the apparent extremities (of the build'ing) they further discovered two sockets, "*encastrements*," almost square, cut in the rock. They recog'nised that these sockets were well on a level, and 'their angles sharp, and perfectly rectangular. It was 'from one angle to the other, and on the outside, that 'they took the measure of the base, and on the line 'which joins them, with a minute attention, and most 'exact methods:—finding its length 716 feet 6 inches 'French, or 232·747 metres,' = 9163·45 British inches. —M. JOMARD, *Antiquités Memoires*, p. 513, vol. i.

'While we were occupied with these operations, 'other workmen laboured at the north-east angle of 'this (the Great) Pyramid to discover its true base. 'At two metres and three-quarters, about, of distance 'from the nucleus or of the present base, we found the 'part of the rock in which the stone of the angle of 'the casing had been inlaid "*incrustée*." The rock is 'still perfectly flattened "*dressé*" and cut out to the 'depth of 207 millimetres, over a space of 3·9 by 3·4 'metres.'—M. COUTELLE, *Antiquités Memoires*, p. 46, vol. ii.

ENGRAVINGS.

The great French work on Egypt is very notable for the large number of engravings of atlas size which it contains, touching the Pyramids of Jeezeh, there called usually of Memphis. In execution, these engravings are magnificent, forming such examples of the 'line manner,' or true work of the graver, as the present generation seldom sees. Some faults have however crept in, as thus:—In Plate 9, vol. v. of *Antiquités Planches* of the smaller size of atlas, there is a grand view of the Great and second Pyramids from the north,—with a sun, just below the horizon, radiating from thence magnificently over all the sky,—but in an azimuth which is due *south*, or where the Egypt of our days most assuredly never sees the sun at so low an altitude.

In Plate 14 of vol. v. of the larger size of atlas, there is a section of the Great Pyramid, very recommendable as the only one known, at least by me, where every course of the masonry has been put in by measure; yet is the interior unfortunately faulty. Thus

(1.) the entrance passage is made to terminate below, at its junction with the first ascending passage.

(2.) The portcullis of the said first ascending passage is made to have slipped down *into the entrance passage*, thereby blocking it up.

(3.) The well is far from complete, besides being made too straight and vertical as far as represented; and its entrance hole from Grand Gallery is of a wrong shape; *i.e.*, square and door-like, whereas its top, is really inclined suitably with the ramp-lines, so that it would be concealed were the ramp completed, or the ancient stone, now broken out, put back into its place.

(4.) The floors of the Queen's chamber and horizontal passage are erroneously represented all on one level, *i.e.*, not showing the deep step towards the southern end.

(5.) The Grand Gallery roof is made with distinct inverted steps, but having only *thirty* of them, instead of thirty-six.

(6.) The *south-east* socket of the Pyramid is shown as well as the north-east; but the only other socket which the French *savants* say that they discovered, besides the north-east one, was that at the north-west corner. Since then, viz., in 1865, Messrs Aiton and Inglis found by excavating that a south-east socket really existed. But, that the French had not seen it, is pretty plain from their having drawn it of the *same* size as the north-east socket, while its meridian length is really only one-third of that.

In another Plate, the faults of not showing the

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granite leaf of the antechamber to be composed of two pieces, and one of them garnished with a certain projecting portion, the "boss," since found to be of the invaluable theoretical significance,—are to be noticed; also, and still more importantly, the total neglect of the *ledge* on the coffer in the King's chamber. But many other features are well given, and with splendid treatment as works of the draughtsman.

HYPSOMETRICAL REFERENCE OF THE GREAT PYRAMID, BY M. JOMARD, IN 'DESCRIPTION DE L'ÉGYPTE,' 'ANTIQUITÉS DESCRIPTIONS,' VOL. II. p. 62.

'Les opérations du nivellement des deux mers, l'un 'des ouvrages les plus importans des ingénieurs de 'l'expédition Française, ont été rattachées, d'après une 'idée très-judicieuse de M. Le Père ainé, directeur de 'ce travail, au sol de la Grande Pyramide, qui servira 'ainsi de repère invariable à toutes les observations 'future sur le niveau des crues du Nil, sur l'exhaussement du lit du fleuve et celui de la vallée. Ce point 'de départ est le sol de l'encastrement du socle de la 'Pyramide, à l'angle nord-est : il est élevé de 42·88 'mètres' (1688 British inches) 'au-dessus de la coudée 'supérieure du meqyâs ou nilomètre de Roudah : de '42 mètres' (1654 British inches) 'au-dessus de la 'vallée et des hautes eaux moyennes (de 1798 à 1801); 'et de 49·97 mètres' (1967 British inches) 'au-'dessus des basses eaux moyennes pour la même 'époque. Ces donnés précieuses ne doivent pas être 'perdues de vue.'

Compare vol. iii. of "Life and Work," p. 77 : adding to the numbers above given, six inches, to reduce them from the floor of the north-east socket, to the upper surface of the general pavement surrounding the Great Pyramid. See also p. P 47.

PYRAMID MEASURES BY COLONEL HOWARD VYSE AND MR PERRING.

No series of authorities on Pyramid measurement would be complete, without the combined work of the two authors above mentioned. We have indeed been obliged to point out in more than one instance, such as that of the height of the present Pyramid, that their numbers are by no means always so correct as they might be; but we believe them to be perfectly honest, as published by Colonel Howard Vyse, either in his octavo volumes of *Operations carried on at the Pyramids of Jeezeh in* 1837, or his folio atlas of *The Pyramids of Jeezeh*, published soon after. They furnish besides, the greatest body of measures of different portions of the Pyramid ever collected by any single party, and contain some items with regard to which there are no other authorities. The publication, too, since then, by Chevalier Bunsen, of some of these measures, as unfortunately altered afterwards by Mr Perring to suit a theoretical view of his own, makes a republication of the original numbers important for the credit both of Mr Perring and Colonel Howard Vyse, as *measurers*; and their numbers of feet and inches being here reduced to inches only, renders their results more immediately comparable with our own.

WHOLE PYRAMID.

	British inches.
Ancient base-side, length of,	= 9168·
Present base-side,	= 8952·
Ancient height, vertical, computed by angle 51° 50′,	= 5769·
Present height, vertical,	= 5409·
Ancient height, inclined,	= 7382·
Present height, inclined,	= 6819·

Angle of casing-stones, between 51° 50′, and 51° 52′ + x seconds.

ENTRANCE.

Vertical height from base to bottom of entrance,	= 588·
Distance of the centre of this entrance eastward from the centre of the Pyramid,	= 294·
Breadth of passage,	= 41·5
Height of passage, perpendicular to incline,	= 47·0

Angle of this entrance passage, = 26° 41′.

LENGTH OF ENTRANCE PASSAGE.

From present dilapidated beginning of roof to the junction with first ascending passage,	= 756·
Thence to the forced passage,	= 214·
Thence to the well,	= 2582·
Thence to the subterranean horizontal passage,	= 296·
Or, present length inclined, of whole entrance passage,	= 3850·
But, ancient length must be increased for an extent of more than 276 inches broken away at the beginning with the exterior of the building, and is therefore more nearly,	= 4126·

SUBTERRANEAN HORIZONTAL PASSAGE.

Breadth,	= 33·
Height,	= 36·
Length,	= 324·

SUBTERRANEAN CHAMBER.

Cut out of rock of hill *in situ*,

Length, East to West,	= 552·
Breadth, North to South,	= 325·
Ceiling flat, floor uneven from the excavation not having been completed: depth from ceiling to deepest part of floor,	= 138·
Northern side distant from the central vertical axis of the Pyramid, northwards,	= 96·
Eastern side is distant from the same axis eastwards,	= 311·
Depth of ceiling below base of Pyramid,	= 1088·

SUBTERRANEAN PASSAGE TO THE SOUTHWARD.

Length,	= 633·
Breadth,	= 31·
Height,	= 29·

SUBTERRANEAN SHAFT OR HALF-WELL.

This was situated near the eastern end of this chamber, in the deepest part of the floor, so far as excavated; it was described as very rude, evidently unfinished, and about in depth,	= 150·

See further particulars of it at the end of the list.

FIRST ASCENDING PASSAGE.

Length, from lower end of granite portcullis blocks to the Grand Gallery, including the space of 177 inches at present occupied by said blocks,	= 1492·
Height, perpendicular to incline,	= 47·
Breadth,	= 41·5

Angle of inclination = 26° 18′.

GRAND GALLERY, OR SECOND ASCENDING PASSAGE.

	British inches.
Height, vertical,	= 336·
Length from North end to step at South end,	= 1810·
Further length from step to passage leading to King's chamber,	= 62·
Total length of Grand Gallery,	= 1872·
Breadth between ramps,	= 41·5
Breadth of each ramp,	= 20·6
Height (vertical) of ramp,	= 24·

ANTECHAMBER NEIGHBOURHOOD.

Length of passage, horizontal, leading through antechamber, from Grand Gallery into King's Chamber,	= 265·
Height of said passage,	= 44·
Breadth of ditto,	= 41·5
Height of portcullis,	= 169.

KING'S CHAMBER.

Length from East to West,	= 411·
Breadth from North to South,	= 205·
Height, floor to ceiling,	= 229·
Height from base of Pyramid to floor of chamber,	= 1665·
Northern side distant from centre of Pyramid to southward,	= 195·
Eastern side distant from same eastwards,	= 315·

There is supposed to be a difference of a quarter of an inch in one of the sides of the chamber, which is probably an inflection in the stone.

NORTHERN AND SOUTHERN AIR-CHANNELS.

Inclined height of upper ends from base of Pyramid,	= 8972·
Distance of lower ends from East side of King's Chamber, westwards,	= 97·
Height of same from floor of chamber,	= 36·
Dimensions of same, in height,	= 6·
" breadth,	= 8·
Length of northern air-channel from King's Chamber to outward part of Pyramid,	= 2796·
Dimensions of average section, in height,	= 9·5
" " breadth,	= 9·
Length of southern air-channel from King's Chamber to outward part of Pyramid,	= 2091·
Dimensions of average section, height,	= 9·1
" " breadth,	= 8·9

The mouth of the southern air-channel has been forced and enlarged; but was probably originally of the same size as the other.

SARCOPHAGUS OR 'COFFER' IN THE KING'S CHAMBER.

Outside of coffer, length,	= 90·5
" breadth,	= 39·
" height,	= 41·
Inside of coffer, length,	= 78·
" breadth,	= 26·5
" depth,	= 34·5

CHAMBERS OF CONSTRUCTION.

Length of passage leading to Davison's Chamber out of south-east corner of top of Grand Gallery,	= 297·

DAVISON'S CHAMBER, DISCOVERED BY MR. DAVISON IN 1764.

Length, East to West,	= 460·
Breadth, North to South,	= 205·
Height varies between	= 30· / 42·

WELLINGTON'S CHAMBER, DISCOVERED BY COL. HOWARD VYSE IN 1837.

	British inches.
Length, East to West,	= 462·
Breadth, North to South,	= 204·
Height, varies between	= 26· / 44·

NELSON'S CHAMBER, DISCOVERED BY COL. HOWARD VYSE IN 1837.

Length, East to West,	= 465·
Breadth, North to South,	= 200·
Height, varies between	= 24· / 58·

ARBUTHNOT'S CHAMBER, DISCOVERED BY COL. HOWARD VYSE IN 1837.

Length from East to West,	= 448·
Breadth from North to South,	= 196·
Height, varies between	= 16· / 53·

CAMPBELL'S CHAMBER, DISCOVERED BY COL. HOWARD VYSE IN 1837.

Length from East to West,	= 454·
Breadth from North to South,	= 246·
Height, in centre of angular roof, varies between	= 70· / 103·
Whole height from floor of King's Chamber to roof of Campbell's Chamber,	= 881·

PASSAGE LEADING TO QUEEN'S CHAMBER.

Length from North end of Grand Gallery to beginning of low passage,	= 199·
Length from the low passage to the step,	= 1104·
Length from step to Queen's Chamber,	= 215·
Total length of this passage from North wall of Grand Gallery,	= 1518·
Breadth of passage,	= 41·5
Height of passage, in 'low' part before the step,	= 46·
" beyond the 'step,'	= 68·

QUEEN'S CHAMBER.

Length, East to West,	= 225·
Breadth, North to South,	= 204·
Height to commencement of roof,	= 177·
Extreme height to upper angle of roof,	= 243·
Recess in eastern side, width at bottom,	= 61·
" whole height,	= 183·
" depth to forced passage,	= 41·
" width at top,	= 28·6?
" distance of central vertical axis from same feature of East wall of room,	= 26·0?
Distance from western side of chamber to centre of Pyramid,	= 90·
Distance from southern side of chamber to centre of Pyramid,	= [illegible]
Whole height from base of Pyramid to floor of this chamber,	= 806·

WELL; i.e., Upper or Dry Well.

Depth of upper and vertical part of shaft,	= 318·
Thence to grotto,	- 289·
From grotto to bottom,	= 1596·
Total depth,	= 2298·
Square in section, with length of one side,	= 28·
Height of top of natural rock above base of Pyramid,	= 264·

Note.—As the mouth of the well has been forced through the masonry, Mr Perring supposes it was not part of the original design; but, if the upper inclined passage was filled with

solid masonry, it was the only way in which the workmen could go out after they had closed up the passage from the upper end of it.

The platform on the top of the Pyramid is about 396 inches square; above this are four or five stones belonging to the upper layers.

CONCLUDED AREA AND WEIGHT.

		Acres	roods	poles
Former extent of base,	=	13	1	22
Present extent of base,	=	12	3	8

Supposing the natural rock to average 96 inches over the extent of base, and deducting the space occupied by chambers and passages, the original quantity of masonry would be, in cubic feet, ... = 89,028,000

Or in tons, ... = 6,848,000

And the present quantity, in cubic feet, . = 82,111,000

And in tons, ... = 6,316,000

The space occupied by chambers and passages being only 56,000 cubic feet, or 1-1590th of the whole mass.

MISCELLANEOUS DETAILS.

		British inches.
Pavement at centre of North front, width,	=	402·
Thickness of its stones,	=	21·
Width of same pavement at excavations near middle of each half of North front,	=	from 132· to 144·
Horizontal distance of outer surface of bevelled casing stones at foot of North front, from the rectangular masonry behind them,	=	about 108·

MR PERRING'S ACCOUNT OF THE SHAFT SUNK IN THE SUBTERRANEOUS CHAMBER, DURING THE YEAR 1838.

Base of Great Pyramid above Nile in 1838 A.D.,	=	1647·
Rise of Nile bed in 4000 years, estimated	=	120·
Sum, or base above Nile in 2162 B.C.	=	1767·
Base of Great Pyramid to ceiling of subterraneous chamber,	=	1088·
Height of said apartment,	=	138·
Probable height of any undiscovered chamber below,	=	120·
		1346·
Balance to former sum,	=	421·
		1767·

Shaft in floor of subterraneous room was sunk from that depth, or 1226 inches below base, 432 inches further, or to 1658 inches below base, without meeting anything else than solid and dry rock.

(To have met with *wet* rock, this shaft ought to have been driven fully 120 inches further down, or to 1780 inches below the Pyramid pavement. See Hypsometric table in p. 82 of "Life and Work," vol. 3.—C. P. S.)

PYRAMID MEASURES BY MR E. W. LANE.

THE unrivalled accuracy and loving conscientiousness with which the talented Mr E. W. Lane described 'the Modern Egyptians,' leaves amongst further regrets for his too early death, that his researches among the monuments of ancient Egypt are fewer than they would otherwise probably have been. The only fragments of his labours in this direction, that I am acquainted with, are all of a high order, viz :—

First, A large view of the Great Pyramid from its north-eastern corner, contained in Colonel Howard Vyse's atlas of the Jeezeh Pyramids.

Second, His arrangement of the ancient Egyptian dynasties and interpretation of the traditions of Osiris, contained in the article 'Egypt,' by his nephew, in the last edition of the *Encyclopædia Britannica*.

And, *third*, some measures of the Great Pyramid which appear in his sister, Mrs Poole's, *Englishwoman in Egypt*, published between 1842–45.

These measures I have extracted as follows, thinking it only due to his excellence, skill, and general accuracy that he should appear among Great Pyramid authorities; though, had he lived longer, and published the measures himself, he might have revised some few of the numbers first.

GREAT PYRAMID GENERALLY.

		British inches
Height of Pyramid base above plain, approximately,	=	1800·
Present height of Pyramid from base to summit,	=	5472·
Number of courses of masonry, base to summit, = 203		
Length of side of platform at summit,	=	396·
(Do. in time of Pliny (70 A.D.), = 170 British inches.)		
(Do. in time of Diodorus Siculus (60 B.C.), = 108 „)		
Present length of every or any side of the base,	=	8790·

N.B.—A socket 144 inches square, alluded to as being 144 inches *outside* the parts above measured, and showing the ancient size of the Pyramid.

ENTRANCE PASSAGE.

'Over' the sixteenth course from bottom, or high,	=	600·
Distant eastward of middle vertical plane of North side, more than,	=	240·
Angle of dip southward, = 26° 30′.		
Height of, at right angles to incline,	=	48·
Width,	=	42·
Granite portcullis block, distance of from beginning of roof of entrance passage,	=	840·
Almamoon's hole, distant from the same,	=	960·

N.B.—This passage, so far, well built, of good Mokattam stone, and with fine joints.

FIRST ASCENDING PASSAGE.

Length of, from South, or upper end of portcullis,	=	1808·
Add projection of into floor of Grand Gallery,	=	18·
Total length from above, to above-mentioned points,	=	1826·

N.B.—Sides and roofing very rough.

QUEEN'S CHAMBER.

Visible beginning of passage leading to, from projection of floor of first ascending passage,	=	188·
Length thence to deeper part,	=	1116·
Further length of that deeper part,	=	218·
Total length from North wall of Grand Gallery,	=	1530·
Height of deeper part,	=	67·
Width of same,	=	41·
Height of shallower part,	=	47·
Width of same,	=	41·
Queen's Chamber, length,	=	228·
„ breadth,	=	204·
„ height to commencement of roof,	=	162·
„ height to point of roof,	=	246·

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GRAND GALLERY.

		British inches
Height of grand step therein near North end,	=	87·
Same, including a small cut-off above,	=	95·
Angle of ascent, = 26° 30′.		
Ramps, square in section, length of one side,	=	20·5
Width of Grand Gallery above the ramps,	=	82·
Whole length of Grand Gallery,	=	1896·
Upper and southern step, horizontal length, to be taken off above,	=	61·
" its height,	=	35·

ANTECHAMBER AND PASSAGES.

Horizontal passage from Grand Gallery to antechamber—		
Length,	=	63·
Height,	=	43·5
Width,	=	41·5
Antechamber, length,	=	116·
" breadth near top, nearly	=	63·
Granite leaf, in two pieces, each in thickness,	=	15·
Horizontal passage, antechamber to King's chamber—		
Length,	=	101·
Height,	=	43·5
Breadth,	=	41·5
Total length, Grand Gallery to King's Chamber,	=	270·

KING'S CHAMBER.

Length of,	=	412·5
Breadth of,	=	206·25
Height of,	=	230·25
Number of courses in walls of, = 6 (?)		

WELL AND SUBTERRANEAN CHAMBER.

The lower parts of both the well and the entrance passage leading to the subterranean chamber, are characteristically described for their *irregularities*.

NOTICES OF THE PROBABLE TOMBS OF KING CHEOPS, *ALIAS* SUPHIS OR SHOFO OF THE GREAT PYRAMID AND OF KING SHAFRE OF THE SECOND PYRAMID.

Of the two kings who built the Great and the Second Pyramids, the ancient authors generally relate that they were not buried in their respective Pyramids, but in some secret places known only to a few friends; and because the said kings had made themselves so hateful to their subjects by their oppressions, their impiety, and especially by stopping the religious services of Egypt, that their bodies would assuredly have been dragged from their tombs by the enraged people, if the localities had been known. In addition to which Herodotus relates that the place of Cheops' burial was "in a subterranean island surrounded by the waters of the Nile."

He mentions the hydraulic condition twice over, once locating the island under the Great Pyramid, and once in some other part of the hill whereon that building stands. The account is therefore none of the clearest, and being merely derived from traditional hearsay *may* not have much truth in it; besides which, so far as it goes, though tending to confirm the statement that Cheops was not buried in the Great Pyramid, yet it rather takes away from both the *reason* given and the allegation of a secret and clandestine burial.

That *reason* however has received another and severer critical examination by the late John Taylor, who pronounced that the character of the accusations against the two kings went to prove, not their impiety or atheism, but the *difference* of their religious views from those of the Egyptian people. Now the views of the latter inclined vehemently to the very worst form of animal idolatry; any attempt therefore to stop such practices may quite probably have arisen from a knowledge on the part of the kings of a higher and purer religion; and this is even rendered more than probable by the equal absence both of idolatrous emblems and self-glorification on every part of the finished walls of their Pyramids, whether within or without. In seeking therefore for the tombs of these two kings, we are helping to rescue from oblivion certainly not the two worst, and perhaps the two best, men who ever lived in Egypt, and nearly the earliest also.

Now only about a dozen years ago a most astonishing discovery was made by Mariette Bey, who exposed by excavations a few yards to the S. East of the Sphinx a marvellous temple-tomb, composed as to its interior of polished red-granite and white arragonite. "The temple of the Sphinx," the oldest of all idols, M. Renan called it; clenching his theory, by saying that the azimuthally inclined entrance passage of the building led precisely to the Sphinx, though the walls of the whole building did not.

I am compelled to dispute M. Renan's conclusions,

1st, because there is no idolatrous carving or inscription about the building, only plain smooth surfaces of square columns, and smooth rectangular walls astronomically oriented.

2nd, because one of my photographs shows that the entrance passage does not point to any part of the Sphinx, but to the opening of the so-called temple (ruined Cyclopean walls) on the East front of the Second Pyramid; and

3rd, because there is a sepulchral well in the East chambers of the regally grand majestic tomb, and in that well Mariette Bey discovered a life-sized statue of King Shafre in hard Diorite.

In the map therefore, on Plate 18, I have had no hesitation in calling the structure "King Shafre's Tomb;" and a very magnificent structure it is, well worthy too of being better represented by descriptions, measures, drawings and photographs than it has yet been to the modern world.

About an equal distance to the N. West of the Sphinx, may be seen another large tomb in the Map of Plate 18.

This tomb was cleared of sand by Col. Howard Vyse in 1837, and has been well described by him in his several Pyramid publications. He called it Campbell's tomb, after the English Consul General of that day, and he found in it a small central building at a

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great depth below the surface of the ground, with various sarcophagi, little green idols, and certain hieroglyphic inscriptions. These being interpreted by Dr Birch set forth that the principal man buried there, was one Phaishaf, 'attached to the Royal Scribes of the 'Viands, in the South quarter of Memphis,' under the latest dynasty of the old Egyptians or about 570 B.C.

Yet all these sarcophagi and inscriptions may be subsequent introductions; for nothing was so frequent in the time of decadence of old Egypt, as breaking open old tombs and using them over again. And the work of the tomb itself is far too grand and massive for a clerk of the viands to be likely to execute on his own account. In fact, next to Shafre's tomb and the Pyramids themselves, it is the grandest thing on the hill of Jeezeh both in nobility of design, and success of execution, as a pure geometrical cutting into solid and compact rock. It has been reserved, however, for a recent pseudonymous author, Karl von Rikart, to suggest that the deep trench surrounding the central excavation, combined with the porous nature of the Rock which allows the infiltration of the Nile water freely, realizes in practical effect, the hydraulics of the description of Cheops' tomb, as given by Herodotus; viz. 'a 'subterranean chamber surrounded by the water of the 'Nile.'

The conditions are indeed there very remarkably fulfilled in the present day. I doubt indeed whether they were so in the days of King Cheops, as the Nile is supposed to have been then at a lower level; but I have added Plate 52 as a graphical representation of the state of the case, and now append some numerical measures chiefly from Howard Vyse's volumes: reducing his measures always to British inches.

CENTRAL EXCAVATION OF THE SUPPOSED CHEOPS' TOMB.

	Inches.
Breadth, East to West,	366
Length, North to South,	815
Depth,	642

SURROUNDING EXCAVATION.

Mean width,	64
Length and breadth at inside,	687
Length and breadth at outside,	816
Depth,	876

INTERVENING BREADTH OF ROCK

Between outside of central excavation, and inside of surrounding excavation.

East side,	114
North,	114
West,	192
South,	261

HYPSOMETRIC PARTICULARS.

All given in terms of depression in inches below level of Great Pyramid pavement.

	British inches.
Top of supposed Cheops' tomb at its North-East angle,	917
" " " South-West angle,	976
Mean floor of subterranean Chamber of Great Pyramid,	1208
Top of well at Palm Trees,	1511
Top of Vyse's "Sweet-water well,"	1520
Sandy plain at base of Great Pyramid hill, variously stated as from and without doubt different in different places,	= 1380 to 1460; 1400 to 1500; 1500 to 1586
Bottom of Central hollow of supposed Cheops' Tomb,	= 1571
High Nile level of 1838,	1647
High Nile level of 1837,	1665
Level of water in Sweet-water well,	1755
Level of water at Palm-tree well,	1774
" in Shaft No. 3, in June 1837,	1755
and in October 1838,	1779
Level of water in Vyse's Shaft, No. 2,	1788
" in well of King Shafre's tomb, from 1766 to	1800
Bottom of surrounding excavation in supposed Cheops' Tomb; 1st statement,	1798
" second statement,	1834
Level of water in Vyse's shaft No. 1 (season not mentioned),	1848
Low Nile Level in 1837,	1896
Low Nile Level in 1838,	1945
Mediterranean Sea,	2580

GREAVES' STANDARD OF MEASURE.

PROFESSOR GREAVES of Oxford (A.D. 1638) was so eminently in advance of his age in metrological researches, that much interest has been expressed at various times, and for various purposes, to learn,—if it were possible,—the length of the measuring-rod which he used, in terms of a modern known standard. But the rod itself having been lost,—though the case which once held it, is said to be preserved still in Oxford,—the comparison has not been possible directly; indirectly, however, Greaves' intentional method by successive measures of stated parts of the Great Pyramid, can be brought into use through the agency of our own measures.

His principle he describes in vol. i. of his *Pyramidographia*, by Dr Birch, page 126; and at page 346, towards the end of his Denarius dissertation, he supplies the following data for his own measures:—

(1.) 'The first and most easterly of the three great 'Pyramids of Egypt hath on the north side a square 'descent; when you are entered a little past the mouth 'of it, there is a joint or line, made by the meeting of 'two smooth and polished stones over your head, which 'are parallel to those under your feet; the breadth at 'that joint or line is 3·463 of the English feet;' or × 12 = 41·56 Greaves' inches.

(2.) 'Within the Pyramid, and about the midst of 'it, there is a fair room or chamber, the top of which 'is flat, and covered with nine massy stones; in it 'there stands a hollow tomb of one entire marble 'stone; the length of the south side of this room, at 'the joint or line where the first and second rows of 'stone meet, is 34·380 feet;' or × 12 = 412·56 Greaves' inches.

(3.) 'The breadth of west side of the same room, 'at the joint or line where the first and second row 'of stones meet, is 17·190 feet;' or × 12 = 206·28 Greaves' inches.

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(4.) 'The hollow, or inner part of the marble tomb 'near the top, on the west side of it, is in length 6·488 'feet:' or × 12 = 77·86 Greaves' inches.

(5.) 'The hollow or inner part of the marble tomb 'near the top of it, on the north side, is in breadth '2·218 feet;' or × 12 = 26·62 Greaves' inches.

Now the first of these specified places may be identified in our table of heights and breadths of entrance passage, page 36, = 41·50 inches.

The second, or length of the south side of the King's chamber, 42 inches above the floor, is from our measure on the floor of 412·60, reduced for the angular inclination of the walls = 412·56 inches.

The third, or west side of the room, similarly corrected, is 206·26 inches. (See p. P 37.)

The fourth, or inside length of the coffer near the top on the west side, = 78·03 inches. (See p. P 43.)

And the fifth, or inside breadth of the coffer near the top on the north side, = 26·68 inches.

Hence we have the following double series:—

	Greaves. Inches.		C. Piazzi Smyth. Inches.
(1.)	41·56	=	41·50
(2.)	412·56	=	412·56
(3.)	206·28	=	206·26
(4.)	77·86	=	78·03
(5.)	26·62	=	26·68
Sum,	764·88	=	765·03

One would think from the above numbers that four and five had been measured with a different rod from the others either by Professor Greaves or myself; but I am not aware of any error of the sort in my own observations; and the coffer, which they belong to, has always been a puzzling object to passing travellers. There seems, therefore, at present to be no opportunity of doing anything else than taking the sum of each series; and thereupon declaring, that 764·88 of Greaves' inches are equal to 765·03 of the present British imperial inches; or in fact that Greaves' measuring-rod was based on a standard foot much closer to the truth, than most persons have hitherto deemed possible or likely.

LENGTH OF THE CUBIT OF MEMPHIS.

FROM a comparison of Professor Greaves' measures of various parts of the Great Pyramid, Sir Isaac Newton deduced a value in British inches for the length of the cubit of the ancient city of Memphis, or of ancient Egypt generally; and arrived thereby at a quantity very fairly close to that which has been subsequently determined on perfectly different grounds by later investigators: few of whom, however, appear to expect a precision of more than two or three tenths of an inch.

The method on which Sir Isaac Newton proceeded was based on the assumption,—that if the Great Pyramid was built by Egyptian workmen, there was a probability that even numbers of whole lengths of their favourite linear standard—or the Memphian cubit,—would be employed by them, for practical convenience, in laying off the chief lengths, breadths, and heights throughout the structure.

This principle seems to contain *some* truth, but is not always to be implicitly depended on; for many circumstances connected with either use or fine art, may require fractional, and very intricate fractional, portions of a cubit to be introduced into some parts of a building, even *because* whole cubits are introduced into another. Further also, if the length of the part measured be very great, and the difficulties of measurement notable,—as in the sides of the base of the entire Pyramid,—the errors of observation may exceed the length of any possible fraction of the cubit; and some number of whole cubits can then be placed by the modern observer with perfect ease, but not propriety, within the limits of his several observations, and claimed as being the length originally intended by the ancient builder.

To keep therefore on the safe side, I have confined myself, in a similar inquiry based on my own measures, to interior features of the Pyramid only; and to cases in which, both the whole lengths were small, as of 2, 4, or more cubits,—if cubits existed at all; and the error of observation was probably under a tenth of an inch.

The final mean of the whole set of determinations obtained in this manner = 20·73 British inches, as the length of the cubit employed by the masons engaged in the Great Pyramid building, or, that of the ancient city of Memphis; and which cubit need not, and actually is not, by any means the same as the cubit typified in the more important and very unexpectedly symbolised metrological system of the Great Pyramid.

The above length for the Memphis and Great Pyramid cubit comes very near the mean of Sir Isaac Newton's, Sir Gardner Wilkinson's, Mr Perring's and other determinations—hitherto considered, = 20·70 inches; but the nearness is accidental only, for my individual results are found anywhere between 20·10 and 21·35 British inches; and some of theirs are almost as wide. The best of them, indeed, are usually between 20·6 and 20·8 British inches; thus a preserved cubit recently found in pulling down a building at Thebes, supposed to date about 1000 B.C., is mentioned by Sir Gardner Wilkinson, as equal to two ordinary cubits, each of 20·65 inches long; and he makes the cubit-marks of the Elephantine Nilometer, dating from the Roman Emperors, = 20·63 inches, but mentions a French determination of the same = 20·73 inches; and likewise notices a stone with 10-14ths of a cubic built into the wall at Elephantine, and part apparently of an older Nilometer, where the cubit was = 21·0 British inches. The cubit of the Nilometer at Cairo is given by the same author at 21·4 English inches, but attributed to no earlier authority than an Arab Caliph about A.D. 860.

The differences amongst my own results are partly due to dilapidation effects, but are partly dependent

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also on variations introduced by the builders, or actual errors in their work: as when the breadth of the Grand Gallery varies in different parts of its length, irregularly, anywhere between 81·7 and 83·0 inches. Another source of error is more uncertain, as where two parts taken by Sir Isaac Newton and most other writers as certainly intended to be the same in measure, are found to be positively different. An example of this is presented in the breadth and height of the ramps, assumed by Sir Isaac to be equal, but found by my measures to be (on the mean of a number of places, but nowhere very uniformly), nearly an inch different, without a probable uncertainty of more than 1-10th of an inch. (See p. P 31.)

All the results are given without exception in the table below; and may probably be held to indicate, that it was no principal object with the architect of the Great Pyramid, to memorialize the exact length of the cubit of Memphis in that manner; while they may further show, that the cubit of Memphis is an entirely different length from, and is never to be confounded with, the cubit of the symbolical Great Pyramid system, memorialised in the Queen's Chamber and the "Granite "Leaf" of the Ante-chamber (Capt. Tracey, R.A. and St John Day, C.E.), and = 25·025 British inches nearly.

Parts of the Great Pyramid measured.	Measured length in British inches.	Assumed to contain of cubits of Memphis the following numbers.	Consequent length of the ancient cubit of Memphis in British inches.
Breadth of entrance passage, .	41·5	2	20·75
Breadth of North doorway in Grand Gallery, . . .	42·2	2	21·10
Breadth of Grand Gallery, . .	81·7 83·0	4	20·43 20·75
Breadth between ramps, . .	40·8 42·7	2	20·40 21·35
Breadth of South doorway of Grand Gallery, . . .	41·4	2	20·70
Mean breadth of East and West ramps, ...	20·1	1	20·10
Mean height at right angles to incline of do., do., . . .	21·0	1	21·00
King's Chamber, length, . .	412·6	20	20·63
" breadth, . .	206·3	10	20·63
" height, . .	230·1	11	20·91
Mean, . . .	...	...	20·73

SIR ISAAC NEWTON'S DISSERTATION ON CUBITS.

'A DISSERTATION upon the *Sacred Cubit* of the *Jews* '(Hebrews rather, or Israelites) and the *Cubits* of the 'several Nations; in which, from the Dimensions 'of the greatest *Egyptian* Pyramid, as taken by Mr. '*John Greaves*, the antient Cubit of *Memphis* is 'determined.

'*Translated from the* Latin *of Sir* Isaac Newton, *not* '*yet published*.' And now extracted from 'MISCELLANEOUS WORKS of Mr. *John Greaves*, Professor of 'Astronomy in the University of *Oxford*: many of 'which are now first published. Vol. II. Published by THOMAS BIRCH, M.A., F.R.S., and Member of the Society of Antiquaries, London.—1737.'

'To the description of the Temple belongs the knowledge of the *Sacred Cubit;* to the understanding of 'which, the knowledge of the Cubits of the different 'nations will be conducive.

'The *Roman* and *Greek Cubits*[1] were a Foot and a 'half, and, like the *Sacred Cubit*, consisted of six '*Palms*, and twenty-four *Digits*. For the *Roman* and '*Greek* Feet contain'd four *Palms*, and sixteen *Digits*. 'The *Roman* Foot was likewise divided into twelve '*Unciæ* or *Pollices*, and was equal to $\frac{967}{1000}$ of the '*English* Foot, as Mr. *Greaves*, who examined diligently the antient monuments in *Italy*, and consider'd 'the arguments of former writers, as *Philander*, *Agricola*, *Pætus*, *Villalpandus*, *Snellius*, and others, has 'determined with the greatest accuracy of all other 'authors. The *Roman Cubit* is therefore $1\frac{4505}{10000}$ of 'the *English Foot*.

'Of the *Greek Feet*, the *Attic* was most eminent. 'Modern writers represent it as equal to a *Roman* Foot 'and a *Semuncia* of that Foot; because the *Greek* '*Stadium* consisted of six hundred *Greek Feet;* and a '*Roman Milliare*, or Mile, of a thousand of the greater '*Roman Passus*, or five thousand Feet; and antiently 'eight *Greek Stadia* were equal to a *Roman Milliare*. 'But it is probable, that the nearest round numbers 'were used here; and if we say, that the antients 'sometimes made the *Stadium* equal to an hundred 'and twenty-five *Passus*, that proportion might be 'deduced, not from a comparison of the Feet with one 'another, but from the foregoing proportion of the '*Stadium* to the *Milliare*, express'd very near the 'truth in round numbers. This conjecture is confirm'd by reflecting, that *Polybius*, cited by *Strabo*, 'receded from this vulgar computation, and represented 'the *Milliare* as equal to 8 *Stadia*, and one-third 'part; by which means the *Attic* Foot will be equal 'to the *Roman*. The former computation is favour'd 'by the *Ptolemaic* Foot, which is equal to a *Roman* 'Foot and a *Semuncia*, if the latter Foot was deriv'd 'from the *Attic*. The latter computation is countenanced by the Porphyry pillar dug up at *Rome*, with 'this inscription, ΠΟΔ. Θ. that is, *nine Feet;* for the 'Foot of this pillar, as measured by *Philander*, exceeded 'the *Roman* foot only a ninth part of an *Uncia*. This 'difference shews the Foot not to be *Roman*, and the 'inscription proves it to be the *Greek* Foot. But 'whether it was the *Attic* Foot, let others determine. 'Till something more certain shall appear, we shall 'assume nothing, but that the *Attic* Foot was neither

1 'Vitruvius lib. 3. Hero in Isagoge. Hesychius. Suidas 'in vocibus [illegible] & [illegible]. Columella lib. 5, de Re Rustica, 'qui cubitum nominat *sesquipedem*, quasi *pedis & semis*. Vid. & 'Frontin. de Limit. Agrorum; & Isidor. Hispalensem, lib. 15, 'c. 15. Authors are agreed upon these Cubits, amongst whom '*Agricola* and Mr *Greaves* are especially to be consulted.'

'less than the *Roman*, nor greater than the *Roman* 'above a *Semuncia*. This being granted, we shall 'have the magnitude of the *Attic* Cubit to pretty great 'exactness.

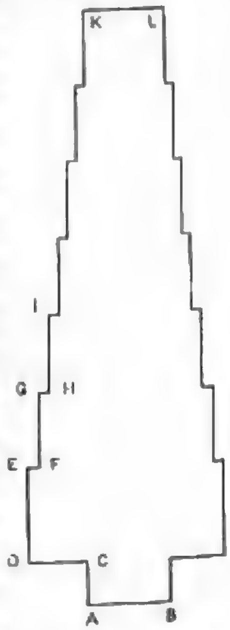
'The *Derah*, or *Arabian* Cubit[1] consisted in like 'manner of six *Palms*, and 24 digits; and, in my 'opinion, was very near equal to the *Roman* or *Attic* 'Cubit. For it was a fifth part of the Royal Cubit of '*Ægypt*; that is, as will immediately be shewn, four 'simple Cubits of *Ægypt*, which are now equal to five '*Roman* ones.

'Three *Arabian* Miles were likewise equal to the '*Persian Parasanga*, that is, to thirty *Attic Stadia*, 'and consisted of 1000 *Orgyiæ*, or *Arabian* Paces, 'that is, 4000 Cubits; by which means the *Arabian* 'Cubit will be equal to the *Attic*. For the wandering '*Arabians* at first serving in war under the *Romans*, and 'afterwards founding an empire in *Syria*, learned from 'the conquered people the money, weights, and mea-'sures of the *Romans* and *Greeks*. We shall pass over 'this Cubit, therefore, and proceed to those which are 'more antient.

'From the Pyramids of *Ægypt* accurately measured 'by Mr. *John Greaves*, I collect the length of the 'antient *Cubit* of *Memphis* in this manner. The side 'of the first Pyramid was 693 *English* feet. It is very 'probable, that at first the measure of it was deter-'mined by some round number of *Ægyptian* Cubits. '*Ibn Abd Alhokm*, quoted by Mr *Greaves*, tells us, that 'the measure of each side was an 100 Royal Cubits of 'the antient times. But it is probable, that the *Ægyp-tians* learned, from the *Orgyiæ* of the *Greeks*, their 'measure of four Cubits of *Memphis*, and gave it the 'name of the *Royal Cubit*. Thus the side of the 'Pyramid will be 400 simple Cubits, or four *Arouræ*; 'and the *Cubit* of *Memphis* will be equal to $1\frac{719}{1000}$ of 'the *English* Foot.

'That the Pyramid was built by the Cubit of this 'magnitude, appears from several dimensions of it. 'The square passage leading into it of polished marble 'was in breadth and height $3\frac{463}{1000}$ of the *English* 'Foot; that is, two of the above-mentioned *Cubits* of '*Memphis*. And of the same breadth and height were 'the four other galleries. In the middle of the Pyra-'mid was a chamber most exquisitely form'd of polished 'marble, containing the monument of the king. The 'length of this chamber was $34\frac{38}{100}$ *English* Feet, and 'the breadth $17\frac{19}{100}$; that is, it was 20 Cubits long, 'and 10 Cubits broad, the Cubit being supposed to be '$1\frac{719}{1000}$ of the *English* Foot. The difference between 'this measure and the former is $\frac{333}{10000}$, or one-thirtieth 'of a Foot, that is, about one-seventh of an Inch; an 'error of no importance, if we consider the much 'greater irregularities observ'd by Mr *Greaves* in the 'best buildings of the *Romans*. The roof of this 'chamber consisted of nine oblong and parallel stones; 'the seven middle ones of which were of the same 'breadth, but the two outermost were less by half in 'breadth than the rest; and the breadth of them 'all together was equal to the length of the chamber, 'or to 20 Cubits; so that the length of the middle 'stones was two Cubits and an half. The marble gal-'lery, which led into this chamber, was six feet and '87 of 100 parts of a foot; that is, 4 Cubits of the 'chamber, in breadth. In the middle of this gallery 'was a way of polished marble, $3\frac{435}{1000}$ feet; that is, 2 'Cubits broad; and on both sides the way were two 'banks, like benches, of polish'd marble likewise, '$1\frac{717}{1000}$ feet broad, and $1\frac{717}{1000}$ feet deep; that is, in 'breadth and depth one Cubit. Who will therefore 'imagine, that so many dimensions not at all depend-'ing upon each other, should correspond by mere chance 'with the length of the Cubit assigned by us!

'Besides, the division of this Cubit into 6 *Palms* is 'evident from the dimensions of the Pyramid. For 'the height of the gallery, 'according to Mr *Greaves*, 'was about 26 Feet, that is, '15 Cubits. Subtract the 'height of the benches, and 'the remaining height will 'be 14 Cubits. This was 'divided into seven parts, 'according to the 7 ranges 'of the stones in the walls 'of the gallery; and every 'upper range projected over 'the lower about three 'inches, as is represented 'in the annexed figure; 'where $A B$ expresses the 'breadth of the way, $A C D$ 'the bank or bench, $D E$ 'the height of the first 'range of stone, $E F$ the 'projection of the second 'range, and $F G$ the height 'of it; $G H$ the projection 'of the third range, and $H I$ 'the height of it; and so on 'to the roof $K L$, which an-'swers to the way $A B$. The 'height therefore of every 'range of stone was two 'Cubits; and the 6 projections $E F$, $G H$, &c., an-'swering to one Cubit, were *Palmares*.



'There are likewise, in the king's monument above 'mentioned, specimens of the division of the Cubit. 'For since the Cubit $D C$ is $1\frac{719}{1000}$ of a Foot, and con-'sequently the *Palm* $\frac{2865}{10000}$ of a Foot, ten *Palms* will be '$2\frac{865}{1000}$ Feet; seven *Palms* and three Digits will be '$2\frac{2204}{10000}$ Feet; and twenty-five *Palms* and two Digits 'will be $7\frac{3058}{10000}$ Feet. Now Mr *Greaves* found the 'measure of the height of the monument within to be '$2\frac{860}{1000}$ Feet, the breadth within to be $2\frac{218}{1000}$ Feet, 'and the length of the exterior superficies to be 7 Feet,

[1] '*Abulfedæ* Geograph. Arab. and *Muhammed Ibn Masoud*, quoted by Mr *Greaves*.'

'3 Inches and an half; that is $7\frac{888}{1000}$ Feet. The 'height of the monument within was therefore 10 '*Palms*, the breadth within 7 *Palms* and 3 Digits, 'and the length of the exterior superficies 25 *Palms* 'and 3 Digits, without any sensible error. The height 'and breadth of the exterior superficies was 3 Feet, 3 'Inches and 3 quarters; that is, 11 *Palms* and 2 Digits 'and a quarter, if Mr *Greaves* has been sufficiently 'exact in setting down the dimensions of it.

'There are also other specimens of this Cubit; as 'particularly that the whole length of that gallery, 'with the hypothenuse of a rectangular triangle, whose 'base was 15 Feet, and height about 5 or 6, or per-'haps 7 Feet, being measured by a cord, was 154 'Feet. Subtract the hypothenuse, and there will 'remain the length of the gallery, 138 Feet; that is, '20 times the breadth, or 20 *Royal Cubits*. Two 'other galleries were likewise measured, and found to 'be in length 110 Feet, that is, sixteen *Royal Cubits*; 'and another Chamber was in breadth about 17 Feet, 'that is, 10 Cubits; and an *Anticamerella*, or *Anti-'closet*, was in length 7 Feet, in breadth about $3\frac{1}{2}$ Feet; 'that is, 4 Cubits long, and about 2 Cubits broad. 'And it is my opinion, that the Pyramid was built 'throughout after the measure of this Cubit.

'If any person shall hereafter exhibit in this 'manner the dimensions of the remains of the old 'buildings of the *Babylonians* and other nations, it 'will not be difficult to determine from thence the 'ancient Cubits of those countries. In the meantime 'I shall produce one instance, which occurs, as a 'specimen of this calculation. Mr *Purchas*[1] informs 'us, that there is still extant between the ancient '*Babylon* and *Bagdad*, a vast rude structure of brick; 'the bricks of which his friend Mr *Allen* found 'to be one Foot long, eight Inches broad, and six 'Inches thick; he means Inches of the *English* 'Foot. These proportions show, that the bricks were 'regularly formed, and consequently, that in the making 'of them regard was had to some particular measure 'used by the *Babylonians*, which was of great use, to 'enable the workmen from the number of bricks to 'determine immediately the dimensions of the walls 'with respect to the length, breadth, and thickness, 'and *vice versâ* to compute the number of the bricks 'necessary to the building of the wall agreed upon. 'As the *Babylonians* therefore measured their build-'ings by Cubits, it follows, that the bricks according 'to their length, breadth, and thickness, conjunctly 'must compose the measure of the Cubit. Now two 'bricks according to their length, three according to 'their breadth, and four according to their thickness, 'form the same measure; and consequently the mea-'sure is that of a Cubit. A *Babylonian* Cubit is there-'fore equal to two *English* Feet; and the component 'parts intimate the division of this Cubit into six '*Palms*, so that the dimensions of the bricks may be 'express'd in round numbers of *Palms*; the length 'by 3 *Palms*, the breadth by 2, and the thickness by '$1\frac{1}{3}$. This Cubit may perhaps be determined here-'after with more exactness by a greater variety of 'observations.

'The magnitude of the *Persian Cubit*, I think, 'may be determin'd from their *Parasanga*. For it is 'to be considered, that the greater measures, which 'exceeded the human members, us'd to be deduced from 'the lesser by multiplication, in which multiplica-'tion the *denary* and sometimes the *binary* numbers 'were employed. Thus the *Roman*[1] *Calamus* or '*Pertica* consisted of ten Feet; the *Scrupulum* of ten 'Feet in length, and ten in breadth; the *Versus* 'of an hundred Feet in length, and an hundred in 'breadth; the *Clima* (a measure deriv'd from the '*Greeks*, as the name shows) of ten *Orgyiæ* in length, 'and ten in breadth; the *Actus* of two *Climata* in 'length, and two in breadth; the *Jugerum* of two 'square *Actus* in length; the *Decumanus* of ten *Actus* 'in length, and ten in breadth; the *Centuria* of ten '*Decumani* in length, and ten in breadth, within *Italy*; 'but without, of twice that number; the *Saltus* of an 'hundred *Decumani* in length, and an hundred in 'breadth; the *Milliare*, or Mile, of a thousand *Passus* 'in length; and the *Iter Diei*, or *Day's Journey*, of 'twice ten *Milliaria*. The *Greek* Reed, called Ἄκαινα, 'consisted of ten Feet; the *Clima* of ten Feet in 'length, and ten in breadth; the *Plethrum* of an 'hundred Feet in length and breadth; the *Stadium* of 'an hundred *Orgyiæ* in length; and the *Iter Diei*, 'according to *Herodotus*, of two hundred *Stadia*. And 'in the province of *Cyrene*, in the lands which *Ptolemy* 'a *Greek* king of *Ægypt* left to the *Roman* people, 'the[2] *Plinthides* consisted of fifty *Limites* in length, 'and fifty in breadth; and each side of those square '*Limites* were ten *Stadia*.

'It appears also from several instances, that as the 'western nations proceeded from the Foot multiplied 'by ten, so the eastern did from the Cubit multiplied 'in the same manner. Thus among the *Jews*, a nation 'us'd to the feeding of cattle, the *Kibrath Terræ* or 'pasture-land, sufficient, I think, for a flock under one 'shepherd, was determined by the space of a thousand 'Cubits, and a Sabbath-day's Journey by that of two 'thousand Cubits. And thus among the *Ægyptians*, 'the *Aroura* consisted of an hundred Cubits in length, 'and an hundred in breadth. And because the '*Ægyptians* every year after the inundation of the '*Nile* divided their lands into *Arouræ*, the Reed ought, 'for the greater expedition in measuring, to consist of 'ten Cubits, that by the repetition of ten they might 'make an *Aroura*. And for the like reason the greater 'measures, into which those lands were divided, ought 'to consist of tens and hundreds of *Arouræ*.

'The greater measures therefore of the ancient nations 'consisted of the round numbers of those lesser mea-

[1] 'Pilgrimage, par. I. lib. 1. c. 11.'

[1] 'Vide Hygin. de Limitib. constituend. & Siculum Flaccum 'de Condit. Agrorum.'

[2] 'Hygin. de Limit. constit.'

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'sures from which they were derived; and consequently 'the *Schœni* of the *Ægyptians* and other eastern nations, 'and the *Parasangœ* of the *Persians*, consisted of round 'numbers of Cubits. Now the least *Schœnus* of the '*Ægyptians*, by the testimony of *Artemidorus* and '*Strabo*, was equal to thirty *Greek Stadia*; and the '*Parasanga*, by the testimony of *Herodotus*, *Xenophon*, '*Hesychius*, *Suidas Agathias*, and others cited by '*Strabo*, was likewise equal to thirty *Stadia*; and the 'round number of Cubits, to which so many *Stadia* 'were equal, are ten thousand. That *Schœnus* there'fore consisted of 10,000 *Cubits* of *Memphis*, and the '*Parasanga* of as many *Persian* Cubits; and 10,000 'of the Cubits of both kinds were equal to 30 *Stadia*.

'The calculation of the *Ægyptian* Cubit is con'firmed by the present Cubit of the *Ægyptians* used 'in the city of *Grand Cairo*, which Mr *Greaves* found 'to be $1\frac{824}{1000}$ of the *English* Foot. This Cubit ap'proaches nearer to the ancient Cubit of *Memphis*, 'than to the lesser Cubits of the *Greeks*, *Romans*, and '*Arabians*, who reigned in *Ægypt*; and therefore it 'seems to be derived from that of *Memphis*. But it is 'greater than that. And what wonder is it, that a 'measure should be somewhat increased in the space 'of above 3000 years? The measures of Feet and 'Cubits now far exceed the proportion of human 'members; and yet Mr *Greaves* shows from the '*Ægyptian* monuments, that the human stature was 'the same above 3000 years ago, as it is now. The 'measures therefore are increased, the reasons of which 'may be assigned. The instruments, which used to be 'preserved as standards of measures, by contracting 'rust are increased. Iron beaten by the hammer may 'insensibly relax in a long space of time. Artificers 'likewise, in making instruments, chuse to err in the 'excess of the materials; and when by filing they 'attain any measure, which they think sufficient, they 'stop, knowing that they can soon correct that little 'excess by filing, if their master should complain of it; 'but that they cannot remedy a defect. Let us suppose 'therefore, that all measures have increased by degrees, 'especially in the first ages, when less care was taken 'of them; and the Cubit of *Memphis*, about the time 'of the *Roman* Empire, will be a mean between the 'ancient and the modern Cubit, but will approach 'nearer to the modern. The ancient Cubit was $1\frac{719}{1000}$ 'of the *English* Foot, and the modern is $1\frac{824}{1000}$ of the '*English* Foot. The mean therefore between them 'will be about $1\frac{76}{100}$, or $1\frac{77}{100}$ of a Foot. Now 10,000 'of such mean or middle Cubits make, as they ought, 'about 30 *Attic Stadia*.

'The former calculation of the *Persian* Cubit is con'firmed by the *Arish*, or modern *Persian* Cubit, which '(being doubled, as I suppose) Mr *Greaves* found by 'measuring to be $3\frac{197}{1000}$ of the *English* foot. If half 'of this was the simple Cubit, and it increased from 'the time of the *Greek* and *Roman* Empire after the 'manner of the Cubit of *Memphis*, it must antiently 'have been about $1\frac{55}{100}$ of the *English* Foot. *Hero*'*dotus* stiles this Cubit, compared with the Cubits of 'the *Greeks* and neighbouring nations, the *middling* '*Cubit*; and tells us, that the royal *Persian* Cubit 'was larger than it by 3 Digits. If we understand by 'them, Digits of the middling Cubit, which was more 'known to the *Greeks*, the royal Cubit will be to the 'middling Cubit, as 27 to 24; and since the middling 'Cubit is $1\frac{55}{100}$ of the *English* Foot, the royal Cubit 'will be about $1\frac{744}{1000}\frac{1}{2}$. Now 10000 of such Cubits 'make, as they ought, about 30 *Attic Stadia*.

'The preceding computations are likewise confirm'd 'by a certain general reason, by comparing the Feet 'and Cubits used at first in every nation according to 'the proportion of the members of a man, from which 'they were taken. For the Foot of a man is to the '*Cubit* or lower part of the Arm of the same man as 'about 5 to 9, as I my self have measur'd, and any 'person may easily find by his own body. And the 'oldest Feet, of which any account has been trans'mitted to us, are the *Roman*, the *Ptolemaic*, and the '*Drusian* Foot at *Tongeren* in *Germany*, the last of 'which is equal to $13\frac{1}{3}$ *Unciœ* of the *Roman* Foot. 'And to these three Feet, according to the proportion 'of 5 to 9, answer the three Cubits, $1\frac{7406}{10000}$, of the '*English* Foot, $1\frac{8036}{10000}$, of the *English* Foot, and '$1\frac{9582}{10000}$, of the *English* Foot; and of about these 'magnitudes are the antient Cubits determined by us 'above, viz., those of *Memphis*, *Babylon*, and *Persia*; 'to which add that of *Samos*, which *Herodotus* repre'sents as equal to the Cubit of *Memphis*. The *Greek* 'and *Roman* Cubits, which were secondary measures, 'adapted to the measures of the Feet before received, 'ought not to come under consideration here.

'The Cubits of the Eastern Nations, with which 'the *Jews* were surrounded, being determined in this 'manner, we may from hence form a conjecture con'cerning the magnitude of the *Jewish* Cubit. The 'vulgar *Jewish* Cubit ought not to be greater than 'them all, nor the sacred Cubit less than them all. 'The opinion of *Villalpandus* and others therefore is 'to be rejected, who represent the vulgar cubit as 'equal to two *Roman* Feet and an half; and I think 'them likewise mistaken, who make the sacred Cubit 'and *Attic* Cubit equal. That the sacred Cubit was 'very large, appears from the *Jewish Calamus* or Reed, 'which contained but six of these Cubits; and from 'the antiquity of this Cubit, since *Noah* measured the 'Ark with it. However, it is not to be magnified in 'such a manner, that the vulgar Cubit (which in the 'time of *Moses* was called the *Cubit of a man*, *Deut.* 'iii. 11) should much exceed the Cubit of a tall man. 'But we shall circumscribe these Cubits in narrower 'limits in the following manner.

'We learn from the *Talmudists* and *Josephus*, that 'the *Jews* used the measure of four sacred *Palms* in'stead of the *Greek* Cubit. The *Greek* Cubit there'fore approached nearer to 4 *Jewish Palms* than to 5 'or 3; that is, it was less than $4\frac{1}{2}$ *Palms* and greater 'than $3\frac{1}{2}$. Hence it follows, that the sacred Cubit of

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'6 Palms was less than 2⅘ *Attic* Feet, and greater 'than 2 *Attic* Feet.

'The stature of the human body, according to the '*Talmudists*,[1] contains about 3 Cubits from the feet 'to the head; and if the feet be raised, and the arms 'be lifted up, it will add one Cubit more, and contain '4 Cubits. Now the ordinary stature of men, when 'they are bare-foot, is greater than 5 *Roman* Feet, and 'less than 6 *Roman* Feet, and may be best fix'd at 5 'Feet and an half. Take the third part of this, and 'the vulgar Cubit will be more than 20 *Unciæ*, and 'less than 24 *Unciæ* of the *Roman* Foot; and conse'quently the sacred Cubit will be more than 24 '*Unciæ*, and less than 28⅘ *Unciæ* of the same Foot.

'*Josephus* writes, that the Pillars of the great court 'were as large as could be embraced by three men with 'their arms join'd. The *Orgyia* or Fathom of a man 'is commonly supposed equal to the stature of the 'same man, but in reality exceeds it about one Palm 'of the *Roman* Foot. The common people use the 'nearest round numbers; in this case the true num'bers are to be employed; add therefore a Palm to the 'measures of the stature of a man above express'd, and 'the sum being tripled, 15¾ *Roman* Feet will be greater, 'and 18¾ less than the circumference of the pillar.

'Now that circumference, according to the *Talmud*'*ists* and *Josephus*, was, as above, 8 Cubits, at least in 'the inner court. Taking therefore about an eighth 'part of the preceding numbers, the sacred Cubit will 'be greater than two *Roman* Feet, and less than two 'and a third. We have taken here the pillars of both 'courts, that is, in thickness, tho' not in height. It 'is certain, that the pillars of the inner court were not 'thicker than those of the outer court; and therefore 'the latter computation must necessarily be admitted.

'A Sabbath-day's journey, by the unanimous consent 'of the *Talmudists* and all the *Jews*, was two thousand 'Cubits. Hence the *Chaldee* interpreter upon *Ruth* i. '6, says, "We are commanded to observe the Sabbath '"and good days, so as not to go above two thousand '"Cubits." The *Jews* describing this journey, instead 'of Cubits, sometimes substitute Paces. *Erasmus*, in 'his notes upon *Acts* i. 12 writes thus concerning the 'Sabbath-day's Journey: *The Evangelist means the* '*space of two thousand Paces. It was not lawful for* '*the Jews to travel farther on the Sabbath-day. This* '*is asserted by St* Jerome, *writing to* Algasia, *in his* '*tenth question*, viz. *that the Jews religiously observed* '*not to walk on the Sabbath-day above two thousand* '*Paces, agreeably to the appointment of* Akiba, Simeon '[*the Just*] *and* Hillel, *Rabbins, whom they use to call* '*our masters.* Thus writes *Erasmus*, who reads *passus* 'in St. *Jerome*, and not *pedes*, as it is corruptly in 'the printed editions of that father. And hence in '*Numb.* xxxv. 4, instead of *a thousand Cubits*, the '*Latin* interpreter substitutes *a thousand Paces*. But 'we must take care not to understand by them the '*Roman* or *Greek* Paces; for in *Sebbolch Lecheth*, '*Tract.* 22, *cap. de Sabbat.* those Paces are thus de'scribed: Samuel *travell'd thro' the valley, and knew* '*not the limit of the Sabbath. A Sabbath-day's jour*'*ney is two thousand middling Paces.* As if he had 'said, a Sabbath-day's journey is a journey of two 'thousand paces of a man travelling upon a sabbath, 'not with speed, as in the *Roman* Paces, not too 'slowly, but moderately, in the manner of those who 'travel on the sabbath-day. Now men of a middling 'stature, in walking in this manner, go every step 'more than two *Roman* Feet, and less than two and a 'third. And within these limits was the sacred Cubit 'circumscribed.

'The *Talmudists* write, that the height of the steps, 'by which they ascended to the inner Court, was half 'a Cubit, and their retractions half a Cubit. They 'mean the sacred Cubit; and we see that *Josephus's* 'computation, with regard to the height of these steps, 'corresponds with them. Now *Vitruvius* determines, 'that the height of steps ought not to be more than '10 *Roman Unciæ*, and the retractions not less than '18 *Unciæ*; whence, since the *Jews* make the height 'equal to the retractions, we must suppose that they 'took a middle proportion, and that the height, as well 'as the retractions, made about 12, or at most 13 '*Roman Unciæ*. The middle proportion between 10 'and 18 is about 13$\frac{5}{12}$. And I should be inclined to 'maintain, that this height was not at all exceeded, 'lest it might have been difficult to ascend the steps. 'The sacred Cubit therefore was less than 27 *Roman* '*Unciæ*, but not less than 24 *Unciæ*, in order that 'the retractions of the steps might not be too much 'lessen'd.

'The Cubit being thus circumscribed within certain 'limits, and the erroneous opinions of other writers 'being thus refuted, we may now assign the more 'exact measure of it with greater assurance; and this 'we shall do by the following argument.

'It is agreeable to reason to suppose, that the *Jews*, 'when they passed out of *Chaldea*, carried with them 'into *Syria* the Cubit which they had received from 'their ancestors. This is confirmed both by the dimen'sions of *Noah's* ark preserv'd by tradition in this 'Cubit, and by the agreement of this Cubit with the 'two Cubits, which the *Talmudists* say were engrav'd 'on the sides of the city *Susan* during the empire of 'the *Persians*, and that one of them exceeded the 'sacred Cubit half a Digit, the other a whole Digit. '*Susan* was a city of *Babylon*, and consequently these 'Cubits were *Chaldaic*. We may conceive one of them 'to be the Cubit of the royal city *Susan*, the other 'that of the city of *Babylon*. The sacred Cubit there'fore agreed with the Cubits of divers provinces of '*Babylon* as far as they agreed with each other; and 'the difference was so small, that all of them might be 'derived in different countries from the same primitive 'Cubit, the *Jewish* Cubit being less enlarged after 'sacred things began to be determined by it. This

[1] 'This proportion is expressly set down in *Mishnaioth*, Tract 'de *Ghabarim*, cap. 4, ה in Comment.'

'therefore was the proper and principal Cubit of the 'Jews. But that people afterwards going down into 'Ægypt, and living for above two hundred years under 'the dominion of the Ægyptians, and endurging an 'hard service under them, especially in building, where 'the measures came daily under consideration; they 'must necessarily learn the Ægyptian Cubit. Hence 'came the double Cubit of the Jews, viz. that of their 'own country, and the adventitious one, which, from 'its being used upon ordinary occasions only, was 'esteemed vulgar and profane. This hypothesis is 'confirmed by the proportion of the Cubits to each 'other. For the Babylonian Cubit of two English 'Feet is to the Cubit of Memphis of $1\frac{719}{1000}$ of the 'English Foot, as 6 to $5\frac{157}{1000}$, that is, as the sacred 'Cubit to the vulgar Cubit very near. The small fraction of $\frac{157}{1000}$ might arise from either the difference of 'the Babylonian Cubits, or the greater antiquity of the 'Babylonian building, than of the pyramid, or the 'dimension of the brick, expressed not in the exact, 'but the nearest round numbers.

'Suppose the thickness of the brick to be $6\frac{2}{15}$ 'English inches, the breadth $8\frac{1}{4}$ inches, and the length '$12\frac{3}{8}$ inches; and a Cubit double that length will be 'to the Cubit of Memphis as 6 to 5. I am inclined 'therefore to think, that the Cubit of Memphis, at the 'time when the Jews went down into Ægypt, was 'equal to 5 Palms of the Chaldæo-Hebraic Cubit; and 'that the Jews thus determining the magnitude of that 'Cubit by 5 Palms of the proper Cubit, the Palms of 'Memphis became at last neglected, and the double 'Cubit, with only a simple Palm, remained among the 'Jews. Besides, as it is reasonable to suppose, that the 'profane and adventitious Cubit agreed with the Cubits 'of the nations round about, viz., those of Memphis, 'Samos, and Persia; so it appears from the following 'argument, that this Cubit was the same with that of 'Memphis. The different measures of the Cubit of 'Memphis, taken from different parts of the Pyramid, 'were $1\frac{717}{1000}$, $1\frac{719}{1000}$, and $1\frac{732}{1000}$ of the English Foot. 'To these measures in the proportion of the Sacred 'Cubit to the vulgar Jewish Cubit are the measures '$2\frac{0604}{10000}$, $2\frac{0628}{10000}$, and $2\frac{0784}{10000}$ of the English Foot, 'which in Unciæ of the Roman Foot are $25\frac{57}{100}$, '$25\frac{60}{100}$, and $25\frac{79}{100}$, and consequently fall in the 'middle of those limits, with which we have before 'circumscribed the Sacred Cubit, and which were 24 'and 27 Unciæ of the Roman Foot. Thus therefore, 'by means of these limits, those measures agree with 'the sacred Cubit, and consequently the measures of 'the Cubit of Memphis agree with the vulgar Cubit. 'Supposing therefore that the Jews learned the Cubit 'of Memphis in Ægypt, and that it was their vulgar 'Cubit, and consequently that in the time of Moses, 'and soon after, when, as Mr Greaves contends, the 'Pyramids were built, the vulgar Cubit was of the 'same magnitude with that of Memphis; the sacred 'Cubit in those times was not less than $25\frac{57}{100}$, nor 'greater than $25\frac{79}{100}$ Unciæ of the Roman Foot. 'Those, who shall hereafter examine the Pyramid, by 'measuring and comparing together with great accuracy 'more dimensions of the stones in it, will be able to 'determine with greater exactness the true measure of 'the Cubit of Memphis, and from thence likewise of 'the sacred Cubit. In the mean time for the precise 'determination of the Cubit of Memphis, I should 'choose to pitch upon the length of the chamber in 'the middle of the Pyramid, where the king's monument stood, being very large, and built with admirable 'skill; which length was the twentieth part of the 'length of the whole Pyramid, and contained 20 'Cubits, and which was very carefully measured by 'Mr Greaves, as he informs us himself. And from 'hence I would infer, that the sacred Cubit of Moses 'was equal to 25 Unciæ of the Roman Foot, and $\frac{6}{10}$ 'of an Uncia; or, what is equivalent, that it had the 'same proportion to two Roman Feet as 16 to 15.

'Mersennus in his treatise de Mensuris, Prop. 1, 'Cor. 4, writes thus: *I find that the Cubit, (upon which a learned* Jewish *writer, which I received by the favour of the illustrious* Hugenius, *Knight of the order of St Michael, supposes the dimensions of the temple were formed,) answers to $23\frac{1}{4}$ of our inches, so that it wants $\frac{3}{4}$ of an inch of two of our Feet, and contains two* Roman *Feet, and two Digits and a Grain, which is $\frac{1}{4}$ of a Digit.* The Paris Foot, 'with which Mersennus compared this Cubit, is equal 'to $1\frac{068}{1000}$ of the English Foot, according to Mr 'Greaves; and consequently is to the Roman Foot as '1068 to 967. In the same proportion reciprocally are '$23\frac{1}{4}$ and $25\frac{68}{100}$. That Cubit therefore is equal to '$25\frac{68}{100}$ Unciæ of the Roman Foot, and consequently 'falls within the middle of the limits $25\frac{57}{100}$ and $25\frac{79}{100}$, 'with which we have just circumscribed the sacred 'Cubit; so that I suspect this Cubit was taken from 'some authentic model preserved in a secret manner 'from the knowledge of the Christians. Lest any 'person should be surprised, that the Cubit, which we 'have concluded to have been in the time of Moses '$25\frac{60}{100}$ inches, should not have increased more in 'three thousand years; he may observe, that the Palms 'used in building at Rome, which was antiently 9 'Unciæ of the Roman Foot, is now equal to $\frac{733}{1000}$ 'parts of the English Foot, that is, $9\frac{1}{12}$ Unciæ, and 'consequently that in fifteen hundred years it has 'increased but $\frac{1}{12}$ of an Uncia, though it was not preserved in a religious manner.

'Some compute the Cubit from Solomon's brazen 'sea. Lest any objection should be raised from thence, 'I shall briefly remark, that the bottom of that sea 'ought not to be represented spherical, as it generally 'is, but flat, in such a manner that all the water might 'run out for the use of the priests, and the vessel 'might stand commodiously upon the backs of the 'oxen, and the oxen not hinder the priests from coming 'to the cocks. However I would not represent it 'under a cylindrical figure. The following one will be 'more beautiful. Let the line A B, of ten Cubits, be

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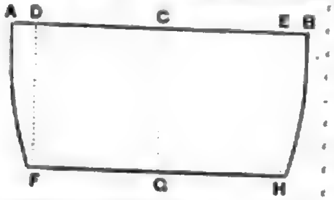
'bisected in *C*; and taking upon it *A D*, *E B*, of a 'Cubit each, erect the perpendiculars *D F*, *C G*, *E H*,



'each of them of 'five Cubits, and 'with the semi-'axes *A D*, *D F*, 'and *B E*, *E H*, 'describe the 'quadrants of the 'ellipses *A F*, *B H*, 'and drawing the 'right line *F H*, the figure *A F G H B* convolved round 'the axis *C G*, will describe the external superficies of 'the vessel, whose cavity, if it be an hand-breadth 'thick, will contain about (?) thousand baths, suppos-'ing that a bath was equal to twelve *Roman Congii* '(as *Agricola* and others maintain) and that seven '*Congii* and an half will fill a Cubic *Roman* Foot, as 'Mr *Greaves* found by the *Farnesian Congius*. It is 'said likewise, that this sea contained three thousand 'baths; whence some affirm, that there were two 'kinds of baths. Others understand a dry measure, 'whose *Cumulus* equalled half the contents; others 'suspect a various reading; others imagine, that the 'sea contained two thousand baths for daily use, but, 'when full, could receive three thousand baths. I shall 'not attempt to determine the dispute.

'This is what I thought proper to lay down at 'present with regard to the magnitude of this Cubit. 'Hereafter perhaps those, who shall view the sacred 'mount, and the monuments of the *Chaldeans*, by 'taking accurately the various dimensions of the stones, 'bricks, foundations, and walls, and comparing them 'together, will discover something more certain and 'exact.

'The *Roman* Cubit therefore consists of 18 *Unciæ*, 'and the sacred Cubit of 25⅗ *Unciæ* of the *Roman* 'Foot; and consequently those Cubits are to each 'other in round numbers as 2 to 3 very near. And 'this proportion is used by *Josephus*, out of regard to

	Josephus's Cubits.	Sacred Cubit.	Talmud Cubits.	Vulgar Cubits.
'The height of the wall *Chajil* { without,	40	26⅔	...	...
within,	25	16⅔	...	...
'Difference answering to the 12 steps,	15	10	...	...
'Height of these 12 steps,	15	10	9⅓	...
'Height of the *Septum cancellatum*,	3	2	...	3
'Height } of the gates,	30	20	20	...
'Breadth } of the gates,	15	10	10	...
'Height of the altar,	15	10	10	...
'Breadth of the altar,	50	33⅓	33	...
'Height of the temple within,	60	40	40	...
'Circumference of the pillars,	12	8	8	...

'the greater expedition in computing the bulk of the 'buildings. For writing to the *Romans*,[1] he every-'where puts three *Roman* Cubits for about two sacred 'Cubits, except in some of the most eminent dimen-'sions of the temple, properly so called, and set down 'in scripture, in which case he thought proper to retain 'the sacred Cubit. This will appear by comparing the 'Cubits of *Josephus* with the sacred Cubits of the '*Talmudists*, in the above table.

'Thus likewise, where *Josephus* in a round number 'makes the *Exhedras* thirty Cubits, we must write 'twenty sacred Cubits, or more exactly twenty-two; 'and the like reduction is necessary in all the other 'numbers of *Josephus*.'

[1] 'Josephus in Prologo Belli Judaici.'

MEMORIAL ASTRONOMY OF THE GREAT PYRAMID.

ON this important subject I shall do no more at present, than refer to the 3d volume of my "Life and Work at the Great Pyramid," and also to the plates 44, 45 and 46 of these pages.

Sir John Herschel had already deduced, in a research entered upon for Col. Howard Vyse in 1839, that the entrance passage of the Great Pyramid pointed to the transit of the Polar star at the Pyramid's day of building, viz., α Draconis *below the Pole*. But why below the Pole; and at which of the two epochs, before or after the date of α Draconis approaching *nearest* to the Pole,—the entrance passage indicating a distance of 3° 42′ therefrom, but, of itself, not saying whether that was before or after the date of the star having been once only 10′ distant from the Pole?

My own researches, based on the practical examination of the building, answer,—it was the last of the two epochs of 3° 42′ distance, or that of 2170 B.C.; and because, when α Draconis was then crossing the Meridian below the Pole, the Pleiades, also in a manner memorialized by the Pyramid architecture, and at that time being approximately equatorial, or time measuring stars, were crossing it above the Pole; besides being also in the same Right Ascension as the vernal Equinoctial point; and were therefore seen on the Meridian at midnight on a day equivalent to our Sept. 21st, or the Autumn Equinox, the Pole star being also on the Meridian, but under the Pole, at the same instant. See the said Plates 44, 45 and 46.

PHYSICAL POSITION OF THE GREAT PYRAMID ON THE EARTH'S SURFACE.

Mr H. Mitchell, of the United States Coast Survey, set forth in 1868 that the Great Pyramid is in the centre of origination of the Sector shape of the land of Lower Egypt; and thereby in the most important physical situation which has ever been occupied by any building on the earth.

This view is graphically set forth on Plate 51, with some additions; while Plates 48, 49, and 50 further show the Great Pyramid's land of Lower Egypt to be situated in the centre of all the land surface of the

globe and in the mean temperature and normal atmospheric pressure of all its inhabited surface.

The numerical measures of these things are printed at length in my recent publication "On an Equal Surface Projection," (Edmonston & Douglas, Edinburgh); and need not therefore be repeated here. While in the Quarterly Journal of Science for April 1871, London, may be seen a further exposition, setting forth from the topographical features of the hill of Jeezeh, that it is the Great Pyramid only, of all the group of Pyramids on that hill, which has the central "look-out" upon, and therefore command over, the sectorial form of Lower Egypt lying at its foot, and stretching away Northward before it symmetrically on its meridian line.

That meridian line too is a most notable one. Marked for Egypt itself by the Great Pyramid, or by a monument in shape one of the best, and in size most certainly the largest, of all triangulation signals ever erected for surveying purposes in any country, it was immediately seized on with happy and intuitive insight by the eminent *savants* who accompanied the first Bonaparte to Egypt, as their meridian of departure, or their central zero and constant reference for longitude throughout all their maps of North Africa. And now it has been recently shown, as in the pamphlet just mentioned, that the Great Pyramid's meridian line produced to either Pole has equally distinguished characteristics, derived from Nature in her broadest aspects on this planet, for being considered the prime meridian for all the nations of the world, and that there is no other meridian line which can for a moment compare with it.

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PART II.—OF THE PRACTICAL WORK STILL NECESSARY FOR THE RECOVERY OF THE GREAT PYRAMID'S ANCIENT, FROM ITS MODERN, DIMENSIONS.

IN the 3d volume of "Life and Work at the Great Pyramid,"* I have attempted to use to the utmost the observations contained in the preceding pages for the purpose, mentioned titularly above, of deducing the ancient and original dimensions from the modern and dilapidated state in which this Pyramid building presents itself to men in these latter days of its history. As my measures referred chiefly to the interior of the structure, and as there the original surfaces have not been much broken, the virtual restoration of that part has been by no means unsuccessful; and requires merely in certain places, places which can only be recognised from time to time as the theory of the building shall advance, still more minutely exact measures than any which I was able to make, but which will be comparatively easy to a scientific man going there in future with that one special object formally in view.

The exterior, however, of the Great building is exceedingly dilapidated, and I have few or no measures of my own to set forth for its elucidation. That subject is therefore still "to let"; and as it is too vast for any private individual to undertake at his own cost, I may as well explain here the state of the case, so that either Societies, or Governments may see the propriety of their taking up the grand architectural and historical problem, and prosecuting it earnestly until a successful solution of all its parts shall have been arrived at.

Size and Shape then of the ancient exterior of the Great Pyramid are the first desiderata to be determined. They have though, without doubt been already obtained by many observers after their manner of measure and ideals of proceeding: why then are they to be sought for again?

At this point I fear that *something* of the theory must be introduced; for, just as in astronomy, every advance of the theory calls for more perfection in the practice of observation, so is it here; while if theory be neglected, there is little or no inducement to accurate measures.

Now the particular theory which has in my humble but earnest judgment explained hitherto the largest number of observed features in the Great Pyramid is the Metrological, or Scientific. And the first deductions thereof simply state that 'the length of 'each of the sides of the base of the Great Pyramid, measured in terms of a cubit ' $= \frac{1}{\text{ten millionth}}$ of the semi-axis of rotation of the earth, represents the number of days, ' or turnings of the earth on its axis, in a year.'

But such cubit, according to the best modern geodesy = 25·025 British inches, and

* Published by Edmonston & Douglas, Edinburgh. 1867.

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the solar year of 365·24 days × 25·025 = 9140·131 ; while the sideral year of 366·24 × 25·025 = 9165·156.

Which of these two lengths then, if either, does a mean base-side of the Great Pyramid (its basal plane being assumed to be square, flat and restored to its original size), —which of these two, does it actually measure ?

Then comes the lamentable answer for modern science to have to make, that some of its chief heroes in geodesy have one after another measured the base-side of the Great Pyramid, *between the same station points* too, but with the result of differing so much from each other, that *both* of the theoretical lengths are included *amongst* the modern measured lengths of one and the same thing in the living, solid rock, as thus—

			British Inches.
The French Academicians in 1799, from socket to socket,			9163
Col. Howard Vyse and Mr Perring in 1837,	do.	do.	9168
Messrs Aiton and Inglis in 1865,	do.	do.	9110
Officers of the R. Engineers sent out by the Ordnance Survey to Sinai in 1868, 9,	do.	do.	9130

There is also a measure whose final results are on record but not the minute particulars, by Mahmoud Bey, the Egyptian Astronomer, but it does little more than increase the probabilities of the French determination being the most accurate one.

The French savants, Col. Howard Vyse, and Mahmoud Bey did indeed only measure the North side of the base : while both Messrs Aiton and Inglis and the Ordnance officers measured all four sides and similarly from "Socket to Socket." The latter party have however only as yet published the *mean* of their four sides measured ; and Messrs Aiton and Inglis, whose results were published by me in "Life and Work" in 1867, though they do give the measures of each side separately, yet make them agree much more closely together than with their predecessors' measure. Hence even if all the parties had equally measured all four sides, they would apparently have still had very large differences in their mean result for a base-side : and the lengths for a solar year and sidereal year, would still have been included in their *differences* of measure from each other.

This then is the state of the case to be set before the modern world. The best modern measures of the ancient G. Pyramid's base-side are not by any means accurate enough for the demands of theory. Not too that the theory demands any superlative or utopian degree of accuracy ; for the measurement of some geodesic base-lines within the last few years both in England and India is said to have been carried out to an accuracy of $\frac{1}{500000}$th of the whole, while the differences of the equally modern measurement of the ancient Great Pyramid's base-side amount to $\frac{1}{200}$ of the whole ; and the particulars of measurement in any of these latter cases are either so slightly published or so unfavourably known, that we cannot pin our faith on any one of the measures by itself, or allow it to stand exclusive of the others.

Elsewhere* I trust that I have already shown that the theory or cause, which is here concerned, is worthy of the highest efforts in the science of modern times, aided by those necessary grants without which similar important and large operations are never undertaken anywhere; but which grants have been so abundantly bestowed by both the Home, and Indian, Governments of late years on both astronomical, geodetical, physical, and archæological enquiries, all of which subjects have their human beginnings in this Great Pyramid question, that some favourable movement in its direction by the ruling powers may be reasonably anticipated ere long.

As preparatory then to an efficient remeasurement of the length of the Base-sides of the Great Pyramid, itself an essential preliminary to almost all other Pyramidological researches,—I beg to submit the following local particulars.

(1.) The outer corners of four shallow sockets cut in the levelled surface of the earth-fast rock outside the *present* dilapidated corners of the built Great Pyramid, are supposed to be the points to be measured between horizontally in order to obtain the original length of each external, finished, "casing-stone" base-side.

(2.) Previous to any such measurement being commenced, the present outer corners of those sockets must be reduced to their ancient corners, as the sockets have suffered, it is feared, much dilapidation and injury, even since 1865; owing to having been then imperfectly covered over, on leaving them, by the parties who at that time opened them.

(3.) The said sockets must be *proved* to have been the sockets originally holding the corner-stones of the casing; or showing how far they overlapped, and therefore and thereby *not* defining the ancient base of the Great Pyramid *to the amount so overlapped.*

Now two of these sockets were found, or rather first *discovered* in modern times, by the French savants in 1799; again found by Col. Howard Vyse in 1837, and still again by Messrs Aiton and Inglis in 1865, and *then* with the addition of other two, making the whole four, or one at each corner of the square base. Of these four, which are described on p. P 47, and pictured on Plate 40, the only *one* which can be identified with either of the two French sockets, or Col. H. Vyse's, because the only one they have pictured carefully and unexceptionably, is that at the N. East corner of the Pyramid: and seeing that the others, as discovered by Messrs Aiton and Inglis, with some assistance from me, are all of very different sizes and shapes from that N. East one, the ground should be cleared far and wide about each corner to see if there are any other sockets in the neighbourhood.

(4.) Whether any more rival sockets claiming to be the true corner sockets of the ancient base are, or are not, then and in that manner, found,—the usually known or selected ones should further be tested, by being compared with any other remaining indications of where the line of each base-side stood in former days. Some particular and most positive indications of this kind we know were found by Col. Howard Vyse in

* "Life and Work at the Great Pyramid;" "Antiquity of Intellectual Man," Quarterly Journal of Science, Jan. 1871 and April 1871.

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the middle of the Northern side, and there is no reason why as good markings should not be discovered, if properly looked for, along the other three sides; and they are so vitally important to a due understanding of the case, that their ascertainment should *precede* any expense being incurred on the measurement of lengths from socket to socket.

(5.) Col. H. Vyse found those invaluable markings of the line of the North base-side, or part of the very base-side itself, by accomplishing the heavy work of digging down by a cross cut, through the middle of the heap of rubbish, near 50 feet high, on that side. But he has published no records of how those markings, or that actual portion of the base-side, agree, either in level or in azimuth with the sockets. Indeed he left the ground in such a state of hillock and hole, that no such measures can, or ever will, be taken with creditable accuracy until a longitudinal cut through the rubbish heap shall be driven from East to West and all along between the two N.E. and N.W. sockets.

(6.) The making of such a long and laborious cut, and then the "lining" and "levelling" of the bases of the Colonel's casing stones *in situ*, (or their remains, for they are said to have been mischievously broken up since then) and their comparison with the sockets or their joining lines by appropriate and powerful surveying instruments, should be the first operation of the new measurers, to whom it is fervently to be hoped that an intelligent Government will grant the due means for effecting it satisfactorily.

(7.) A similar longitudinal cut, and similar comparisons are to be made in the other base-side hills of rubbish, together with a wider clearing away of the rubbish outside, in order to determine the form and proportion of the "pavement" which is believed to have anciently surrounded the Pyramid; but of which the only positive information which we have, is based on the little bit of it which Col. H. Vyse cut down to near the middle of the North side.

This work might cost from £12,000 to £14,000; for the material to be cut through is not only extensive, but so hard and concreted that it turns and bends the hoes or picks employed in Nile cultivation and which are the only tools the Arabs know of. But besides the theoretical value of such an operation for *distinguishing and identifying* the base to be measured, it would certainly yield practically abundant fragments of casing stones, and perhaps settle the oft-mooted questions of ancient inscriptions on the outer surface of the Pyramid.

(8.) When the four sides of the base, and the corresponding sides of the pavement are exposed to view,—a new fixation of the exact original places of the precise outer corners of the now dilapidated and rather expanded corner sockets may be required; and then, from and between such newly fixed points, there must be

A, Linear measures of distance taken with first-rate accuracy.
B, Levellings.
C, Horizontal angles, to test the squareness of the base.
D, Astronomical measures to test the orientation of each of the base-sides.
E, Angular and linear measures combined to obtain both the vertical slope

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of the ancient Pyramid flanks, and the distance of certain of the present joints of the entrance passage from the ancient external surface of the Pyramid in the direction of that passage produced—a matter which is at present very doubtful, but a new and good determination of which is essential to utilize fully the numerous internal observations contained in this, and other, books.

(9.) When all the above works shall have been carefully accomplished, the men who have performed them will doubtless have become the most competent advisers as to what should be undertaken next; whether in search of the fourth chamber, concerning whose existence there is a growing feeling amongst those who have studied certain laws of area and cubic contents which prevail among the presently known chambers and passages; or for the more exact remeasurement of certain portions of the building which shall then be recognised by the theory as of fiducial character and importance.

(10.) Should the next remeasurement unfortunately not be under sufficiently favourable auspices or powerful patronage enough to attempt all that has been sketched out above,—I would suggest to those employed upon it the importance of endeavouring to operate in that manner on at least the North side of the Great Pyramid alone, where much of the work has already been performed, and where traces of the old base-side are known to exist, or did certainly exist 34 years ago.

(11.) The levels as well as temperatures of water in the wells of the plain close to the Pyramid, and in the Nile in the distance, should also be measured through a full twelvemonth interval. A meteorological journal should likewise be kept for the same period at the base of the Pyramid, and the corrections ascertained to reduce it either to the summit or King's Chamber levels above, or to the plain level below; while no efforts should be spared to re-open the ventilating channels of the King's Chamber and to prevent the Arabs from filling them up again.

(12.) An examination should be made of the *apparent* Pyramid in the Desert almost West of the Great Pyramid: likewise of the Northern coasts of Egypt where they are cut by the Great Pyramid's several Meridian and diagonal lines produced; also of the Fourth Dynasty remains in the Sinaitic Peninsula; and of any monuments whatever, whether in Egypt or the neighbouring countries for which any older date than that of the Great Pyramid can reasonably be assigned; including also a fuller account than any yet published of King Shafre's Tomb and its bearings with, or upon, the origin, education, labours and life of the first of the Pyramid builders.

MODERN CALCULATIONS TOUCHING CERTAIN POINTS OF THE GREAT PYRAMID'S ANCIENT ASTRONOMY.

In all researches connected with the Great Pyramid, its absolute date in chronology should never be lost sight of; for that date is undoubtedly so early as to demand, not a simple human origin of the modern kind, but something more like an interference in

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the ordinary laws, whether of human or any other kind, of nature, to account for the *intentional* presence there of certain geometrical features and physical symbolizations only recently detected by modern measures, examinations and science.

Differentially, or comparatively, there is no doubt or uncertainty amongst any good archæologists that the Great Pyramid is *older* than all other known and existing specimens of human architecture, whether in Egypt or any other part of the world. But as to *how old* it is, there is little or no accord amongst the many various archæological authorities who have written on the subject, some of them making its date of foundation as low as 1600 B.C., and others as high as 5700 B.C.

These exaggerated differences are due to the said learned men having approached the question only from the side of Egyptian antiquities generally, assisted by reference to the Dynasties of Manetho; neither of which methods have any absolute chronology for early times, but merely give statements of the number of years of each king's reign, without any proof whether such kings were successive or contemporary. Such methods too may be the only ones possible for all other Egyptian buildings *excepting* the Great Pyramid; but there, in that first of all stone buildings of Egypt, besides greater size, superior excellence of workmanship, and complete freedom from all idolatrous representations, there would appear to be the invaluable feature for such a beginning of human effort and history, that it has a strictly scientific, and absolute, chronology of its own; depending on a memorialization, by means of long narrow passages penetrating nearly the whole substance of the building, of certain crucial star-directions at the time of the foundation being laid.

A beginning of research into the Great Pyramid's absolute date from this side, or from its own mechanical features computed for by modern astronomy, was made by the late lamented Sir John Herschel in 1839, and further carried on by myself in 1865,—but by no means to the full extent now required in the present advancing state of the whole question. I beg therefore to submit a few notes which I trust may occupy some scientists in the closet while others are engaged in the field taking further and more accurate measures of the ancient building.

MEMORANDUM OF SOME COMPUTABLE DATA REQUIRED FOR GREAT PYRAMID INVESTIGATION AND HISTORY.

(1.) The date to a year of α Draconis being for the *second* time, or in 2200 B.C. nearly, at a distance of 3° 41′ 50″ from the Pole; also its Right Ascension at that date.

(2.) Similarly for the *first* time of that star being at that Polar distance, or for somewhere about 3400 B.C.

(3.) The date to a year of α Draconis being nearest to the Pole, somewhere about 2800 B.C.; also its then Right Ascension and Declination.

(4.) The date to a year of η Tauri being last in $0^h\ 0^m\ 0^{sec}$ Right Ascension; and its declination at the time.

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(5.) The date to a year of η Tauri being 12 hours distant in Right Ascension from α Draconis.

(6.) Estimate of the limits of error of such computations in realising the actual stellar facts of 4000 years ago; including therefore the deficiencies of our knowledge of both the proper motions, and secular variations of the proper motions (a most notable and difficult element in the case of Sirius, the national star for chronologic reference to all Egyptians *after* the age of the Great Pyramid) of α Draconis and η Tauri; and also the still existing, though it is hoped very small, residual errors in the modern determination of the great astronomical constants as precession, &c., and their secular variations.

(7.) What are the limits of possible change of Latitude and Azimuth through the last 4000 years, of a line drawn on Egyptian rock, East and West, as involving any shifting of the crust of the earth, wholly or partially, either over, or with reference to, the place of the Pole's of the Earth's general axis of rotation?

(8.) Assuming, with Colonel Clarke, R.E., of the Ordnance Survey, that the lengths of the Polar semi-diameter, and of the mean Equatorial semi-diameter of the Earth are, by the latest and best measures, 250,261,452, and 251,112,744 British inches, respectively; and that these lengths apply to the spheroid as defined by the surface of the ocean,—how much ought they each to be increased to represent the cubical contents of land above the existing ocean level; or as my friend William Petrie, C.E., first expressed it, how high, accurately in inches, would the present ocean rise, if all the present dry land, *i.e.*, land above the ocean surface, were to be shovelled into the water?

CERTAIN OF THE DATA SUPPLIED.

An important answer to the Spherical Astronomy part of these few questions having been recently and kindly communicated to me by Dr Brünnow, Astronomer-Royal for Ireland, I have much pleasure in introducing it here.

(*Copy.*)

'In going back to such remote ages one cannot use the ordinary formulæ for 'precession, which are accurate only for a couple of centuries, and I had to employ the 'rigorous formulæ of the *Mécanique Céleste*; which, however, are not perfectly correct 'either, except for about 1200 years from the epoch of 1750, on account of the 'inaccuracy of the planetary perturbations. These formulæ might be improved by 'recomputing them with more modern data, but I have at present not the time to do 'this and have used them as they are. But I have computed the Right Ascensions 'and Declinations of the stars according to the rigorous formulæ of Bohnenberger, and 'therefore, I think, the results I send you will answer your purpose, as the inaccuracy 'of the formulæ will chiefly affect the time alone, but not so much the differences of 'Right Ascension and Declination.

'I computed the following positions of the two stars:—

Date.	α Draconis		η Tauri.	
	R. A.	Decl.	R. A.	Decl.
	° ′ ″	° ′ ″	° ′ ″	° ′ ″
−2250	185 0 1	+86 56 37	359 58 23	+3 46 36
−2170	185 16 30	+86 29 31	0 57 26	+4 13 46
−2090	185 37 33	+86 2 26	1 56 33	+4 40 57
−2800	306 1 5	−89 54 22	353 14 57	+0 40 2
−2790	2[illegible] 10 50	−[illegible] 55 25	353 22 9	+0 43 22
−2780	252 59 33	+89 54 15	353 29 32	+0 46 47
−3[illegible]	355 13 19	+86 15 38	345 21 15	−2 56 21
[illegible]	[illegible] 26 [illegible]	+86 32 47	345 57 37	−2 40 30
[illegible]	355 36 17	+86 49 37	346 33 49	−2 23 50
−1570	188 21 1	+83 7 19	8 23 50	+7 36 34
−1560	18[illegible] 27 [illegible]	+83 9 48	8 38 24	+7 43 5

'Therefore η Tauri had Right Ascension 0° in the year − 2248, and its Declination 'was then +3° 47′ 20″.

'α Draconis had the Declination 86° 18′ 10″ in the year − 2136; its Right Ascen-'sion was then (−2136·5) 185° 25·0′ and that of η Tauri 1° 22·2′, therefore the distance of 'α Draconis in Right Ascension from η Tauri was then 184° 2·8′ = 12h 16m. Therefore 'also when η Tauri was culminating, α Draconis was at hour-angle 175° 57′; and I find 'that its azimuth was then 0° 17′ reckoned from North towards the West, its altitude 'being then 26° 18′ 7″: assuming the Pyramid's Latitude = 30° 0′. Therefore I think it 'must have been even then visible through the Great Pyramid's entrance passage.*

'Again α Draconis had the same Declination in the year − 3443.

'The two stars were 180° apart in the year −1574, and the Declinations of the two 'stars were then +83° 9′ 42″ and 7° 34′ 11″.

'The nearest approach of α Draconis to the Pole occurred in −2790. At the same 'time the two stars were 90° apart in Right Ascension in the year − 2788, when the 'Declination of α Draconis was 89° 55′ 20″. Therefore when α Draconis was at the 'highest point of its small diurnal circle, the Pleiades were rising, and setting when 'α Draconis was at the lowest point.

(Signed) 'BRÜNNOW.'

* The above quantities are all of them computed by Dr Brünnow, for the "theoretical" Great Pyramid which I set before him, viz., a Pyramid in 30° N. Latitude, with an entrance passage accurately in the plane of the Meridian and at an angle in that vertical plane inclined 26° 18′ 10″ to the Northern horizon (see Plate 2, vol. 3 of my "Life and Work at the Great Pyramid.") But none of these quantities obtain precisely in the actual Great Pyramid, whose Latitude is 29° 58′ 51″; whose entrance passage's vertical plane points to an azimuth 5′ West of North according to my observations, and 19′ according to French observations; and whose angle of inclination to the Northern horizon is 26° 27′ 0″ according to my observations, extending from its mouth down to the junction of the first ascending passage, but is 26° 41′ according to the observations of Col. H. Vyse, extending the whole length from its mouth down to the horizontal entrance into the subterranean chamber.

When Dr Brünnow with his own powerful methods of calculating has bravely leaped across the gulf of 4000 ± years which separates us from the last occasion when α Draconis was seen at the Great Pyramid under an angular altitude of 26° 18′ 10″ at its lower meridian transit,—it will be comparatively easy for any one else, on the data which Dr Brünnow has thus kindly supplied, to compute for a passage angle of 26° 27′ or 26° 41′, and an azimuth of from 5′ to 19′ West of North, and ascertain both the alteration of date thereby made and the approximation to coincidence with η Tauri on the Meridian above the Pole when in 0h 0m R.A.

C. P. S

REPORTS

PRESENTED BY THE ASTRONOMER

TO THE

BOARD OF VISITORS OF THE ROYAL OBSERVATORY, EDINBURGH,

IN THE YEARS

1863, 1864, 1869, 1870, &c.

REVISED IN PARTS TO CONVEY THE FULLER INFORMATION
OCCASIONALLY ASKED FOR AT THE MEETINGS.

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I. REPORT read by the ASTRONOMER-ROYAL for SCOTLAND, before the Adjourned Meeting of the BOARD OF VISITORS of the ROYAL OBSERVATORY, EDINBURGH, on the 14th of October 1863.

MR PRESIDENT AND GENTLEMEN,

In the 12th volume of the Edinburgh Astronomical Observations just completed at the press, and now in course of distribution and publication, there are included four of my Reports to you at formal visitations held between the years 1858 and 1862. These reports contain expositions of many matters of vital importance to the efficiency of this, the Royal Observatory of Scotland, and were presented primarily to your Board, as being the proper medium of communication between the Observatory and the Government; for the Board having been appointed by Government for the express purpose of being such a medium, I have been thereby deprived of all direct power in the case.

Business standing over from former Reports.

One of the subjects alluded to in the Reports, viz., the printing of our observations, has been, I know, brought before the attention of H. M. Government by your President, Sir W. Gibson-Craig, and with the happiest effect; for a threatened sudden reduction in the number of printed copies of our volumes of observations, has been averted; and the 12th volume now before you, has accordingly had the same number of copies thrown off, as obtained with its eleven predecessors, and we have not been obliged to disappoint our numerous foreign corresponding Observatories and Societies.

Another of the points alluded to, was, the strange fact that the Royal Observatory of Scotland was not provided with a portable time-piece, though required to perform a daily public duty in which such an apparatus is an absolute necessity. This want, which had been temporarily supplied during many years by an enterprising and skilful chronometer maker in the city, was

most efficiently supplemented by Sir W. Gibson-Craig, when the matter was brought to the attention of the Board, for he at once presented the Observatory with an excellent portable chronometer at his own private expense. That chronometer has been in constant use ever since, and has contributed much to the satisfactory working of the public time-ball signal, for the benefit, on one occasion, of H. M. ships of the Channel Fleet, as well as many others.

But respecting the rest of the topics described in the Reports, subjects too which can only be properly entertained in the case of a Royal Observatory of Scotland, by Government itself, I can hardly proceed further therein, without receiving some information from the Board as to the state of its communications with the Government. On the present occasion, therefore, I have only to assure the Board that none of the matters previously brought to their notice in the printed Reports have lost their scientific interest or official necessity; and that if the Reports were still again to write, there is nothing material to be changed in them.

RECENT OBSERVATORY WORK.

Recent Observatory work.

Meanwhile, in the Observatory itself, we have been closely and not unsuccessfully employed. The printed volume of our own observations, the MS. books of star observations, and the printed returns prepared every month and every quarter for the Registrar-General of Scotland, on the same principle that similar returns are prepared for the Registrar-General of England, by the Royal Observatory of Greenwich, will demonstrate the fact of much official labour. The system of Jones' electric controlled clocks, both the Sidereal Time, and the Mean Time, series still answers admirably; but perhaps one of the most interesting circumstances to call the Board's attention to, is the increased extent to which the electric time-signals of this Observatory have been applied for, and adopted, by several important cities in the empire.

RISE AND GROWTH OF THE TIME-SIGNALLING SYSTEM.

Rise and growth of the Time-signalling system.

The giving and spreading a knowledge of the true time in our own locality was ever a distinguishing feature of the Observatory on the Calton Hill, even in the days when it was still a private establishment in the hands of its spirited and intellectually-minded founders, the Members of the Astronomical Institution of Edinburgh: and on passing into the possession of H. M. Government, that duty was never relaxed for a single day. The early machinery for the purpose was by no means ineffective, but being decidedly troublesome to the public, was reinforced in 1852 by an electric-worked Time-Ball on the latest improved Greenwich model, at the expense of H. M. Government; and we then became, ostensibly to all, one of the three time-signalling public observatories

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of the home country; viz. Greenwich, Liverpool, and Edinburgh. We did not stop there, however, but in 1861, agreeably with the desires and subscriptions of Edinburgh citizens, added both an electric controlled Jones' pendulum clock capable of showing the time correctly second by second in the Castle at nearly a mile of distance from the Observatory, and an electric-fired time-gun to our other means of signalling; obtaining thereby both a sensible improvement in accuracy, and an enormous advantage in efficiency, over the simple and single Time-Ball arrangement.

The Time-Ball, Controlled-Clocks, and the Time-Gun.

The Jones' controlled-clock system had already been adopted with success at the excellent time-signalling Observatory of Liverpool; but with the electric-fired time-gun we were entirely alone, and each day that we used it, only increased our astonishment that so few persons in the kingdom seemed aware of all its merits. Two and a-half years, however, of faithful work, through good weather and bad, were gradually producing their effect on men's minds; and when the British Association was about to meet this summer in Newcastle, we were honoured by an application from there, through Mr Nath. J. Holmes, Engineer to the Univ. Private Tel. Co., for a daily electric current to discharge the Edinburgh form of time-signal, viz., a cannon, from the roof of the old Norman keep on the river's bank.

Scarcely had the working of this signal been commenced (the Electric Telegraph Company with admirable liberality lending their best "through" wire in aid of the desired scheme), and its applicability to its intended purpose of making the true time known to the greatest number of individuals, with the utmost ease to them, and with the extremest accuracy possible to man with all the means at his disposal in the present age, been practically demonstrated—than the group of important seaports near the mouth of the Tyne moved for a similar signal, and soon had an electrically-fired thirty-two pounder gun established on the Ballast Hill, North Shields.

Extension of the Time-Gun system from Edinburgh Southwards.

Sunderland next applied; and, by an exquisite arrangement invented by Mr Nath. J. Holmes, was enabled, as well as Newcastle, to receive its instantaneous signal by means of the original electric current from the Edinburgh Observatory.

Several other cities have applied for the Edinburgh time-signal since then, and the local negotiations, generally conducted for us by the Universal Private Telegraph Company, for the means of loading their respective guns are in different states of forwardness: but the only one amongst them that has succeeded in accomplishing its part is Glasgow, the Queen of the West. Some parties interested in the true time there, had early perceived the advantage to astronomy of a division of labour amongst astronomical observatories; and as the Royal Observatory, Edinburgh, had long since become a time-observing and a time-signalling observatory, they preferred in 1855 to make the experiment of getting public time-signals from there, rather than from the very

Its extension from Edinburgh Westwards.

admirably planned academic Observatory of Glasgow, which was already fully taken up to the utmost of its strength with other branches of astronomy, much more immediately adapted to the nature of its establishment.

Previous case of the R. Observatory, Edinburgh, sending time-signals publicly to Glasgow.

With the countenance and assistance, therefore, of the British Association for the Advancement of Science, and the Glasgow Observatory too, as represented by its late popular Director,—the Edinburgh Royal Observatory dropped a Model Time-Ball daily for a week by electric means, in a public meeting room (that of the Mechanical Section of the B. A.) in the Glasgow College, in the year 1855; I myself having had the honour each day of being allowed to enter the chamber, raise the model ball into its electric trigger catch, before the assembled audience, and then hand, on the part of Prof. Nichol, a chronometer with the Glasgow Observatory's determination of Greenwich mean time to the President of the Mechanical Section, Mr Fairbairn of Manchester,—and invite him to inform the spectators if he could perceive any difference between the Edinburgh Observatory's determination from its own observations of 1 o'clock mean time Greenwich, to be shown presently by the fall of the ball before him, under the influence of the current to come from Edinburgh simultaneously with the dropping of the time-ball there, and the same instant of absolute time as determined at the Glasgow Observatory and indicated on the face of the chronometer with its correction for that morning written down by Professor Nichol. That piece of daily work for the whole of the British Association week was successfully performed, thanks in a great measure to the Electric and International Telegraph Co., who conducted all the "through" part of the operations, including the laying down of a long line of wire from their station to the Glasgow College, and still more to the late eminent Sir Thomas Makdougall-Brisbane who generously bore the expense of the whole; but somehow there did not seem to be enough in the Time-Ball system itself, to fully interest the practical inhabitants of the great western city, for nothing further followed or was adopted. When, however, after eight years had elapsed, and the inventions of Professor Wheatstone had enabled an electric current to explode a distant gun more easily as well as certainly than to drop a ball; and certain citizens of Glasgow, as represented to us chiefly by the directors of telegraph companies, did locally provide a cannon, and, aided materially by the well-known Magnetic Telegraph Company, did connect it by wire with the Edinburgh Observatory, and when the current from there did consequently discharge the Glasgow gun simultaneously with the several guns of Edinburgh, Newcastle, and Shields,—the strong common sense of Glasgow's citizens immediately perceived the superior efficiency of the new system; for, after a week's experiment with from 2 lb. to 2·5 lb. of gunpowder a day, from a cannon temporarily placed, as will be seen in a Schedule recently received from them, they are now vigorously adopting a new and more suitable locality, with the

The Ball system does not make so many converts as the Gun.

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noble charge of 8 lbs. of powder, or nearly double of what is used at any of the other stations.

While in this manner the utility of the Edinburgh Royal Observatory is being spread equally from one to five cities; its own labour is by no means proportionally increased. The time occupied in star observations day by day all the year through, and the comparison and correction of the signal-clock many times a-day, are exactly the same as before; and all the new duty required, is a simple attention to larger galvanic batteries and an automatic clock arrangement which sends off currents to four different telegraph lines, in place of one only. For the accuracy in time and efficiency in force of these electric currents, the Observatory pledges itself: and Edinburgh, at the fountain head of the currents, knows at once by her own two daily time signals, whether the distant affiliated cities have received a correctly timed current or not.

Advantages both in economy and accuracy, flowing from a comprehensive system of electric signals.

The present time-signalling system, therefore, of the Edinburgh Royal Observatory may be regarded both as most complete in its publicity; in the various checks which it affords to all and sundry for detecting error; and, as something never yet surpassed anywhere both for the distance to which the original Observatory currents are sent, and their directness in inducing at their further ends, the exact and full signal that is required there. Those terminal mechanisms are all due to Mr Nath. J. Holmes, and he has had the organisation of the arrangements for procuring for a few minutes each day the loan of unbroken lines of wire between each terminal city and the Edinburgh Observatory. We have not therefore agitated for or advocated anywhere the adoption of our system or the reception of our signals; but have simply waited until local parties have brought the end of a wire within our walls, and requested us to send a strong electric current into that end punctually each day at one o'clock, because the other end would then be connected at a distance of 50 or 70 or more miles, as the case might be, with a loaded cannon prepared by the citizens there to be a time-signal to them.

Unexceptionable mode of establishment and growth.

To meet these daily growing expansions of our system, unusual labour has been required from the two Assistants in the Observatory, numerous experiments have been tried, and many temporary arrangements have been employed; but these things are now settling down into an established and easy form; and one of our principal experimental results,—viz., the astonishing force of Professor Wheatstone's portable magneto-electric machine, when brought to bear by the agency of "Abel's fuse," in producing explosions, whether in air or water, and at distances varying from 1 to 120 miles,—after having been applied for by a member of a foreign Government with a view to immediate war purposes, was recently exhibited at the Edinburgh University Conversazione to the Social Science Association; where, under the title of "Insular defence," its powers were frequently put in action, and on a variety of illustrative examples, which proved perfectly convincing.

SUBSIDIARY OBSERVATORY BUSINESS.

Necessity of Lightning Conductors.

While we have thus been of late employing *artificial* electricity in many useful operations, I have to report that the Observatory had been previously injured by *atmospheric* electricity; for, in the very unusual storm of thunder and lightning last February, in which the Nelson Monument was partially set on fire, the Time-ball wires were broken, our window-clock rendered useless, and considerable damage done in the interior of the Observatory. I have, therefore, to request the Board to represent this matter to H.M. Government, and apply for a small grant, both to repair the past misfortune, and to furnish the Observatory with some amount of scientific protection from the effects of lightning for the future.

Present of books from abroad.

I have also to call the attention of the Board to the last few months' accumulation of scientific books presented from abroad, a memorial alike of the estimation in which the Royal Observatory, Edinburgh, is held by many foreign countries, and of the necessity for our being provided, as mentioned in former reports, with the means of binding, and the space for setting up, these invaluable stores of modern research.

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II. REPORT read by the Astronomer-Royal for Scotland to the Special Meeting of Her Majesty's Government Board of Visitors of the Royal Observatory, Edinburgh, on the 4th of November 1864.

Mr President and Gentlemen,

At your last meeting within the walls of this building on the 14th of October 1863, I had occasion to bring to your notice, that in my four preceding annual Reports on the state of this Royal Observatory, many points essentially connected with its wellbeing had been duly set forth before you, in your capacity as the appointed means of communication between the Observatory and H. M. Government. I had also to regret, that no results of such communications had transpired lately. Reference to last Report.

In the course of last spring, this state of things excited the earnest attention of the Chamber of Commerce of Edinburgh, who much desired to act in concert with the Board of Visitors, and to testify, if necessary, to the Government Officers in London, how much interest was felt in this part of the kingdom, that the Royal Observatory of Scotland should be maintained in a state of efficiency. A Committee of the Chamber, under the convenership of Mr R. M. Smith, was accordingly formed, who examined into the whole legal and documentary history of the Observatory from the time of its being adopted by H. M. Government; and when the members had fully satisfied themselves on all necessary points, the Chairman of the Chamber, Mr Duncan M'Laren, proceeded to London and represented the case personally to the Lords of H. M. Treasury. Movement by the Chamber of Commerce.

Upon that representation, My Lords required from your Secretary a report of your last meeting; on receiving which, they, My Lords, examined the more ancient documents in their own office, and found that according to them, H. M. Government were bound to keep up and repair the instruments here, as well as the buildings containing them.

Thus was gained, and in a perfectly unexceptionable manner, a most important turning-point in the history of the Observatory; one often contended for previously, but without distinct result; and the thanks of all who are interested in this national establishment for Scotland are eminently due to Mr Duncan M'Laren, for having necessitated a crucial inquiry, which resulted in such an admission; for what would any Observatory come to at last, if its architectural portion were alone attended to, and nothing done to keep up its astronomical instruments. Its success.

The admission of responsibility being once made by the Lords of H. M.

Treasury, appropriate action speedily followed thereupon, and an official inspection was ordered of the state of each of the instruments in the Observatory. This examination accordingly took place, and was followed by the preparation of an estimate for repairs required, which estimate is, I believe, at the present moment under their Lordships' consideration.

THE ORDINARY ASTRONOMICAL WORK OF THE OBSERVATORY.

The ordinary Astronomical Work of the Observatory.

Meanwhile, the work of the Observatory has been going on much as usual. The fundamental data for our observations of time and Right Ascension with the Transit Instrument are,—the places of the principal stars, as kindly furnished to us at the beginning of each year from the Royal Observatory, Greenwich; and we recently received a spontaneous and very satisfactory proof that the Astronomer-Royal is as careful of the full and perfect accuracy of the list of star places which he furnishes us, as of that which he uses himself.

State of the Mural Circle.

In observations of the Polar Distances of Stars, we have hitherto depended on the absolute indications of the Mural Circle, as aided by reflection observations and the known Latitude. But it is doubtful how much longer this can be carried on; for, in the course of last year, a change of balance in the circle has manifested itself, and recalls the calamitous condition in which several of its spokes were found in 1846. We have immediately brought into use the four microscopes additional to those usually employed, so as to get at any change in the value of the graduation consequent on the alteration of balance; but have not been able even to do that, without experiencing proofs of the actual rottenness of certain parts of the brass; and perceiving the wisdom of those other Observatories, which have long since replaced their instruments of the age of this mural circle, with new structures and improved material.

The Sidereal Clocks.

The system of Sidereal Clocks, viz., three, electrically controlled under Jones' system by a fourth, which is kept in a closet of more equal temperature than the observing room, continues to answer so well that it has been visited by the Director of a new Observatory, and an estimate for a similar loud seconds-striking clock to ours, has been procured from the makers of it, Messrs Ritchie and Son of Leith Street. We are not, however, quite satisfied yet, that all possible practical accuracy has been reached for the most refined purposes of astronomy, and only wait the opportunity to carry out further some of the same principles which have already yielded us such improved results upon our experience of past times.

The Mean-Time Clocks.

The also electrically Controlled Mean-Time Clocks (excepting the unfortunate window clock whose ruin by lightning we have not attempted, in the absence of funds, to repair), have likewise been performing admirably; and have been so much approved of, that two similar ones have been ordered of

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Messrs Ritchie for the Imperial Observatory of Pulkova. They are both now finished and despatched to their destination, but were kept some time going under electric control of this Observatory, in the same circuit with the Castle Clock; and one of them, carrying a large and broad seconds-hand of 1 foot radius, and carrying it true to the Observatory time, was both a triumph to Jones' system of controlling, and an advance on public clocks for giving time accurately to the people.

Similar Clocks ordered in Edinburgh for Russia

But perhaps a still more striking proof of the position we have attained as introducers into, and up to last year the only employers in, Scotland of Jones' system of electric-controlled clocks,—was experienced last autumn when certain parties of the Glasgow College,—who had unfortunately been moved into bitter hostility against both me, the Edinburgh Observatory, and even the city of Edinburgh,—because quite innocently I had sent out from here, the electric signals which had gone on to Glasgow and given that city the intellectual luxury and business accommodation of true time daily, by discharging guns there as above described in p. R 7,—when these very parties, I say, determined to begin an opposition by indicating the true time to their city themselves, and to do it through means of clocks controlled on Jones' system—which system they further professed to derive exclusively from Liverpool, and implied that Edinburgh knew nothing about it. But there was no one then in Glasgow capable of applying the system. To whom did the parties there send for *privately*, but Messrs Ritchie of Edinburgh, the very clock makers of the R. Observatory, Edinburgh, for the purpose of enabling the wealthy and powerful Glasgow University to begin their wilful and needless warfare against the said small and very poor Edinburgh Observatory.

Glasgow College profits by the Edinburgh Observatory's introduction of Jones' system of Controlled Clocks into Scotland.

Messrs Ritchie accordingly,—having first called on me and asked me whether, under such strange circumstances, they *could* go,—went there, and not only, with my full approval as Astronomer Royal for Scotland, applied the electric control to the Turret Clock of the Glasgow College on the 20th December 1863, and applied a seconds break and contact springs to the Glasgow Observatory Mean-Time Clock on the same occasion, but on the 12th of January 1864, applied the electric control to Prof. W. Thomson's class-room clock; made another electric-controlled clock of large size on 14th March 1864 for the College authorities, to exhibit either at the Tontine or in Buchanan Street; and furnished during the same month to Prof. Grant of the Glasgow Observatory a pair of clocks for illustrating the principle of electric controlling.

The leading Mean-Time Clock of our Edinburgh Observatory series has experienced a notable practical improvement, in having had applied to it our ingenious citizen Mr Sang's method of adjusting a clock to true time daily, or clearing off the small effects of its rate during twenty-four hours. This method

Introduction of Mr Sang's Method of Adjustment

was described here by Mr Sang in a paper read before the Royal Scottish Society of Arts last winter, and has now been applied by him with his own hands to our Clock; with such excellent and truthful workmanship too, that the ordinary rate of the clock is really steadier than it used to be formerly; while the method of removing from its indications an absolute error of one, two, or three tenths of a second, more or less, is admirably simple, and nearly incapable of being misused even under circumstances of haste or disturbance.

It is therefore really another Edinburgh contribution, of no mean practical importance to the art of communicating the true time accurately to the public.

EDINBURGH DAILY TIME-SIGNALS.

Edinburgh Daily Time-Signals.

Our means therefore of working public time-signals are now more nearly perfect than at any former period; and the Edinburgh daily signals have been given effectively by both Time-Ball and Time-Gun throughout the year; excepting that the former signal has failed on two occasions and was totally suspended for several weeks during the summer, while repairs were being performed. These were of a serious kind, for the wooden mast on which the Ball traverses, was found to be rotten, after its twelve years' service on the top of Nelson's Monument, and to require complete renewal; a difficult task on a very contracted and painful site, but performed successfully by Mr Matheson and the Office of Works. The opportunity was taken too, at the same time, of improving the action of the air cylinder, by substituting for the old disc a piston of an elongated cylindrical figure; and with such remarkably good effect, that the performance of the apparatus is vastly better now than it was when first erected; and while the velocity of the first part of the descent is unimpaired, the latter part is made so slow, and yet so regular, that it occupies more than twenty seconds, and it is difficult to perceive by eye, and quite so by ear, when precisely the heavy mass comes to a rest.

Repairs of Time-Ball Structure.

The Edinburgh Time-Gun.

Respecting the Time-Gun, I had announced in former reports that it was everything we could wish it, except the occasional no-fire arising from a bad fuse. That one difficulty has now been practically removed, and since the 5th of last January there has not been a single miss-fire. The credit of this improvement is due altogether to the present master-gunner, W. Swanston Brent, who, having made an original examination of the friction fuses, considered that the previous failures arose, not from any defect in the chemicals, but from the occasional imperfect fixation of the mechanical elements of the fuse. With this idea in his mind, he made up a small apparatus, and employed it in his own rooms for testing this portion of the manufacture of each tube before giving it out for the service of the gun, and the consequence is, that not a single miss-fire has taken place since then.

Notable Improvement by the present Master-Gunner at the Castle.

The improvement has been so decided, and the benefit so notable alike to

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the credit of the chemists of the Royal Arsenal at Woolwich, and the efficiency of the public service here, that I trust the Board will duly mention the case in their Report to Her Majesty's Government.

THE SYSTEM OF FIRING DISTANT TIME-GUNS SUDDENLY TERMINATED.

The system of firing distant time-guns, which occupied much of the last Report, has come to an end with us here for the present, but not without having produced consequences in the highest degree worthy of record. The guns themselves, when well worked, are as popular as ever; indeed so much so, as to have excited something of over-competition for managing them. This appeared first at Shields and Newcastle; with reference to the time-guns at which places Mr Holmes, their originator, was informed one morning last November, by a local board, that his further services were dispensed with, an arrangement for firing them for seven years to come having been entered into with the Electric and International Telegraph Company.

The System of Firing distant Time-Guns suddenly terminated.

Of the Newcastle and Shields Time-Guns.

When *we*, of the Royal Observatory, Edinburgh, were applied to, however, to go on sending our daily currents, to fire the guns under this new arrangement, I thought myself called on to refuse; because not only was our original promise made to Mr Holmes only, but we looked on him as the inventor of the distant time-gun system, and as having acquired a moral patent to its working for some years, so long as he kept ahead of all other parties in the effective and appropriate application of electricity to the end in view; and this requirement he fulfilled most admirably by his employment of his purchased interest in Wheatstone's Magneto-Electric exploder for igniting the fuse, and by his praiseworthy punctuality in keeping up the system of regular weekly returns, in schedule forms, of the actual particulars at each gun.

Mr Nath. J. Holmes the originator of them.

Mr Holmes was, however, liberal enough to say, that he would not insist on his being retained to work the guns, so long as they were fired by the prompt action of the magneto-electric spark, as distinguished from the slow heating action of galvanic batteries. In conjunction therefore with him, and adding to his views what seemed necessary on the part of the Royal Observatory, Edinburgh, to secure exactness, we prepared a set of rules on which, and on which only, it was agreed that signals for firing time-guns could be sent from here.

Principles of Firing Time-Guns from a Royal Observatory settled.

These rules being forwarded to the Tyne Commissioners, at their request, were much discussed with them; and though objected to at first, on account of their stringency, were gradually admitted by them, especially after their Secretary had been sent here to have a personal interview with me. Indeed the whole breach seemed so certainly closing up in a satisfactory manner, that, in

anticipation of the firing of the guns being speedily resumed, I applied to the Queen's and Lord Treasurer's Remembrancer in Scotland to overlook any agreement that might be proposed binding the Royal Observatory, Edinburgh, to the service of the Time-Guns of the Tyne, and that high officer kindly consented so to do.

The Originator of the Guns, and the already recognised principles on which they *should* be fired, overthrown.

Such was the state of things, when a few days afterwards we heard unexpectedly that the Royal Observatory, Greenwich, had stepped into the arena, and undertaken the firing of those guns, in connection with the Electric and International Telegraph Company, without any of the precautions which we had already pronounced on as essential to accuracy and success, and without Greenwich having up to that time adopted a single gun in its own time signalling practice.

The second case to be noticed is that of the Glasgow Time-Gun, which had been just set on foot at the date of the last Report. The account of it there given has been violently criticised by certain persons, the thing itself bitterly fought against, and myself, my office as appointed by Her Majesty, the Royal Observatory, Edinburgh, and the city of Edinburgh, reviled in a paper of the Western Metropolis—mainly, so far as is openly alleged, because I attributed that remarkable public good, or the establishment of the Glasgow Time-gun, to "the Citizens of Glasgow," when such and such other parties in Glasgow (and notably the College there, which it now appears was at that time *entering* into arrangements *soon to begin* signalling time to the Clyde), had nothing to do with its establishment. Now I have no desire to keep to the expression "the Citizens of Glasgow," if it is too comprehensive; and indeed I did not intend it in any such sense, but meant only to give honour to those of the citizens there who did, at their own expense, make all the necessary local, civic, and police arrangements for giving that important city the benefit of a general time-signal of the most effective kind; at a period too *when Glasgow was getting nothing of the sort from its own Observatory;* and those local arrangements being publicly completed there by those gentlemen, *they* brought the end of their wire from Glasgow into the walls of this, the Royal Observatory, Edinburgh, and requested me, as "Astronomer Royal for Scotland," to send into it a daily electric current.

The Glasgow Time-Gun of October 1863.

This duty, therefore, in accordance with the terms of my appointment by Her Majesty, I duly performed, in spite of disloyal oppositions and abuse coming to me from the West, from October 1863 to February 1864; and meanwhile those truly worthy persons who, if not the whole of the citizens of Glasgow, were virtually acting most admirably for them in the local arrangements, and who were ably headed and directed by Mr Nath. J. Holmes with the Directors of the Universal Private Telegraph Company, citizens, I am assured, of worth

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and renown,—supplemented their first Time-Gun in the suburbs of Glasgow by a second one in St Vincent Place on the 29th of October, and these two by a third one at the Broomielaw, on the 10th of November; while a fourth gun was added to the system at Greenock, on the 21st of November, all four being then and thereafter simultaneously fired through the agency of the electric current from this Observatory.*

Supplemented by two more Time-Guns in Glasgow, and one in Greenock.

Of each of the three Glasgow gun-fires, regular schedule returns on printed forms were sent here every week; and form now an interesting collection, illustrative of an experiment in its way unequalled anywhere, and now complete within itself, having come to a conclusion on the 6th of February 1864, but not without reflecting the utmost credit on the several Officers of the Telegraph Company employed to superintend the local management of the respective cannons. It would be easy to show from Glasgow newspapers that the Time-Guns greatly approved themselves there to citizens generally, notwithstanding some special cases of opposition. Those guns, however, once dropped by their original promoters, are still silent; and, without Mr Nath. J. Holmes to assist, though many have tried, or are trying, no one has succeeded yet, so far as I am aware, in establishing a single Time-Gun in Great Britain, other than our original one of the Edinburgh Observatory, the citizens of Edinburgh, and the Edinburgh Castle.

Close of the Glasgow and Greenock Time-Guns.

In Madras it is reported that measures are being taken by the very able Astronomer there, Mr Norman Pogson, with funds supplied to him by the Governor in Council, to convert no less than five guns which are daily, at different hours, fired in and about that city, into Time-Guns, by connecting them electrically with the Normal Mean-Time Clock of his Observatory; and he makes the remark in his official document on the subject, that "the smoke by day and flash by night, (of a Time-Gun), are far better and more conspicuous signals than any Time-Ball,"—a remark that must be grateful to Edinburgh ears.

Time-Guns at Madras.

METEOROLOGICAL COMPUTATIONS AND CORRESPONDENCE.

In Meteorology, we have been occupied as usual in deducing from the observations made at fifty-five of the stations of the Meteorological Society of Scotland, the returns required for the Monthly and Quarterly Reports of the Registrar-General of Births, Deaths, &c., in Scotland. We have also had some correspondence with M. Le Verrier of the Imperial Observatory of Paris, based on the Society's observations at and about the period of the great storm of December 2 and 3, 1863; and believe that these observations, which I was

Meteorological computations and correspondence.

The Storm of Dec. 2 and 3, 1863.

* I.E. The galvanic current produced by batteries in this Observatory, and sent off by one of its clocks, was made to close a circuit in Glasgow, the closing of which circuit liberated a spark from a local magneto-electric apparatus and that by igniting an Abel's fuse instantaneously exploded the gun. See Appendix.

allowed to communicate by express consent of the Society, were looked on in France as furnishing some very notable data connected with the physical features of that remarkable aerial disturbance.

Meteorology as an advancing Science.

There is little doubt but that the present is a favourable epoch in the growth and spread of Meteorology. It has not indeed advanced as had been expected of it a few years ago, when, if it was to advance at all, some great writers predicted that it would be,—by taking on it the character of Astronomy, and allowing its exact features to be predicted by calculation for any length of time to come; but such a contrariety in result is generally a mark of true scientific progress. What has really been accomplished has been almost entirely the fruit of the extension of the electric-telegraph, which concentrates instantaneously at one point a knowledge of the meteorological circumstances at many out-stations, and enables a central authority, by what he knows has already begun in the atmosphere at a distance, but is progressing slowly over sea and land, to warn many places of what they may presently expect to feel.

Admiral Fitzroy's methods.

In our own country Admiral Fitzroy has earned for himself a distinguished fame as the pioneer in this new department of Meteorology, and has executed his difficult part with admirable skill.

M. Le Verrier's Publications.

It is worthy of note, however, that the same service has since been entered into by M. Le Verrier and the Imperial Observatory of Paris, with the effect of introducing some notable improvements, and amongst others, the publication of their daily bulletin.

Instant Value of the French iso baric daily maps.

This bulletin is forwarded to the Royal Observatory, Edinburgh, free, every day, by M. Le Verrier; and we find his daily map of the barometrical and wind state of Europe so important in forming conclusions of the weather, that we must advise all Meteorologists in this country to subscribe for a copy of this French production, until the English Government establishes something of the same order. Indeed a single glance each morning at the barometrical lines, shows incontestably, by their closeness or wideness apart, both the intensity of that chief mechanical action for producing wind, viz., difference of adjacent barometric pressures, together with the amount of such movement and the parts of the world next likely to be visited by the disturbance.

Great Meteorological progress in France.

It is also well that it should be known more generally than it seems to be in Great Britain, what an immense impetus has been given to the study of physical phenomena in France, by the establishment during last year of the "Association Scientifique." This Society, originated and in some measure assisted by the Imperial Observatory, realises in France the peculiar British principle of the voluntary association of independent individuals, besides also recognising the requirement in Meteorology as distinguished from Astronomy, of an immense number of observers spread over the entire country, but working on a uniform system well organised and inspected. The Association seems to have become already exceedingly popular over the whole of France, and has held

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some central meetings within the Observatory on a greater scale than the celebrated Institute, but in a different manner. M. Le Verrier, too, further reports, that as the stormy season is now approaching, the number of officials in the Central Observatory has been increased from and after the 2d of the present month, so as to allow of constant attendance there up to midnight, for the purpose of receiving late telegraphic dispatches and watching over the coming weather for all the coasts of France.

The staff of the Paris Observatory strengthened for the Meteorology of the coming winter.

Great storms can certainly be predicted in this manner, one, two, or more days beforehand, and more easily in tropical than in temperate latitudes; it would seem therefore well worthy of public demand, in presence of the accounts of the recent great storm at Calcutta and the loss of 12,000 lives, that a Commission should be sent out to inquire into the circumstances, and ascertain what portion of that large amount of loss might have been saved to the country, by a proper employment of the resources of modern science.

The recent Storm at Calcutta.

QUESTION OF SOLAR REFRACTION.

A problem more astronomical than meteorological, and more connected with general physics than with either, is that of the sensible existence of a solar-refraction, of the nature indicated by Prof. W. Thomson, from his views on the Dynamical Theory of Heat. We had endeavoured here to make observations to test it, but without success, and in our smoky position, despaired at last of ever seeing a star sufficiently near the sun for the purpose. During this present year, however, the subject has been taken up by the Astronomers at Pulkova, near St Petersburg, where they have a purer atmosphere than ours, more modern instruments, and unrivalled skill; so that their practical finding must be important for the theory in its present state. Their method also of inquiry was original, and is thus described by M. Wagner, who has charge of the Transit Instrument and the time observations there generally.

Question of Solar Refraction.

Taken up in an efficient manner in Russia.

"This summer we have undertaken, on your precedency, a series of observations for ascertaining the existence or non-existence of a sensible solar refraction, in observing on Dr Winnecke's proposition, Venus about the time of her superior conjunction with the sun. The unfavourable state of the weather has prevented us from observing Venus from July 12 to July 22 inclusive, the conjunction happening on the 17th. Nevertheless, I succeeded in observing Venus on the 23d, when her distance from the border of the sun was not greater than 1° 28′; and I think that under favourable circumstances it will be possible to observe Venus, and also Mercury considerably nearer to the Sun, even when not at great elevations above the sea-level, where certainly such observations may be made much more conveniently.

"The agreement of the observed Right Ascensions with those calculated from M. Le Verrier's tables is better than I had expected under such circum-

stances, and certainly at these distances from the Sun, there is not yet any solar refraction of appreciable amount, as you may judge yourself from the following list :—

Date.	Observation—Calculation. Second.	Remarks.	Date.	Observation—Calculation. Second.	Remarks.
1864 June 4	0·00		July 9	+0·01	
7	+0·02		10	−0·04	
9	0·00				
10	+0·02		23	+0·02	
13	+0·03		24	+0·05	
20	−0·11	Two wires only observed.	26	−0·01	
23	−0·03		27	0·00	
25	−0·02		29	−0·05	
27	−0·05	Determination of time 1·5 days' distant.	30	−0·12	Very bad image; the agreement of the 5 single wires bad.
30	−0·00				
July 4	−0·06		August 4	−0·01	

"Dr Gylden has observed Venus with the Vertical Circle, but his observations are not yet all reduced."

This must be regarded as a very interesting and valuable contribution from abroad, to a modern Scottish problem in its theoretical origin.

A NEW INQUIRY URGED UPON THE ASTRONOMER.

A new Inquiry urged upon the Astronomer.

About five years ago, a subject was, by a private gentleman, pressed upon my attention, as Astronomer-Royal for Scotland, to investigate; but, I, finding that it was not ostensibly in my line, handed it over to one of the Architectural Societies in Edinburgh. Nothing, however, was done in that quarter; and therefore, when another book on the same subject was sent to me from the same author last winter, I set myself to look into it as well as I could.

The Great Pyramid, and Mr Taylor's Theory.

This subject was, a theory of the Great Pyramid of Egypt, as expounded by the then living but now deceased Mr John Taylor of London, in his two works, "The great Pyramid, why was it built, and who built it," and "The Battle of the Standards," *i.e.*, standards of weight and measure. The further that I proceeded in the inquiry, the more *some* of Mr Taylor's leading views seemed to commend themselves; until, after reading everything that I could lay my hands on, applying some special tests and giving full consideration to all recorded measures,—a high probability was impressed on my mind, that the Great Pyramid, besides its tombic use, might have been originally invented and designed to be appropriate for no less than a primitive *Metrological* Monument; not however of the Egyptian idolatrous metrology, but of proto-Chaldean, and more particularly of the sacred Hebrew, metrologies. Also that it was completely isolated by its leading features of construction from all other Egyptian Pyramids; was built, though amongst the Egyptians, yet in protest against their idolatry, and in an age before any other known architectural work; its metrolo-

Results of investigation by a second mind.

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gical system too, notably different from the Egyptian, had, with an exquisite simplicity such a scientific perfection that it could not possibly have been produced by any of the child-like philosophers and physicists of that early day, if there were then any such individuals at all; and being even still, more perfect than anything which civilized Europe has produced up to our own times as a practical system, may be unhesitatingly claimed as, in its origin, something bordering on the very highest questions connected with the manner of man's first appearance on the earth.

The secular proofs of these things reside chiefly in comparison of the best measures of the Pyramid with the latest modern measures of the Earth, and testing the deductions therefrom under all scientific severity; and if they are not so entirely and clamantly convincing as they possibly might be to all men, the fault is largely due to the strangely conflicting and contradictory measures of the Pyramid brought home by different modern travellers; for the true theoretical quantity is always *amongst* the measures, and never on one side of them. *Their* variations or errors indeed almost exceed belief, and make the task of the computist at home most onerous and ungrateful; obliging him to condemn largely, and select very sparingly those few recorded measures which a general knowledge of many attending circumstances may induce him to think least untrustworthy.

Nature of the proofs.

Weak points in the materials for proofs.

The case is precisely such a one as requires further investigation at the place; and, seeing how our nation is agitated just now by questions of a change in its hereditary Metrology, and is urged by a powerful political party to take a radically subversive, instead of a correcting, improving, and reforming, step in that direction—which may be much more fatal to national interests and connections than most men are aware of, in their present uncertainty as to whence these measures were originally derived, and how they acquired a primal resemblance both to those of the Great Pyramid, and to some of the sacred Hebrew measures of old,—I propose to go out to Egypt without delay, though only on my own humble resources, and see if I can do anything by myself to clear up some of the smaller anomalies in the published accounts; or ascertain at least what the present state of the Monument really is, and what facilities it may offer, or difficulties it may present, to a properly furnished national expedition of the future, in an inquiry, antiquarian indeed in character but of exalted science, and where much more than merely individual national interests may be concerned.

Practical ad-measurement on the spot required.

Its possible national importance.

Decision to make a private examination at the Pyramid.

The only request herein that I have made to any one for assistance, has been to Earl Russell, as being Secretary of State for Foreign Affairs; and with him, solely to procure me from His Highness the ViceRoy of Egypt, an exclusive use of the Great Pyramid, during the time that I should be examining its internal arrangements: and his Lordship, though instantly refusing on his own

Earl Russell applied to for his intervention.

part and that of Her Majesty's Government to do anything of the kind,—has yet been pleased to write to Her Majesty's Consul-General in Egypt to procure me the honour of an introduction to the ViceRoy, and then let me plead the case for myself.

Offers of private help and encouragement.

Meanwhile, both the paper which I had the privilege of reading before the Royal Society of Edinburgh last spring, "on the reputed Metrological System of the Great Pyramid," and the popular book published in the course of the summer, "Our Inheritance in the Great Pyramid," have produced many sympathising correspondents, not only in this but other countries also; and some of those correspondents have kindly sent me introductions to Egypt, or offered assistance in various other ways. But the most immediately important, and least expected case of this kind, occurred in our own city, where a friend, immediately after reading the book above-mentioned, began an active correspondence and reference to works with many opposite arguments; but finally not only conceded, that the truth and exalted nature of Mr Taylor's views were apparently maintainable up to the extent to which recorded measures of the Pyramid could prove anything; but that they included, if true, decidedly a great and pregnant question of the day in which we live; and that the only method of further advance in it must be by accurate scientific measure. Whereupon he added, that if he could only usefully contribute the expense of any instruments, which being specially made for the occasion, might facilitate the inquiry I proposed to undertake, he begged to be allowed to do so.

A special instance of an important instrumental apparatus being offered.

This offer was made so spontaneously and heartily, so untrammelled too by the smallest expression that might have implied any desire to control my intended line of observation, that I could not but gladly respond thereto; and if I may succeed eventually in bringing home some superior measures of angle and length from the Pyramid, it will be greatly owing both to the remarkable clinometer of astronomical accuracy, and the peculiar linear measuring apparatus which are now being constructed for this trial in the optical establishment of T. Cooke and Sons, of York, and at the expense of Andrew Coventry, Esq., of Moray Place.

Conclusion.

The period of my absence must be regulated by the amount of work, and the facilities for it which may be found on arrival at the Great Pyramid; but meanwhile all arrangements are made for carrying on the usual Observatory business, and under the experienced care of Mr Wallace, the first assistant, and with the aid of Mr Williamson, the second assistant astronomer, I feel confident of everything being well attended to.

C. PIAZZI SMYTH.

ROYAL OBSERVATORY, EDINBURGH,
3d November 1864.

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APPENDIX TO REPORT FOR 1864.

EXAMPLES of the WEEKLY RETURNS received from the Stations of the distant TIME-GUNS, excepting that of Greenock, connected with the ROYAL OBSERVATORY, Edinburgh, during the end of 1863 and the beginning of 1864.

1. NEWCASTLE-ON-TYNE GUN.
2. NORTH SHIELDS GUN.
3. HAMILTON HILL, GLASGOW, GUN.
4. ST VINCENT'S PLACE, GLASGOW, GUN.
5. BROOMIELAW, GLASGOW, GUN.

TIME-GUN STATION AT NEWCASTLE-ON-TYNE IN THE YEAR 1863.

DISTANCE OF NEEDLE STATION FROM GUN = 600 FEET S.W. BY W.

Day of		1st Signal.		2nd Signal.		3rd, or the 1 : 0 : 0 p.m. Gun Signal.				Wind.		Clouds, 0 to 10.	Wet, Dry, Foggy, or otherwise.	Remarks
Month.	Week.	Time by Clock.	Manner.	Time by Clock.	Manner.	Time by Clock.	Manner.	Interval to Sound of Gun.	Sort of Sound.	Miles per Hour approximately.	Direction.			
		m. s.		m. s.		m. s.		sec.						
Oct. 22	Th.	58 0·5	good	59 0·5	good	60 9·5	good	0·5	sharp	1	W.	0	fine, slight haze	
23	F.	58 0·5	good	59 0·5	good	60 0·5	good	0·5	sharp	1	W.	0	do.	
24	S.	58 0·0	good	59 0·0	good	60 0·0	good	0·5	sharp	2	S.W. by W.	0	do.	
25	⊙	58 0·0	strong	59 0·0	very strong	60 0·0	very strong	0·5	sharp	1	S.	9	dull and cold	
26	M.	no signal	....	59 0·5	weak	60 0·5	good	0·5	heavy	1	W.	5	dull	Connection of wire late in Edinburgh for 1st Signal
27	T.	57 57·5	good	58 57·5	good	59 57·5	good	0·5	heavy	1	S.W.	8	wet	
28	W.	57 58·0	good	58 58·0	good	59 58·0	good	0·5	sharp	3	S.W. by W.	9	dull and cold	
29	Th.	57 57·5	strong	58 57·5	strong	59 57·5	strong	0·5	heavy	4	S.E. by S.	10	wet	Gun fired from local Battery, Edinburgh line not in contact, owing to heavy rain and mist.
30	F.	obser-	vations	not	made	59 57·0	....	0·5	heavy	2	S.W. by W.	10	wet	
31	S.	57 56·5	weak	58 56·5	stronger	59 56·5	strong	0·5	heavy	8	N.W. by W.	5	showery	
Nov. 1	⊙	57 56·0	strong	58 56·0	strong	59 56·0	strong	0·5	sharp	1	N.W. by W.	8	dry, cold	
2	M.	57 54·5	strong	58 54·5	strong	59 54·5	strong	0·5	heavy	1	N.E.	10	wet	
3	T.	57 54·0	strong	58 54·0	strong	59 54·0	strong	0·5	sharp	2	S.W.	10	dull	
4	W.	57 53·5	very strong	58 53·5	very strong	59 53·5	strong	0·5	sharp	4	W.N.W.	8	dull	
5	Th.	57 53·0	strong	58 53·0	strong	59 53·0	strong	0·5	heavy	4	W.	10	cloudy	
6	F.	57 52·5	strong	58 52·5	strong	59 52·5	strong	0·5	sharp	1	W.	8	fine, cold	
7	S.	57 50·5	strong	58 50·5	strong	59 50·5	strong	0·5	heavy	1	S.W. by W.	10	wet	
8	⊙	57 48·5	strong	58 48·5	strong	59 48·5	strong	......	....	2	S.E. by E.	10	very wet	No gun—[illegible]
9	M.	57 47·0	very strong	58 47·0	very strong	59 47·0	very strong	0·5	heavy	2	N.E. by E.	8	foggy	
10	T.	57 46·0	strong	58 46·0	strong	59 46·0	strong	0·5	sharp	4	N.W. by W.	9	fine, dry	
11	W.	57 45·0	good	58 45·0	good	59 45·0	good	0·5	sharp	1	W.	5	fine	
12	Th.	57 41·0	good	58 44·0	good	59 44·0	good	0·5	sharp	3	S.W. by W.	8	fine	
13	F.	57 43·5	good	58 43·5	good	59 43·5	good	0·5	heavy	4	S.W.	8	fine, cold	
14	S.	57 43·0	good	58 43·0	good	59 43·0	good	0·5	sharp	5	W.	8	dull	
15	⊙	57 43·0	good	58 43·0	good	59 43·0	good	0·5	sharp	3	N.W. by N.	8	fine	
16	M.	57 43·0	strong	58 43·0	strong	59 43·0	strong	0·5	heavy	2	N.W. by N.	9	dull	
17	T.	57 43·5	weak	58 43·5	weak	59 43·5	stronger	0·5	sharp	5	W.	5	fine	
18	W.	57 42·0	strong	58 42·0	strong	59 42·0	strong	0·5	heavy	5	S.W. by W.	10	dull	
19	Th.	....	....	....	....	....	....	......	....	1	S.W. by S.	8	fine, hazy	No gun, signal not received (purposely; wires being taken down in Newcastle by order).—C. P. S.

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TIME-GUN STATION AT NORTH SHIELDS, IN THE YEAR 1863.

Distance of Needle Station from Gun = 8¼ Miles.

Day of Month.	Day of Week.	1st Signal. Time by Clock. m. s.	1st Signal. Manner.	2nd Signal. Time by Clock. m. s.	2nd Signal. Manner.	3rd, or the 1 : 0 : 0 p.m. Gun Signal. Time by Clock. m. s.	3rd Signal. Manner.	3rd Signal. Interval to Sound of Gun.	3rd Signal. Sort of Sound.	Wind. Miles per Hour (approximately).	Wind. Direction.	Clouds, 0 to 10.	Wet, Dry, Foggy, or otherwise.	Remarks.
Oct. 22	Th.	20 0·0	good	40 0·0	good	60 0·0	no signal	......	....	......	....	......	....	No gun; observations not made
23	F.	20 0·0	good	....	....	60 0·0	good	......	sharp	......	....	......	....	Observations not made
24	S.	50 0·0	good	55 0·0	good	60 0·0	good	......	sharp	......	....	......	....	
25	⊙	50 0·0	good	51 0·0	good	60 0·0	good	......	sharp	......	....	......	....	do. do
26	M.	50 23·0	good	55 23·0	good	60 20·0	good	......	sharp	......	....	......	dry	do. do.
27	T.	50 6·0	good	55 5·5	good	60 5·0	good	......	sharp	......	....	......	fine and dry	do. do.
28	W.	50 0·0	good	52 0·0	good	60 0·0	good	......	sharp	1	S.W.	10	wet and foggy	
									sharp	4	W.S.W.	8	dry and foggy	
29	Th.	50 0·0	good	52 0·0	good	60 0·0	good	......	sharp	3	W.	10	wet and foggy	By Mr Abel's fuse
30	F.	50 0·0	good	52 0·0	good	60 0·0	good	......	sharp	2	W.S.W.	10	foggy	Gun fired by friction tube
31	S.	Line damaged by	gale; fired by clock			60 0·0	good	......	sharp	6	W.	5	dry	
Nov. 1	⊙	....	....	....	....	60 0·0	good	......	sharp	1	S.W.	3	dry	do. do.
2	M.	....	....	....	....	60 0·0	good	......	sharp	8	W.	10	very wet	do. do.
3	T.	....	....	....	....	60 0·0	good	......	sharp	1½	S.	6	dry	do. do.
4	W.	50 0·0	good	52 0·0	....	60 0·0	good	......	sharp	6	W.N.W.	7	dry	do. do.
5	Th.	50 0·0	good	52 0·0	good	60 0·0	good	......	sharp	1	W.	10	dry and foggy	do. do.
6	F.	50 0·0	good	52 0·0	good	60 0·0	good	......	sharp	calm	....	8	foggy	do. do.
7	S.	50 6·0	good	52 6·0	good	60 6·0	good	......	sharp	calm	....	8	foggy	do. do.
8	⊙	50 0·0	good	52 0·0	good	60 0·0	good	......	sharp	8	S.W.	10	wet and foggy	do. do.
9	M.	50 0·0	good	52 0·0	good	60 0·0	good	......	sharp	4	....	6	....	do. do.
10	T.	50 2·0	good	52 2·0	good	60 2·0	good	......	sharp	3	W.	7	dry	do. do.
11	W.	49 40·0	good	51 40·0	good	59 40·0	good	......	sharp	2	W.	5	dry	do. do.
12	Th.	50 0·0	good	52 0·0	good	60 0·0	good	......	sharp	8	N.	6	dry	do. do.
13	F.	50 0·0	good	52 0·0	good	60 0·0	good	......	sharp	7	W.	4	dry	do. do.
14	S.	50 0·0	good	52 0·0	good	60 0·0	good	......	sharp	4	W.	9	foggy	do. do.
15	⊙	50 0·0	good	52 0·0	good	60 0·0	good	......	sharp	2	N.W.	9	dry	do. do.
16	M.	50 0·0	good	52 0·0	good	60 0·0	good	......	sharp	calm	....	4	dry	do. do.
17	T.	50 0·0	good	52 0·0	good	60 0·0	good	......	sharp	1	W.	5	dry	do. do.
18	W.	50 0·0	good	52 0·0	good	60 0·0	good	......	sharp	1	S.W.	4	dry	do. do.
19	Th.	none	....	none	....	none	....	......	....	......	S.W.	......	dry	No gun fired

TIME-GUN STATION AT HAMILTON HILL, GLASGOW, IN THE YEARS 1863-64.

DISTANCE OF NEEDLE STATION FROM GUN = 7920 FEET SOUTH-EAST.

Day of		1st Signal.		2nd Signal.		3rd, or the 1 : 0 : 0 p.m. Gun Signal. (h. m. sec.)				Wind.		Clouds, 0 to 10.	Wet, Dry, Foggy, or otherwise.	Remarks.
Month.	Week.	Time by Clock.	Manner.	Time by Clock.	Manner.	Time by Clock.	Manner.	Interval to Sound of Gun.	Sort of Sound.	Miles per Hour approximately.	Direction.			
1863.		m. s.		m. s.		m. s.								
Oct. 16	F.	no clock	good	no clock	good	no clock	good	not	heard	3	N.E.	9	wet	Charge = 5 lb… Heard 5 miles …
17	S.	no clock	good	no clock	good	no clock	good	not	heard	2	S.W.	4	fine	8 lbs. Not heard … office, but …
……	⊙	no	gun	no	gun	no	gun	……	……	……	……	……	……	
19	M.	58 2·0	good	59 2·0	good	60 2·0	good	not	heard	2	S.	9	fine	8 lbs. Heard … round distinct
20	T.	58 22·0	good	59 22·0	good	60 22·0	good	not	heard	2	S.W.	5	fine	8 lbs. Heard … street near …
21	W.	58 18·0	good	59 18·0	good	60 18·0	good	not	heard	1	S.W.	7	fine	8 lbs.
22	Th.	no	signal	59 21·0	weak	60 21·0	weak	not	heard	½	S.W.	2	fine	Heard in … west
23	F.	58 1·0	good	59 1·0	good	60 1·0	good	not	heard	1	S.W.	4	fine	8 lbs.
24	S.	58 5·0	good	59 5·0	good	60 5·0	good	not	heard	1	S.W.	haze	foggy	8 lbs.
……	⊙	……	……	……	……	……	……	……	……	……	……	……	……	
26	M.	58 40·0	good	59 40·0	good	60 40·0	good	not	heard	1	S.W.	4	fine	4 lbs. Current giving way
27	T.	58 3·0	good	59 3·0	good	60 3·0	good	not	heard	2	S.W.	6	fine	4 lbs.
28	W.	58 2·0	good	59 2·0	good	60 3·0	good	not	heard	7	S.W.	8	breezy	4 lbs.
29	Th.	57 45·0	good	58 45·0	good	59 45·0	good	not	heard	8	S.W.	9	stormy	4 lbs. Clock … —lifting …
30	F.	57 46·0	good	58 46·0	good	59 46·0	good	not	heard	8	S.W.	8	wet	6 lbs.
31	S.	57 41·0	good	58 41·0	good	59 41·0	good	not	heard	6	S.W.	8	wet	6 lbs.
……	⊙	……	……	……	……	……	……	……	……	……	……	……	……	
Nov. 2	M.	no	signal	no	signal	no	signal	……	……	2	N.W.	9	fine	Current stopped … spring on galvanometer; …
3	T.	58 2·0	good	59 2·0	good	60 2·0	good	not	heard	2	N.	……	foggy	Clock set by … time before …
4	W.	57 42·5	good	58 42·5	good	59 42·5	good	not	heard	4	S.W.	4	heavy & damp	6 lbs.
5	Th.	57 47·0	good	58 47·0	good	59 47·0	good	not	heard	2	N.W.	4	fine	6 lbs.
6	F.	57 58·0	good	58 58·0	good	59 58·0	good	not	heard	2	W.	8	dry frost	
7	S.	57 57·0	good	58 57·0	good	59 57·0	good	not	heard	2	N.	10	foggy	
……	⊙	……	……	……	……	……	……	……	……	……	……	……	……	
9	M.	57 56·0	good	58 56·0	good	59 56·0	good	not	heard	2	S.	10	foggy	
10	T.	57 57·0	good	58 57·0	good	59 57·0	good	missed	……	2	S.	8	fine	Bad fuse
11	W.	57 56·0	good	58 56·0	good	59 56·0	good	not	heard	3	W.	9	dull	
12	Th.	57 57·0	good	58 57·0	good	59 57·0	good	not	heard	2	S.W.	8	dull, wet	

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TIME-GUN STATION AT HAMILTON HILL, GLASGOW, IN THE YEAR 1863–64.

Day of		1st Signal.		2nd Signal.		3rd, or the 1 : 0 : 0 p.m. Gun Signal. (h. m. sec.)				Wind.		Clouds, 1 to 10.	Wet, Dry, Foggy, or otherwise.	Remarks.
Month.	Week.	Time by Clock.	Manner.	Time by Clock.	Manner.	Time by Clock.	Manner.	Interval to Sound of Gun.	Sort of Sound.	Miles per Hour approximately.	Direction.			
1863.		m. s.		m. s.		m. s.		sec.						
Nov. 13	F.	57 58·0	good	58 58·0	good	59 58·0	good	missed	....	2	S.W.	10	dull	
14	S.	57 57·5	good	58 57·5	good	59 57·5	good	not	heard	1	S.W.	10	dull, wet	Fuse burst at top
......	⊙	....	....	....	....	....	....	......	....	......	....	......	....	
16	M.	57 57·5	good	58 57·5	good	59 57·5	good	not	heard	1	S.W.	10	hazy	
17	T.	57 57·0	good	58 57·0	good	59 57·0	good	not	heard	2	S.W.	9	dull	Fuse burst at top
18	W.	57 55·0	good	58 55·0	good	59 55·0	good	missed	....	3	S. by W.	9	dull	
19	Th.	57 53·0	good	58 53·0	good	59 53·0	good	not	heard	4	S.W.	10	dull	Fuse burst at top
20	F.	57 52·0	good	58 52·0	good	59 52·0	good	not	heard	2	S.	10	dull	
21	S.	57 51·0	good	58 51·0	good	59 51·0	good	not	heard	3	S.W.	10	dull	
......	⊙	....	....	....	....	....	....	......	....	......	....	......	....	
23	M.	57 49·5	good	58 49·5	good	59 49·5	good	not	heard	3	W.	10	dull	This gun was heard every day in the quieter streets, although not heard at this office. Charge = 4 lbs.
24	T.	57 49·0	good	58 49·0	good	59 49·0	good	not	heard	2	S.	6	fine	
25	W.	57 48·0	good	58 48·0	good	59 48·0	good	not	heard	8	S.	6	damp	
26	Th.	57 47·0	good	58 47·0	good	59 47·0	good	not	heard	6	S.	5	fine	
27	F.	57 46·0	good	58 46·0	good	59 46·0	good	not	heard	5	S.W. by W.	10	damp	
28	S.	57 59·0	good	58 59·0	good	59 59·0	good	not	heard	3	S.E.	10	dull	
......	⊙	....	....	....	....	....	....	......	....	......	....	......	....	
30	M.	57 52·0	good	58 52·0	good	59 52·0	good	not	heard	4	S.W.	8	dull	
Dec. 1	T.	57 51·5	good	58 51·5	good	59 51·5	good	not	heard	5	S.W.	9	damp	
2	W.	57 44·5	good	58 44·5	good	59 44·5	good	not	heard	5	W.	8	dull	
3	Th.	no	gun	no	gun	no	gun	......	....	......	....	......	....	Magnetic Telegraph Company's wire broken between Edinburgh and Glasgow. No gun
4	F.	no	gun	no	gun	no	gun	......	....	......	....	......	....	Mistake of Mag. T. Co.'s clerk at Edinburgh attaching wrong wire. No gun
5	S.	57 58·0	good	58 58·0	good	59 58·0	good	......	....	9	W.	10	stormy & wet	Gun wire broken by storm, and could not be repaired in time. No gun
......	⊙	....	....	....	....	....	....	......	....	......	....	......	....	
7	M.	58 8·0	good	59 8·0	good	60 8·0	good	not	heard	10	S.W.	10	very stormy and wet	
8	T.	58 10·0	good	59 10·0	good	60 10·0	good	not	heard	9	W.	10	wet	
9	W.	58 13·0	good	59 13·0	good	60 13·0	good	not	heard	4	S.W.	5	fine	
10	Th.	58 14·0	good	59 14·0	good	60 14·0	good	not	heard	5	S.W.	6	heavy & damp	
11	F.	58 15·0	good	59 15·0	good	60 15·0	good	6	heavy	7	S.W.	10	wet	Heard distinctly on the top of this house

TIME-GUN STATION AT HAMILTON HILL, GLASGOW, IN THE YEAR 1863–64.

Day of		1st Signal.		2nd Signal.		3rd, or the 1 : 0 : 0 p.m. Gun Signal. (h. m. sec.)				Wind.				
Month.	Week.	Time by Clock.	Manner.	Time by Clock.	Manner.	Time by Clock.	Manner.	Interval to Sound of Gun.	Sort of Sound.	Miles per Hour approximately.	Direction.	Clouds, 0 to 10.	Wet, Dry, Foggy, or otherwise.	Remarks.
1863.		m. s.		m. s.		m. s.		sec.						
Dec. 12	S.	58 15·5	good	59 15·5	good	60 15·5	good	6	dull	7	S.W.	3	fine	
......	⊙	....	....	....	....	....	....	......	....	......	....	......	....	
14	M.	58 17·5	good	59 17·5	good	60 17·5	good	not	heard	4	S.	6	fine	
15	T.	58 18·0	good	59 18·0	good	60 18·0	good	not	heard	4	S.	5	fine	
16	W.	58 17·0	good	59 17·0	good	60 15·5 a	good	not	heard	11	S.W.	9	stormy	
17	Th.	58 13·5	good	59 13·5	good	60 13·5	good	not	heard	3	E.	3	fine	
18	F.	58 10·0	good	59 10·0	good	60 10·0	good	not	heard	4	S.W.	8	fine	
19	S.	58 8·5	good	59 8·5	good	60 8·5	good	6	dull	3	S.W.	2	fine	
......	⊙	....	....	....	....	....	....	......	....	......	....	......		
21	M.	58 6·5	good	59 6·5	good	60 6·5	good	not	heard	8	S.W.	10	dull	
22	T.	no	signal	no	signal	no	signal	6	dull	5	N.	2	frosty	Fired in short circuit by local elec[illegible]
23	W.	58 4·0	good	59 4·0	good	60 4·0	good	not	heard	7	S.	10	damp	
24	Th.	58 3·5	good	59 3·5	good	60 3·5	good	6	loud	11	W.	10	dull	
25	F.	58 1·5	good	59 1·5	good	60 1·5	good	not	heard	2	S. by W.	10	very wet	
26	S.	58 1·0	good	59 1·0	good	60 1·0	good	missed	....	4	S.W.	10	wet	Gun spiked by mischievous persons
......	⊙	....	....	....	....	....	....	......	....	......	....	......		
28	M.	58 1·0	good	59 1·0	good	60 1·0	good	not	heard	3	S.W.	10	wet	Fired again all right
29	T.	57 59·0	good	58 59·0	good	59 59·0	good	6·5	dull	0	S.W.	10	wet	
30	W.	57 59·0	good	58 59·0	good	59 59·0	good	6·5	dull	2	N.W.	6	fine	
31	Th.	57 58·0	good	58 58·0	good	59 58·0	good	6·5	dull	2	N.W.	5	fine	
1864.														
Jan. 1	F.	57 56·0	good	58 56·0	good	59 56·0	good	not	heard	1	E.	1	dry frost	
2	S.	57 57·0	good	58 57·0	good	59 57·0	good	not	heard	1	E.	1	dry frost	
......	⊙	....	....	....	....	....	....	......	....	......	....	......		
4	M.	57 58·0	good	58 58·0	good	59 58·0	good	missed	....	3	E.	1	dry frost	Bad fuse
5	T.	57 55·0	good	58 55·0	good	59 55·0	good	not	heard	4	N.E.	1	dry frost	
6	W.	57 51·0	good	58 51·0	good	59 51·0	good	not	heard	0	....	......	very foggy and hard frost	
7	Th.	57 47·0	good	58 47·0	good	59 47·0	good	not	heard	1	E.	......	foggy & frosty	
8	F.	57 42·5	good	58 42·5	good	59 42·5	good	not	heard	1	E.	......	foggy & frosty	
9	S.	....	good	....	good	....	good	not	heard	1	E.	5	frost	Clock ran down, set by gun
......	⊙	....	....	....	....	....	....	......	....	......	....	......		
11	M.	58 2·0	good	59 2·0	good	60 2·0	good	not	heard	3	S.E.	9	damp	
12	T.	58 5·0	good	59 5·0	good	60 5·0	good	not	heard	4	S.	6	damp	
13	W.	58 7·0	good	59 7·0	good	60 7·0	good	not	heard	4	S.E.	2	fine	
14	Th.	58 8·5	good	59 8·5	good	60 8·5	good	6	dull	3	S.E.	7	fine	
15	F.	58 9·0	good	59 9·0	good	60 9·0	good	not	heard	4	S.E.	5	fine	
16	S.	58 8·0	good	59 8·0	good	60 8·0	good	not	heard	4	E.S.E.	9	dull	
......	⊙	....	....	....	....	....	....	......	....	......	....	......		

a To-day there appeared to be a good deal of contact on line, evidently caused by the high wind and rain; the needles were observed to make deflections several times before the 1st and 2nd Signals. The exploder handle was not put in motion until 10 seconds before the last signal, and the keys not pressed till 60′ 14″ had expired (our time), when the guns went off 1½ second before they should have.

Digitized by

Time-Gun Station at Hamilton Hill, Glasgow, in the Year 1863–64.

Day of		1st Signal.		2nd Signal.		3rd, or the $\overset{h.}{1} : \overset{m.}{0} : \overset{sec.}{0}$ p.m. Gun Signal.				Wind.		Clouds, 0 to 10.	Wet, Dry, Foggy, or otherwise.	Remarks.
Month.	Week.	Time by Clock.	Manner.	Time by Clock.	Manner.	Time by Clock.	Manner.	Interval to Sound of Gun	Sort of Sound.	Miles per Hour approximately.	Direction.			
1864.		m. s.		m. s.		m. s.		sec.						
Jan. 18	M.	58 11·0	good	59 11·0	good	60 11·0	good	not	heard	5	S.E.	10	damp	
19	T.	58 12·0	good	59 12·0	good	60 12·0	good	not	heard	7	S.E.	9	damp	Clock set by gun
20	W.	58 2·0	good	59 2·0	good	60 2·0	good	not	heard	6	S.E.	10	damp	
21	Th.	58 1·5	good	59 1·5	good	60 1·5	good	not	heard	10	S.W.	10	very wet	
22	F.	58 0·5	good	59 1·5	good	60 0·5	good	not	heard	9	W.	8	dry	
23	S.	58 0·0	good	59 0·0	good	60 0·0	good	5	heavy	11	S.W.	5	fine	
......	⊙	....	....	....	....	....	....	......	....	......	....	......		
25	M.	58 0·0	good	59 0·0	good	60 0·0	good	not	heard	9	S.W.	7	fine	
26	T.	58 0·0	good	59 0·0	good	60 0·0	good	not	heard	15	S.W.	8	dull	
27	W.	57 59·0	good	58 59·0	good	59 59·0	good	6	dull	10	S.W.	10	dull	
28	Th.	57 57·0	good	58 57·0	good	59 57·0	good	6	loud	7	N.W.	3	fine	
29	F.	57 56·5	good	58 56·5	good	59 56·5	good	not	heard	5	S.E.	10	dull	
30	S.	57 54·5	good	58 54·5	good	59 54·5	good	not	heard	8	S.W.	5	fine	
......	⊙	....	....	....	....	....	....	......	....	......	....	......	....	
Feb. 1	M.	57 54·0	good	58 54·0	good	59 54·0	good	not	heard	11	S.W.	10	dull	
2	T.	57 54·0	good	58 54·0	good	59 54·0	good	6	loud	10	S.W.	10	wet	
3	W.	57 54·0	good	58 54·0	good	59 54·0	good	not	heard	17	W.S.W.	10	stormy, dull	
4	Th.	57 54·0	good	58 54·0	good	59 54·0	good	6	loud	4	N.	6	frost	
5	F.	57 53·0	good	58 53·0	good	59 53·0	good	6	loud	2	N.	3	frost	
6	S.	57 50·0	good	58 50·0	good	59 50·0	good	not	heard	2	N.	10	dull, frost	

The gun used at this station was a 22 pounder (iron). Charge of powder used, 4 lbs.
We have just been informed that it was originally a 22 lb. gun, but has been re-bored to the diameter of a 42 lb. one.

TIME-GUN STATION AT ST VINCENT'S PLACE, GLASGOW, IN THE YEARS 1863-64.

DISTANCE OF NEEDLE STATION FROM GUN = 60 FEET.

Day of		1st Signal.		2nd Signal.		3rd, or the h. m. sec. 1 : 0 : 0 p.m. Gun Signal.				Wind.				
Month.	Week.	Time by Clock.	Manner.	Time by Clock.	Manner.	Time by Clock.	Manner.	Interval to Sound of Gun.	Sort of Sound.	Miles per Hour approximately.	Direction.	Clouds, 0 to 10.	Wet, Dry, Foggy, or otherwise.	Remarks.
1863.		m. s.		m. s.		m. s.		sec.						
Oct. 30	F	57 46·0	good	58 46·0	good	59 46·0	good	nil	sharp	8	S.W.	8	wet	3 oz.
31	S.	57 41·0	good	58 41·0	good	59 41·0	good	nil	loud	8	S.W.	9	wet	3 oz.; broke sky light window
......	⊙	....	....	....	....	....	....	......	....	......	....	......		
Nov. 2	M.	no	signal	no	signal	no	signal	......	....	2	N.W.	9	fine	Current stopped by spring on galvanometer; mistake
3	T.	58 2·0	good	59 2·0	good	60 2·0	good	nil	loud	2	N.	......	foggy	4 oz. Clock set by local time before gun
4	W.	57 42·5	good	58 42·5	good	59 42·5	good	nil	loud	4	S.W.	4	damp	4½ oz.
5	Th.	57 47·0	good	58 47·0	good	59 47·0	good	nil	loud	2	N.W.	4	fine	4 oz.
6	F.	57 58·0	good	58 58·0	good	59 58·0	good	nil	sharp	2	W.	8	dry frost	
7	S.	57 57·0	good	58 57·0	good	59 57·0	good	nil	loud	2	N.	10	foggy	
......	⊙	....	....	....	....	....	....	......	....	......	....	......		
9	M.	57 56·0	good	58 56·0	good	59 56·0	good	missed	....	2	S.	10	foggy	Bad fuse. Powder did not ignite from vent being too small
10	T.	57 57·0	good	58 57·0	good	59 57·0	good	missed	....	2	S.	8	fine	
11	W.	57 56·0	good	58 56·0	good	59 56·0	good	missed	....	3	W.	9	dull	
12	Th.	57 57·0	good	58 57·0	good	59 57·0	good	missed	....	2	S.W.	8	dull, wet	
13	F.	57 58·0	good	58 58·0	good	59 58 0	good	nil	sharp	2	S.W.	10	dull	Vent of gun enlarged, to admit fuse
14	S.	57 57·5	good	58 57·5	good	59 57·5	good	nil	loud	1	S.W.	10	dull and wet	
......	⊙	....	....	....	....	....	....	......	....	......	....	......	....	
16	M.	57 57·5	good	58 57·5	good	59 57·5	good	nil	loud	1	S.W.	10	hazy	4 oz.
17	T.	57 57·0	good	58 57·0	good	59 57·0	good	nil	loud	2	S.W.	9	dull	
18	W.	57 56·0	good	58 55·0	good	59 55·0	good	nil	loud	3	S. by W.	9	dull	
19	Th.	57 53·0	good	58 53·0	good	59 53·0	good	nil	loud	4	S.W.	10	dull	
20	F.	57 52·0	good	58 52·0	good	59 52·0	good	nil	loud	2	S.	10	dull	4 oz.
21	S.	57 51·0	good	58 51·0	good	59 51·0	good	nil	sharp	3	S.W.	10	dull	4 oz.
......	⊙	....	....	....	....	....	....	......	....	......	....	......	....	
23	M.	57 49·5	good	58 49·5	good	59 49·5	good	nil	loud	3	W.	10	dull	4 oz.
24	T.	57 49·0	good	58 49·0	good	59 49·0	good	nil	loud	2	S.	6	fine	4 oz.
25	W.	57 48·0	good	58 48·0	good	59 58·0	good	nil	loud	8	S.	6	damp	4 oz.
26	Th.	57 47·0	good	58 47·0	good	59 47·0	good	nil	loud	6	S.	5	fine	4 oz.
27	F.	57 46·0	good	58 46·0	good	59 46·0	good	nil	loud	5	S.W. by W.	10	damp	
28	S.	57 59·0	good	58 59·0	good	59 59·0	good	nil	loud	3	S.E.	10	dull	
......	⊙	....	....	....	....	....	....	......	....	......	....	......	....	
30	M.	57 52·0	good	58 52·0	good	59 52·0	good	nil	loud	4	S.W.	8	dull	
Dec. 1	T.	57 51·5	good	58 51·5	good	59 51·5	good	nil	loud	5	S.W.	9	damp	
2	W.	57 44·5	good	58 44·5	good	59 44·5	good	nil	loud	5	W.	8	dull	

Time-Gun Station at St Vincent's Place, Glasgow, in the Years 1863–64.

Day of		1st Signal.		2nd Signal.		3rd, or the 1 : 0 : 0 p.m. Gun Signal. (h. m. sec.)				Wind.				
Month.	Week.	Time by Clock.	Manner.	Time by Clock.	Manner.	Time by Clock.	Manner.	Interval to Sound of Gun	Sort of Sound.	Miles per Hour approximately.	Direction.	Clouds. 0 to 10.	Wet, Dry, Foggy, or otherwise.	Remarks.
1863.		m. s.		m. s.		m. s.		sec.						
Dec. 3	Th.	no	gun	no	gun	no	gun	......	....	......	....			Magnetic Telegraph Co.'s wire broken between Edinburgh and Glasgow. No gun
4	F.	no	gun	no	gun	no	gun	......	....	......	....			Mistake of M. T. Co.'s clerk at Edinburgh attaching wrong wire. No gun.
5	S.	57 58 0	good	58 58·0	good	59 58·0	good	nil	loud	9	W.	10	stormy & wet	
......	⊙	....	....	....	....	....	....	......	....	......	....	......	....	
7	M.	58 8·0	good	59 8·0	good	60 8·0	good	nil	loud	10	S.W.	10	very stormy and wet	
8	T.	58 10·0	good	59 10·0	good	60 10·0	good	missed	....	9	W.	10	wet	Fuse burst at top, not igniting powder in quill
9	W.	58 13·0	good	59 13·0	good	60 13·0	good	missed	....	4	S.W.	5	fine	do. do.
10	Th.	58 14·0	good	59 14·0	good	60 14·0	good	nil	loud	5	S.W.	6	heavy & damp	
11	F.	58 15·0	good	59 15·0	good	60 15·0	good	nil	loud	7	S.W.	10	wet	
12	S.	58 15·5	good	59 15·5	good	60 15·5	good	nil	loud	7	S.W.	3	fine	
......	⊙	....	....	....	....	....	....	......	....	......	....	......	....	
14	M.	58 17·5	good	59 17·5	good	60 17·5	good	nil	loud	4	S.	6	fine	
15	T.	58 18·0	good	59 18·0	good	60 18·0	good	nil	loud	4	S.	5	fine	
16	W.	58 17·0	good	59 17·0	good	60 15·5a	good	nil	loud	11	S.W.	9	stormy	
17	Th.	58 13·5	good	59 13·5	good	60 13·5	good	nil	loud	3	E.	3	fine	
18	F.	58 10 0	good	59 10·0	good	60 10·0	good	nil	loud	4	S.W.	8	fine	
19	S.	58 8·5	good	59 8·5	good	60 8·5	good	missed	....	3	S.W.	2	fine	Fuse burst at top only
......	⊙	....	....	....	....	....	....	......	....	......	.. ..	......	....	
21	M.	58 6·5	good	59 6·5	good	60 6·5	good	missed	....	8	S.W.	10	dull	Fuse burst at top only
22	T.	no signals	(Mag. T.	Co.'s clerk	forgot to	connect	wire)	nil	loud	5	N.	2	frosty	Fired in short circuit by local clock
23	W.	53 4·0	good	59 4 0	good	60 4·0	good	nil	loud	7	S.	10	damp	
24	Th.	58 3·5	good	59 3·5	good	60 3·5	good	nil	loud	11	W.	10	dull	
25	F.	58 1·5	good	59 1·5	good	60 1·5	good	nil	loud	2	S. by W.	10	wet	
26	S.	58 1·0	good	59 1·0	good	60 1·0	good	nil	loud	4	S.W.	10	wet	
......	⊙	....	....	....	....	....	....	......	....	... ..	....	......	....	
28	M.	58 1·0	good	59 1·0	good	60 1·0	good	nil	loud	3	S.W.	10	wet	
29	T.	57 59·0	good	58 59·0	good	59 59·0	good	2	loud	0	S.W.	10	wet	Fuse hung fire
30	W.	57 59·0	good	58 59·0	good	59 59·0	good	nil	loud	2	N.W.	6	fine	
31	Th.	57 58·0	good	58 58·0	good	59 58·0	good	nil	very loud	2	N.W.	5	fine	
1864. Jan. 1	F.	57 56·0	good	58 56·0	good	59 56·0	good	nil	loud	1	E.	1	dry frost	
2	S.	57 57·0	good	58 57·0	good	59 57·0	good	nil	loud	1	E.	1	dry frost	
......	⊙	....	....	....	....	....	....	......	....	......	....	......	....	
4	M.	57 58 0	good	58 58·0	good	59 58·0	good	missed	....	3	E.	1	dry frost	Bad fuse
5	T.	57 55·0	good	58 55 0	good	59 55·[illegible]	good	nil	loud	4	N.E.	1	dry frost	Exchange clock 4 sec. fast; College clock correct

a To-day there appeared to be a good deal of contact on line, evidently caused by the high wind and rain; the needles were observed to make deflections several times before the 1st and 2nd Signals. The exploder handle was not put in motion until 10 seconds before the last signal, and the keys not pressed till 60' 14" had expired (one time), when the guns went off 1½ second before they should have.

TIME-GUN STATION AT ST VINCENT'S PLACE, GLASGOW, IN THE YEARS 1863–64.

Day of		1st Signal.		2nd Signal.		3rd, or the 1 : 0 : 0 p.m. Gun Signal.				Wind.				
Month.	Week.	Time by Clock.	Manner.	Time by Clock.	Manner.	Time by Clock.	Manner.	Interval to Sound of Gun.	Sort of Sound.	Miles per Hour approximately.	Direction.	Clouds. 0 to 10.	Wet, Dry, Foggy, or otherwise.	Remarks
1864.		m. s.		m. s.		m. s.		sec.						
Jan. 6	W.	57 51·0	good	58 51·0	good	59 51·0	good	nil	loud	...	....	.....	very foggy and frosty	
7	Th.	57 47·0	good	58 47·0	good	59 47·0	good	nil	loud	1	E.	.....	foggy & frosty	College clock correct
8	F.	57 42·5	good	58 42·5	good	60 42·5	good	nil	loud	1	E.	.....	foggy & frosty	
9	S.	....	good	....	good	....	good	nil	loud	1	E.	5	frost	Clock run down
......	⊙	....	....	....	....	....	....	......	....	......	....	......		
11	M.	58 2·0	good	59 2·0	good	60 2·0	good	nil	loud	3	S.E.	9	damp	
12	T.	58 5·0	good	59 5·0	good	60 5·0	good	nil	loud	4	S.	6	damp	
13	W.	58 7·0	good	59 7·0	good	60 7·0	good	nil	loud	4	S.E.	2	fine	
14	Th.	58 8·5	good	59 8·5	good	60 8·5	good	nil	loud	3	S.E.	7	fine	
15	F.	58 9·0	good	59 9·0	good	60 9·0	good	nil	loud	4	S.E.	5	fine	
16	S.	58 8·0	good	59 8·0	good	60 8·0	good	nil	loud	4	E.S.E.	9	dull	
......	⊙	....	....	....	....	....	....	......	....	......	....	......		
18	M.	58 11·0	good	59 11·0	good	60 11·0	good	nil	loud	5	S.E.	10	damp	
19	T.	58 12·0	good	59 12·0	good	60 12·0	good	nil	loud	7	S.E.	9	damp	Clock set by [illegible]
20	W.	58 2·0	good	59 2·0	good	60 2·0	good	nil	loud	6	S.E.	10	damp	
21	Th.	58 1·5	good	59 1·5	good	60 1·5	good	nil	loud	10	S.W.	10	very wet	
22	F.	58 0·5	good	59 0·5	good	60 0·5	good	nil	loud	9	W.	8	dry	
23	S.	58 0·0	good	59 0·0	good	60 0·0	good	nil	loud	11	S.W.	5	fine	
......	⊙	....	....	....	....	....	....	......	....	......	....	......		
25	M.	58 0·0	good	59 0·0	good	60 0·0	good	nil	loud	9	S.W.	7	fine	
26	T.	58 0·0	good	59 0·0	good	60 0·0	good	nil	loud	15	S.W.	8	dull	
27	W.	57 59·0	good	58 59·0	good	59 59·0	good	nil	loud	10	S.W.	10	dull	
28	Th.	57 57·0	good	58 57·0	good	59 57·0	good	nil	loud	7	N.W.	3	fine	
29	F.	57 56·5	good	58 56·5	good	59 56·5	good	nil	loud	5	S.E.	10	dull	
30	S.	57 54·5	good	58 54·5	good	59 54·5	good	nil	loud	8	S.W.	5	fine	
......	⊙	....	....	....	....	....	....	......	....	......	....	......		
Feb. 1	M.	57 54·0	good	58 54·0	good	59 54·0	good	nil	loud	11	S.W.	10	dull	
2	T.	57 54·0	good	58 54·0	good	59 54·0	good	nil	loud	10	S.W.	10	wet	
3	W.	57 54·0	good	58 54·0	good	59 54·0	good	nil	loud	17	W.S.W.	10	stormy, dull	
4	Th.	57 54·0	good	58 54·0	good	59 54·0	good	nil	loud	4	N.	6	frost	
5	F.	57 53·0	good	58 53·0	good	59 53·0	good	nil	loud	2	N.	3	frost	
6	S.	57 50·0	good	58 50·0	good	59 50·0	good	nil	loud	2	N.	10	dull, frost	
......	⊙	....	....	....	....	....	....	......	....	......	....	......		
8	M.	57 51·0	good	58 51·0	good	59 51·0	good	......	....	3	N.E. by E.	hazy	hard frost	College clock [illegible] sec. fast
9	T.	57 49·0	good	58 49·0	good	59 49·0	good	......	....	2	N.E. by E.	hazy	hard frost	College clock [illegible] sec. fast
10	W.	57 46·5	good	58 46·5	good	59 46·5	good	......	....	4	N.E.	9	damp	College clock [illegible] sec. fast
11	Th.	57 48·5	good	58 48·5	good	59 48·5	good	......	....	6	S.E.	10	dull	College clock correct

The gun used here is a small brass one, 2 feet 5 inches long, 1½ inch bore. Charge of powder used, 4 oz.

TIME-GUN STATION AT BROOMIELAW, GLASGOW, IN THE YEARS 1863-64.

DISTANCE OF NEEDLE STATION FROM GUN = 3,960 FEET NORTH-EAST.

Day of		1st Signal.		2nd Signal.		3rd, or the 1 : 0 : 0 p.m. Gun Signal. (h. m. s.)				Wind.				
Month.	Week.	Time by Clock.	Manner.	Time by Clock.	Manner.	Time by Clock.	Manner	Interval to Sound of Gun.	Sort of Sound	Miles per Hour approximately.	Direction.	Clouds. 0 to 10.	Wet, Dry, Foggy, or otherwise.	Remarks.
1863.		m. s.		m. s.		m. s.		sec.						
Nov. 10	T.	57 57·0	good	58 57·0	good	59 57·0	good	3	loud	2	S.	8	fine	½ lb. Well heard 1 mile off. Ball fell 1½ sec. before
11	W.	57 56·0	good	58 56·0	good	59 56·0	good	3	dull	3	W.	9	dull	1 lb. Ball fell 2 secs. before
12	Th.	57 57·0	good	58 57·0	good	59 57·0	good	missed	………	2	S.W.	8	dull and wet	Contact on wire
13	F.	57 58·0	good	58 58·0	good	59 58·0	good	3	loud	2	S.W.	10	dull	Ball fell 2 secs. before gun
14	S.	57 57·5	good	58 57·5	good	59 57·5	good	3	dull	1	S.W.	10	dull, wet	Ball fell 2½ secs. after gun
……	⊙	………	………	………	………	………	………	……	………	……	… …	……		
16	M.	57 57·5	good	58 57·5	good	59 57·5	good	3	dull	1	S.W.	10	hazy	
17	T.	57 57·0	good	58 57·0	good	59 57·0	good	3.	dull	2	S.W.	9	dull	
18	W.	57 55·0	good	58 55·0	good	59 55·0	good	3	heavy	3	S. by W.	9	dull	
19	Th.	57 53·0	good	58 53·0	good	59 53·0	good	3	heavy	4	S.W.	10	dull	
20	F.	57 52·0	good	58 52·0	good	59 52·0	good	3	loud	2	S.	10	dull	
21	S.	57 51·0	good	58 51·0	good	59 51·0	good	3	dull	3	S.W.	10	dull	
……	⊙	………	………	………	………	………	………	……	………	……	………	……		
23	M.	57 49·5	good	58 49·5	good	59 49·5	good	3	dull	3	W.	10	dull	2 lbs.
24	T.	57 49·0	good	58 49·0	good	59 49·0	good	3	sharp	2	S.	6	fine	
25	W.	57 48·0	good	58 48·0	good	59 48·0	good	3	dull	6	S.	6	damp	
26	Th.	57 47·0	good	58 47·0	good	59 47·0	good	3	loud	6	S.	5	fine	
27	F.	57 46·0	good	58 46·0	good	59 46·0	good	3	dull	5	S.W. by W.	10	damp	
28	S.	57 59·0	good	58 59·0	good	59 59·0	good	3	dull	3	S.E.	10	dull	Ball fell 1 sec. before gun
……	⊙	………	………	………	………	………	………	……	………	……	………	……		
30	M.	57 52·0	good	58 52·0	good	59 52·0	good	3	dull	4	S.W.	8	dull	Ball fell 1 sec. after gun
Dec. 1	T.	57 51·5	good	58 51·5	good	59 51·5	good	3	dull	5	S.W.	9	damp	
2	W.	57 44·5	good	58 44·5	good	59 44·5	good	3	dull	5	W.	8	dull	
3	Th.	no	gun	no	gun	no	gun	……	…… …	……	…… …	……	…… ……	Magnetic Telegraph Company's wire broken between Edinburgh and Glasgow. No gun
4	F.	no	gun	no	gun	no	gun	……	………	……	… …	……	…………	Mistake of M. T. Co.'s clerk at Edinburgh attaching wrong wire. No gun
5	S.	57 58·0	good	58 58·0	good	59 58·0	good	not	heard	9	W.	10	stormy and wet	Ball fell with gun
……	⊙	…… ……	………	………	…… …	………	………	……	………	……	………	……	…………	

TIME-GUN STATION AT BROOMIELAW, GLASGOW, IN THE YEARS 1863–64.

Day of — Month.	Day of — Week.	1st Signal. — Time by Clock.	1st Signal. — Manner.	2nd Signal. — Time by Clock.	2nd Signal. — Manner.	3rd, or the 1 : 0 : 0 p.m. Gun Signal. — Time by Clock.	Manner.	Interval to Sound of Gun.	Sort of Sound.	Wind. — Miles per Hour approximately	Wind. — Direction.	Clouds, 0 to 10.	Wet, Dry, Foggy or otherwise.	Remarks.
1863.		m. s.		m. s.		m. s.		sec.						
Dec. 7	M.	58 8·0	good	59 8·0	good	60 8·0	good	not	heard	10	S.W.	10	very stormy and wet	
8	T.	58 10·0	good	59 10·0	good	60 10 0	good	not	heard	9	W.	10	wet	
9	W.	58 13·0	good	59 13·0	good	60 13·9	good	no	gun	4	S.W.	5	fine	Fuse burst at ...
10	Th.	58 14·0	good	59 14·0	good	60 14·0	good	3	loud	5	S.W.	6	heavy & damp	
11	F.	58 15·0	good	59 15·0	good	60 15·0	good	3	loud	7	S.W.	10	wet	
12	S.	58 15·5	good	59 15·5	good	60 15·5	good	missed	....	7	S.W.	3	fine	Fuse did not ignite; appeared to be good when tried in office afterwards.
......	☉	....	....	....	....	....	....	......	....	......	....	......	....	
14	M.	58 17·5	good	59 17·5	good	60 17·5	good	missed	....	4	S.	6	fine	Fuse burst at te... but did not ignite the powder ... quill
15	T.	58 18·0	good	59 18·0	good	60 18·0	good	not	heard	4	S.	5	fine	
16	W.	58 17·0	good	59 17·0	good	60 15·5a	good	3	loud	11	S.W.	9	stormy	
17	Th.	58 13·5	good	59 13·5	good	60 13·5	good	not	heard	3	E.	3	fine	
18	F.	58 10·0	good	59 10·0	good	60 10·0	good	not	heard	4	S.W.	8	fine	
19	S.	58 8·5	good	59 8·5	good	60 8 5	good	3	dull	3	S.W.	2	fine	
......	☉	....	....	....	....	....	....	......	....	......	....	......	....	
21	M.	58 6·5	good	59 6·5	good	60 6·5	good	3	dull	8	S.W.	10	dull	
22	T.	no	signal	no	signal	....	....	3	dull	5	N.	2	frosty	Fired by hand by local clock
23	W.	58 4·0	good	59 4·0	good	60 4·0	good	3	dull	7	S.	10	damp	
24	Th.	58 3·5	good	59 3·5	good	60 3·5	good	missed	....	11	W.	10	dull	Fuse did not ignite; appeared to be good when tried in office afterwards
25	F.	58 1·5	good	59 1·5	good	60 1·5	good	missed	....	2	S. by W.	10	very wet	
26	S.	58 1·0	good	59 1·0	good	60 1·0	good	missed	....	4	S.W.	10	wet	
......	☉	....	....	....	....	....	....	......	....	......	....	......	....	
28	M.	58 1·0	good	59 1·0	good	60 1·0	good	2·5	sharp	3	S.W.	10	wet	
29	T.	57 59·0	good	58 59·0	good	59 59·0	good	2·5	dull	......	S.W.	10	wet	
30	W.	57 59·0	good	58 59·0	good	59 59·0	good	2·5	loud	2	N.W.	6	fine	
31	Th.	57 58·0	good	58 58·0	good	59 58·0	good	2·5	dull	2	N.W.	5	fine	
1864.														
Jan. 1	F.	57 56·0	good	58 56·0	good	59 56·0	good	not	heard	1	E.	1	dry frost	
2	S.	57 57·0	good	58 57·0	good	59 57·0	good	not	heard	1	E.	1	dry frost	
......	☉	....	....	....	....	....	....	......	....	......	....	......	....	
4	M.	57 58·0	good	58 58·0	good	59 58·0	good	not	heard	3	E.	1	dry frost	

a To-day there appeared to be a good deal of contact on line, evidently caused by the high wind and rain; the needles were observed to make deflections several times before the 1st and 2nd Signals. The exploder handle was not put in motion until 10 seconds before the last signal, and the keys not pressed till 60′ 14″ had expired (our time), also the guns went off 1½ second before they should have.

TIME-GUN STATION AT BROOMIELAW, GLASGOW, IN THE YEARS 1863–64.

Day of		1st Signal.		2nd Signal.		3rd, or the 1 h. : 0 m. : 0 sec. p.m. Gun Signal.				Wind.		Clouds, 0 to 10.	Wet, Dry, Foggy, or otherwise.	Remarks.
Month.	Week.	Time by Clock.	Manner.	Time by Clock.	Manner.	Time by Clock.	Manner.	Interval to Sound of Gun.	Sort of Sound.	Miles per Hour approximately.	Direction.			
1864.		m. s.		m. s.		m. s.		sec.						
Jan. 5	T.	57 55·0	good	58 55·0	good	59 55·0	good	missed	....	4	N.E.	1	dry frost	Bad fuse
6	W.	57 51·0	good	58 51·0	good	59 51·0	good	not	heard	......	....	......	very foggy and frosty	
7	Th.	57 47·0	good	58 47·0	good	59 47·0	good	not	heard	1	E.	......	foggy & frosty	
8	F.	57 42·5	good	58 42·5	good	59 42·5	good	not	heard	1	E.	......	foggy & frosty	
9	S.	....	good	....	good	....	good	not	heard	1	E.	5	frost	Clock ran down
......	⊙	....	....	....	....	....	....	......	....	......	....	......	....	
11	M.	58 2·0	good	59 2·0	good	60 2·0	good	not	heard	3	S.E.	9	damp	
12	T.	58 5·0	good	59 5·0	good	60 5·0	good	not	heard	4	S.	6	damp	
13	W.	58 7·0	good	59 7·0	good	60 7·0	good	not	heard	4	S.E.	2	fine	
14	Th.	58 8·5	good	59 8·5	good	60 8·5	good	not	heard	3	S.E.	7	fine	
15	F.	58 9·0	good	59 9·0	good	60 9·0	good	not	heard	4	S.E.	5	fine	
16	S.	58 8·0	good	59 8·0	good	60 8·0	good	no	gun	4	E.S.E.	9	dull	Top of fuse split while the connection was being made at gun; gunner neglected to have a spare one with him
......	⊙	....	....	....	....	....	....	......	....	......	....	......	....	
18	M.	58 11·0	good	59 11·0	good	60 11·0	good	not	heard	5	S.E.	10	damp	
19	T.	58 12·0	good	59 12·0	good	60 12·0	good	not	heard	7	S.E.	9	damp	Clock set after gun
20	W.	58 2·0	good	59 2·0	good	60 2·0	good	not	heard	6	S.E.	10	damp	
21	Th.	58 1·5	good	59 1·5	good	60 1·5	good	3	loud	10	S.W.	10	wet	Heard distinctly in office
22	F.	58 0·5	good	59 0·5	good	60 0·5	good	not	heard	9	W.	8	dry	
23	S.	58 0·0	good	59 0·0	good	60 0·0	good	3	loud	11	S.W.	5	fine	
......	⊙	....	....	....	....	....	....	......	....	......	....	......	....	
25	M.	58 0·0	good	59 0·0	good	60 0·0	good	3	loud	9	S.W.	7	fine	
26	T.	58 0·0	good	59 0·0	good	60 0·0	good	3	dull	15	S.W.	8	dull	
27	W.	57 59·0	good	58 59·0	good	59 59·0	good	3	loud	10	S.W.	10	dull	
28	Th.	57 57·0	good	58 57·0	good	59 57·0	good	not	heard	7	N.W.	3	fine	
29	F.	57 56·5	good	58 56·5	good	59 56·5	good	3	loud	5	S.E.	10	dull	
30	S.	57 54·5	good	58 54·5	good	59 54·5	good	3	loud	8	S.W.	5	fine	
......	⊙	....	....	....	....	....	....	......	....	......	....	......	....	
Feb. 1	M.	57 54·0	good	58 54·0	good	59 54·0	good	3	loud	11	S.W.	10	dull	
2	T.	57 54·0	good	58 54·0	good	59 54·0	good	3	loud	10	S.W.	10	wet	
3	W.	57 54·0	good	58 54·0	good	59 54·0	good	3	loud	17	W.S.W.	10	stormy, dull	
4	Th.	57 54·0	good	58 54·0	good	59 54·0	good	3	loud	4	N.	6	frost	
5	F.	57 53·0	good	58 53·0	good	59 53·0	good	not	heard	2	N.	3	frost	
6	S.	57 50·0	good	58 50·0	good	59 50·0	good	not	heard	2	N.	10	dull, frost	

The gun used at this station was a ship's signal gun, 2 feet 7 inches long, 1 foot diameter at breach, 4 inch bore, fired with a charge of 2 lbs. daily.

III. REPORT to the BOARD OF VISITORS of the ROYAL OBSERVATORY, EDINBURGH, at their Visitation on the 20th of April 1869, at 3 P.M.

PRESENT—

The Rt. Hon. Sir W. GIBSON-CRAIG, Bart. (in the Chair).
The Rt. Hon. The LORD JUSTICE-GENERAL.
Sir ALEXANDER GRANT, Bart., Principal of the University of Edinburgh.
Dr CHRISTISON, President of the Royal Society of Edinburgh.
R. M. SMITH, Esq., F.R.S.E.,
Prof. P. G. TAIT, M.A. (Secretary), and
C. PIAZZI SMYTH, Astronomer Royal for Scotland.

GENTLEMEN,

Since your last visitation of this Royal Observatory, the most important circumstances which I have to bring before your attention, are the actions taken on acknowledgments by two successive Ministries, and mainly on account of your representations, seconded, as they were powerfully at different times by the late much respected Mr Henderson, Queen's and Lord Treasurer's Remembrancer ; Mr Duncan M'Laren, M.P. ; Mr R. M. Smith, F.R.S.E., and the Edinburgh Chamber of Commerce, to the effect that,—

Firstly, The Astronomical instruments here, as well as their containing buildings, have to be kept in repair ; and,

Secondly, That under the increasing amount of various official work ordered to be performed in, or by, this Observatory, some enlargement of office accommodation was required, and easier communication between the Astronomer's residence and the Observatory.

OFFICE AND HOUSE.

The carrying out of the first of these resolutions was simple and easy ; but the second was more difficult, and a special meeting upon it was held here on January 30, 1867, by the Board of Visitors, under the presidency of Sir W. Gibson-Craig ; and with the result of recommending to Government, to exchange their present insufficient and unsuitable Astronomer's house in Hillside Crescent,

for one to be built in the Royal Terrace, and arranged to contain the additional office, book, and instrument rooms, so urgently required.

The question of the Astronomer's house disposed of at last.

On the recommendation of the Board being communicated by their Secretary to H.M. Government, they ordered their own local officer, Mr R. Matheson of Her Majesty's Board of Works, to report upon it. He accordingly, already most intimately acquainted with the Observatory state and situation, satisfied himself by still further examination of all the points at issue, and then sent in to the chief of his department, at that time Lord John Manners, so full and able a report, and one, as it has proved, so directly confirmatory of the decision at which the Visitors had arrived, that the Government agreed to incur the expenditure, subject to the approval of Parliament. This approval was accordingly applied for and obtained last summer, and the house is now so far in progress as to have had the roof just placed on the walls, the approved designs of which were prepared by Mr Matheson.

In this manner was happily solved at length a question which has been a source of trouble, anxiety, and discomfort, for the last thirty-six years. Government had originally intended, when they took over the Observatory, crowning the hill, of the late useful and, in its day, most important "Astronomical Institution of Edinburgh," and erected it into a Royal Observatory, that the astronomer should have an *attached* dwelling, as obtains in every other well-regulated establishment of the kind; but in this case there were two lions in the way,—*first*, the extra expense of building anything on the top of the Calton Hill, as the thousand pounds a-piece columns of the National Monument do testify; and, *second*, the regard of Edinburgh citizens for the architectural appearance of a prominent part of their city. My predecessor, as well as myself, had long advocated what the true scientific needs of the Observatory claimed, pure and simple, and regarded the Hillside Crescent house, at the lowest and most distant corner of the whole hill, as only a temporary accommodation; but as years passed by, and the needs of the Observatory also for more office room continually and inevitably grew, and *could not be satisfied where it stood*,—it became increasingly evident that a *compromise* must be eventually concluded between rigid science on one side, and the social and civic position on the other. While, too, the only satisfactory compromise seemed to be a situation on the Royal Terrace,—so much nearer, amongst other advantages, to the Observatory than Hillside Crescent,—it has been found, subsequently to the decision of Government in its favour, that even that solution would not have been obtainable a few months later.

Its difficulties in preceding times.

The new *office-house*, then, has been commenced auspiciously; and, when finished equally well, must prove a permanent increase of strength and value to the Royal Observatory of Edinburgh. As the said important work is still, however, only in progress, and in other hands than mine,—hands, too, which

may be abundantly trusted, both from their high professional reputation, as well as the careful attention they have given year after year to the old Observatory building,—I pass on now to details connected with the first and minor of the two subjects already adverted to, viz., the reparation of instruments. These though indeed matters of vital importance to the success of our observations, are generally small, both in amount and expense, for they are carried on only within very careful economical limits, under my own supervision, and in almost all cases with local workmen.

DETAILS OF INSTRUMENTAL REPARATION.

Horological.

The first step taken in these scientific repairs was to supply the Observatory with lightning conductors, and then to remedy a former lightning-caused mischief to the "window-clock,"—which will now, accordingly, after a long interval of disuse, be found again in its place and at work for the benefit of the public seeking accurate time. All the other controlled clocks, both for Sidereal, and Mean, Time, have also been improved in details, agreeably with the experience obtained here since this Observatory, with the assistance of Messrs Ritchie, clockmakers in the city, first introduced Jones' method of electrically controlling clocks into Scotland, now eight years ago. Subsequently to that date the method has become popular in some other cities also, and is generally approved as a practical step in the right direction; certainly our present time-signals, and regulation of many public clocks in the city could not be carried on without it. Electric controlled Clock.

Optical.

Of the optical instruments in this Observatory, the two most important and constantly in use are the Transit Instrument and Mural Circle. These have both received some small improvements, chiefly connected with the proper illumination of the wires at night, and freeing both the observer and observations from sundry exceptional conditions, resilvering micrometer heads and scales, &c. They are therefore now, both of them, in a respectable state for ordinary meridian observations of stars; perhaps, indeed, higher praise ought to be given to the Transit Instrument, on account of both its superior calibre and excellent principles of construction. Transit Instrument and Mural Circle.

The equatorial, on the other hand, the third optical instrument of the Observatory, was condemned by the Board of Visitors eighteen years ago, when they memorialised Government on the necessity of a new one, very much larger and better than the present, being supplied; and Government listened for a time to the representation, though disallowing it at last. Since then, troublesome leakings in the dome, together with prejudicial gases, had so much further disabled the instrument as to prevent its use during several years past.

Encouraged, however, to attempt some improvement by the small assistance recently given for instrumental repairs, and finding that even in a *Meridian* observatory, as this one professedly is, we cannot get on without some kind of general telescope, I have been at considerable pains during the last nine months in making all the proper "repairs" that seemed within reach. The consequence is, that the instrument is now in a better condition than it has been during the last twenty years, though it must also be acknowledged that such state only amounts to this, viz., the telescope is in a fair and presentable state, and can be used for the easier class of optical observations,—but its light transmitting power is so limited, that we cannot see the exacter test objects usually referred to by all the best existing observers, both public and private; while the shakiness of the stand, from sheer weakness and want of substance in the principal axes, is so lamentable, that nothing accurate can be attempted whenever a breath of wind is blowing; nor have we any examples of sundry modern appliances, as for photographic and spectroscopic research. Hence mere repair has been carried on upon this instrument as far as possible; but nothing short of substitution, nearly as recommended by the Board of Visitors half a generation ago, will bring it up to the present requirements of science; and for such a change we have neither funds nor authority.

[illegible]

COMPUTING-ROOM

Meteorology.

Work [illegible] to the Registrar-General

Whatever the other difficulties of the Observatory may have been, the assistants and myself have never failed to keep the Registrar-General supplied every month and every quarter with computed deductions from the observations made twice a-day at fifty five of the stations of the Meteorological Society of Scotland. The immense amount of these observations, so highly creditable to that very hard working, voluntarily supported, and eminently scientific Society, renders their due computation a laborious and rather intricate work; but their importance to the vital statistics of the nation seems to be acknowledged more and more widely every day.

The schedules now undergoing computation, and the several sheets preparing for the usual quarterly returns ending 30th of April, are now exhibited.

Library.

Our books, chiefly presentation copies from public institutions, both abroad and at home, are still increasing, and many of them have been half-bound, or otherwise prepared for use, during the past period; but I make no attempt to exhibit them, partly because our shelving space is totally inadequate, and partly because the air of the computing-room, the only dry part of the Observatory,

is so prejudicial to leather binding, that the backs of our most frequently and necessarily employed books are corroding and dropping off. This rapid destruction of literary works, sometimes supposed to be more lasting than monuments of bronze, arises largely from bad warming and ventilation, or from an open coal fire, more generally smoking than not, and from effluvia of gas lights concentrated during long night work in a small room and unable to escape. Although it is to be hoped that the chief part of the books will soon be under more favourable circumstances in the improved house now erecting below, still for those that must remain it seemed desirable to attempt an alleviation, if not a cure, of the evil; and some experiments, made in a more confined situation still, or in a cell under the most elevated part of our roof, show that it can be managed, if the traditional deference to architectural appearance which has so long enchained, though it may also have adorned, this Observatory, will permit its employment and adoption.

Bad air destructive of books and their bindings.

The method consists in little more than mechanical means for removing all the effluvia of fire and lights from the tops respectively of both chimney and room, and need hardly have been noticed here but for a feature, rather unexpected in intensity, accompanying one part of it; namely, so large a formation of water as five pounds a week from a constant gas light, and that water so acid as to redden litmus paper the instant that it is inserted therein; or in a manner completely to explain the rapid failure of the binding of books, and also to justify some trouble being taken to get quit of such an amount of corrosive matter in the state of vapour.

SPECIAL ASTRONOMY.

Obligatory Principles in Choosing New Work.

During the last year, as the recent Annual Report of the Royal Astronomical Society admirably illustrates, there have been very large and highly-appreciated contributions to the progress of astronomy made elsewhere, by special observations, both under unusual circumstances and in unaccustomed sites, abroad as well as at home. So much general interest, too, have these results often excited, that I have found myself recently not seldom questioned in Scotland as to why I also did not go out and observe the great Indian eclipse last August, with some of its brilliant trains of spectroscopic, photographic, and many other results?

Of Eclipse expeditions.

The question was in so far well founded, that the superior propriety of this public observatory, rather than another, being employed from time to time on any suitable branch of "travelling astronomy," has long been pointed out, on the score of its being the only observatory in Britain where the usual amenities for home observation, or for the astronomer being always, when at home, close to

his instruments both by night and by day, are *not* provided; and certainly the only one, all the world over, where he is separated from them by so great an extent, both horizontal and vertical, of rough hill-side. But the question was otherwise erroneously founded, inasmuch as it seemed to imply that the power to take up such problems lay entirely with me. I have often, indeed, advocated that some power in that direction should be placed in the hands of the Astronomer Royal for Scotland; and when I read recently of one of the most successful of the observers sent out to India last summer from France, viz., M. Janssen, having transferred his large telescopes and whole observatory, after the eclipse was over, from Madras to Simla, and having then mentioned that from having there 7000 feet of atmosphere below him, he has a command, which he will immediately proceed to utilise, of many important physical investigations, I could not but revert in thought to the one year when I was allowed to try hastily, with divers borrowed instruments, a similar experiment on a station where not 7000 only, but 12,000 feet of atmosphere could be eliminated; and which station I should certainly have visited again long before this, had the necessary pecuniary means been in my own power.

In repeating and developing that experiment, on *mountain astronomy* too, this Observatory would have been following from 1856 to 1868, a rule long since laid out for its guidance, viz., to seek always some branch of astronomy *not* cultivated by any other observatory. This is by no means the most popularly admired rule, (as eminently shown with regard to the eclipse observations of last year, when the more expeditions that were sent out to observe one and the same thing, the more intensely did public interest arise and funds pour in for sending out yet more observers—English, French, German, and others), but it is the line of proceeding quietly recommended by both utility and economy, and *is* the rule of this Observatory. I acted therefore strictly according to local duty in not making efforts to go out last year on any eclipse expedition, believing eclipses, and solar system phenomena generally, to belong to the Royal Observatory of Greenwich; and that Greenwich is so faithful to its traditions, so splendidly officered at present through all its ranks, and possesses so entirely the confidence of Government and admiration of the astronomical public, that the national honour, in whatever it takes up, cannot be in more able, and in every way better hands. Equally, too, is that the case touching the approaching arrangements for grand astronomical voyages and travels to almost every part of the earth, connected with the two next transits of Venus across the disc of the sun; for those phenomena bear on the main object of the foundation of the Greenwich Observatory, and for them Greenwich has been long, and is still, preparing. In fact, Greenwich has never forgotten its duties in that problem, from the days of Halley to the present time.

WORK NOT FOLLOWED ELSEWHERE.

History and Origin of the Chief Standards of British Hereditary Weights and Measures.

Yet though thus voluntarily confining ourselves here in Edinburgh to what is *not* being already prosecuted and rendered famous elsewhere in older or grander institutions, and unempowered to incur any of those expenses connected with either the making of new instruments or travelling great distances, which were freely accorded to so many eclipse observers in 1867 and 1868,—a subject of singular importance to the early history of science, and of wide-spread utility to the nation, has recently fallen, so far as making a very humble commencement of it is concerned, to our undivided lot. Such subject beginning in an inquiry by instrumental observation, as to whether certain foundational scientific features of the British national and hereditary weights and measures—somewhat as set forth only last year to the country by the first of living *unofficial* astronomers, and to Parliament by a leading Member thereof—are to be looked on as accidental coincidences only; or as real, and not only *de facto*, but in all the collective importance of the many meanings of the word actually employed by the eminent philosopher referred to, the "*a priori*" intentions of the original framers of the system, at whatever date and in whatever land they lived.

Origin of British metrology

Researches connected with the foundation of standards of *linear* measure,—referred in almost every case to measurements of large arcs of the earth's surface or effects of gravity depending thereon,—have in times past been long looked on as pertaining to the duties of *astronomers*; and though it may possibly be thought in the present day, in some quarters, that such work should now be abandoned to geographers, surveyors, and others,—yet even in that case I should remind the Board, that the positive written terms of my appointment as "Astronomer Royal for Scotland" bind me, so far as the words can go, *to apply myself with diligence and zeal to making observations for the extension and improvement* not only of Astronomy, but also of *Geography and Navigation, and other branches of science connected therewith.* While again, looking to the special position of this one Observatory under H.M. *Home* Office, rather than under the Admiralty, War, India, Colonies, or any other of the great public offices with other scientific establishments under them, the subject of inquiring into the origin of our *weight* and *capacity* standards comes not less appropriately to *us*; especially when we seem now to be on the point of proving that the birth of those standards, instead of having been an original accident and totally distinct from the *linear* measure, was actually founded just as directly on cubic derivations from the linear proportions of the whole globe, taken in conjunction with its *mean specific gravity.*

Within the limit of the Edinburgh Astronomer's prescribed duties.

What I have been able to do as yet in this question has been with my own

hands alone; but it has been issued to the public in two or three recent works, and shows, together with the researches of several predecessors, so large a probability of the nobler position, *i.e.*, high scientific intention originally for our chief hereditary standards of weight, capacity, and length, proving true, that a grave responsibility would seem now to fall upon Her Majesty's Government to inquire into the matter farther, and with all that completeness and power which only a government can bring to bear upon it, before they make the recently much threatened radical alterations in this ancient people's metrological laws; subversive alterations, opposed already on principle by both the universally respected *unofficial* astronomer and the Member of Parliament above mentioned, and considered by some commercial and industrial persons largely versed in politics, to be only too likely to end in loosened ties of nationalism between the Government and the people, with forced reversal of passed acts of Parliament if not with something worse.

Scientific origin probable, of standards.

THE RUBICON OF METROLOGICAL LEGISLATION PASSED.

Those proposed alterations, or the complete abolition of all our ancient hereditary British weights and measures, in favour of the modern French metrical system having been already pronounced by another able man,—and he the first and greatest *official* and *central* astronomer of Government,—*to be for the moderate convenience of 1, and excessive annoyance of 999 persons out of every 1000 in the whole population*, are thereby so entirely opposed to the general spirit of all approved legislation in this country during the last fifty years, that one can hardly believe they will ever be carried through. Yet an active minority, much assisted by countenance from France, are unceasingly urging the change; not a few scientific men too, and wealthy societies in the metropolis, are in their Memoirs *forestalling the expected law of the land*; and in one part of Her Majesty's empire even the Government there, as reported in the daily papers, have just announced their actual adoption of the *French* kilogramme as the legal and compulsory standard of weight in future for such *British* subjects as they have to rule over.

Much agitation to introduce French measures.

The case is therefore now, though long neglected by most persons, a really practical one, destined perhaps presently to enter every household in Great Britain; and much to be desired is it that at least our *Home* Government will consider well before they act here. Seeing, moreover, that a public Commission is sitting just now in London, and believed to be preparing a Report on weights and measures, I myself having always had the very highest opinion of the capability of Government, should have every confidence that they will do whatever is perfectly right in this case, as well as in all others,—had not, unfortunately, certain aggressive proceedings been recently taken, and persistently

followed up, by the Government's central officer for surveying, against whatever I have been doing, through several years past, with the result just stated; or by means of the only available method for inquiring into the *intentional-origin* question of any really long hereditary metrology containing prominent units such as those of which our system possesses many examples; viz., by measurements of the still existing facts, and discussions on the original design and object of that most primeval and most purely scientific building of all the earth, *the Great Pyramid of Egypt*, as alluded to in my Report to the Board in the year 1864.

Difficulties in the public way of Knowledge of the Case.

As a sufficient illustration of those attacks (apparently by high authority, with their consequent perversion of the public mind on the Pyramid subject), and without over-extending this report by alluding to others of his allied accusations, I may mention that that officer of Government, the Director-General of the Ordnance Survey, printed in his third letter on the topic to a metropolitan journal, so lately as the 28th of last November,* that he had just discovered an "utterly irreconcilable" discrepancy, to the extent of 16·5 feet, in all the best published accounts, including mine, bearing on the length of a side of the said Great Pyramid's base; and that he had therefore taken upon himself to instruct the officers now employed by public subscription and the consent of Government on the *Sinaitic* Survey, to go to *the Great Pyramid*, if they had time, and bring home an accurate plan of it: when, and not till when, as he indicated,—on account of the present shocking discrepancies of all other persons,—the world will have, *through his surveyors*, "for the first time, trustworthy data for discussing the units of measures employed in the design of the Pyramids."

Slur thrown by a Government Officer on the Edinburgh measures of the Great Pyramid.

No sooner was that document, so neatly insinuating an utterly foundationless character for any and every inductive theory yet placed before the public touching the original design and intention of the Great Pyramid, and so pointedly aspersive, and by name, of the characters of *practical* explorers at the place, such as the French *savants* in 1799, Colonel Howard Vyse and Mr Perring in 1837, and "the Astronomer Royal for Scotland, *from his own measures*," in 1865, published,—than both its author and publisher were severally written to by competent parties in Scotland,† demonstrating that the alleged 16·5 feet of error existed nowhere than in an absurd misconception by the Director-General of the Ordnance Survey himself. But no public notice of such letters was allowed to transpire; no reclamation of Sinaitic subscriptions for the use only of the Sinaitic Survey followed, and the names of former Pyramid explorers remained undeservedly abased.

Proved to be a mistake of the said officer.

* See Letter No. 1, in Appendix. † See Letter No. 2, in Appendix.

At length, after nearly four months' waiting, and in preparation for this report, I wrote* to the said Director to inquire whether he was intending to make any retraction in a Pyramid case where the proof of his large error and unfounded accusations had been so complete: and then received indeed from him, in a letter printed in the same journal under date 20th March 1869,† a tardy confession of the main numerical fact, but accompanied by so settled an ignoring of the other explorer's observations, and even of other Pyramid facts, over and above such few as would suit his own pre-determined depreciating theory, attempting to account separately by low hypotheses for two only, out of the *many*, features of the Great Pyramid,—that when I join to so unsatisfactory a method of research the same officer's printed proposal of August 8, 1868,‡ for establishing a strange and barbarous scheme of tramways and trucks for the delight of (too generally mischievous) travellers *inside* the Great Pyramid—despite the firmly fixed granite portcullis totally blocking one part of the line, and the depressed entrance to the Queen's Chamber in another—I can only anticipate, in such hands, the destruction, not the careful interpretation required in these days, of the unspeakably precious memorials and fiducial traces of scientific structure handed down, as yet more or less safely, from 4040 years ago. A structure showing not only some of the grandest data of planetary astronomy,—such as the mean-distance of the earth from the sun,—within closer limits of accuracy than the range of probable errors of the best mean determinations from modern observations, but also pointing to a common primeval origin for the chief hereditary standards of both the British, German, and Scandinavian metrologies, far more complete and unexceptionable in the character of its whole earth-ball reference, than the modern and very much over-praised French system with which we are now de-nationally threatened.

[illegible]

Hence, as well for a present and very urgent question pressing on the social and commercial interests of the great body of the British people, and also out of proper civilised regard to the oldest, most peaceful, and purest monument of the human race, I beg to submit that the Board should urge upon the attention of H.M. Secretary of State for Home Affairs the unprecedented importance of having the Great Pyramid most carefully examined and completely measured with all the most admirable accuracy possible to the science of the present day. And this should be done forthwith, before any *military* party may haplessly reach the ancient monument of *peace*, and either depreciatingly represent,§ or even recklessly destroy there in its interior, in order to carry out their com-

* See Letter No. 3, in Appendix.
† See Letter No. 4, in Appendix.
‡ See Extract No. 5, in Appendix.
§ For what was actually done in that way by the said military party, see my "Poor Man's Photography at the Great Pyramid in 1865 compared with that of the Ordnance Survey established in 1869," pages 21 to 32; published by H. Greenwood, 2 York Street, Covent Garden, London.

manding-officer's orders to construct his internal railway and locate the power to work it,—refined structural forms full of noble meaning and proportions—devised by, and showing the thoughts of, primeval minds—which can never be replaced.

Standard Scales.

Somewhat in sequence to my own investigations, when at the Great Pyramid, into the methods of its ancient designer, I have been lately seeking to realise a construction for standard scales of length, calculated to be more lasting than those usually employed in modern Europe; but as the matter has not advanced very far, and the Observatory has no suitable place as yet for exhibiting such things in, I delay further notice on this point to a future occasion.

C. PIAZZI SMYTH.

ROYAL OBSERVATORY, EDINBURGH,
15th April 1869.

APPENDIX.

APPENDIX TO REPORT FOR 1869.

LETTER No. 1.—From the "Athenæum," No. 2141, Nov. 28, 1868.

ORDNANCE SURVEY OF SINAI AND THE GREAT PYRAMID.

Ordnance Survey Office,
Southampton, Nov. 23, 1868.

The expedition under Captains Wilson and Palmer, R.E., arrived at Suez on the 8th inst., and were encamped at Ain Musa on the 11th on their way to Jebel Musa. The work of the survey has, therefore, now commenced; and it only remains with the public to say whether, by their contributions to the cost of the survey it shall be completed. If the party should have time for the purpose, I have instructed the officers to measure and bring home an accurate plan of the Great Pyramid. Strange to say, no accurate plan of this pyramid yet exists. The French *savants* made the length of the side of the Pyramid about 746 feet, and the distance between the sockets at the four corners about 764 feet, agreeing very closely with the measures of Vyse and Perring. These numbers give 9 feet as the breadth of the casing stones, and therefore the distance from the corners of the Pyramid to the furthest corners of the sockets 12·7 feet—that is, the diagonal of the square of 9 feet. But on the French plan this distance is made about 29·2 feet, or 350 inches,—and the Astronomer Royal for Scotland from his "own measures" made it also about 350 inches at each of the four corners. These numbers are utterly irreconcilable; in the one case, the finished Pyramid with its casing stones would entirely cover the sockets cut in the rock, which are about 12 feet square,—and in the other, it would not reach to the nearest part of them. Whilst such discrepancies exist it is impossible to say what was the real length of the side of the Pyramid, or the relation of the Pyramid to the sockets. These points will be cleared up by our surveyors, and we shall then have, as I believe for the first time, trustworthy data for discussing the units of measures employed in the design of the Pyramids.

Henry James, *Col. R.E.*

LETTER No. 2.—*Sent to the Editor of the "Athenæum," but not admitted by him, and read since then.*

A PYRAMID DIFFICULTY REMOVED.

Kinnaber House, Montrose,
Dec. 7, 1868.

Sir,—In the "Athenæum" of November 28, pages 715 and 716, there is an interesting letter from Colonel Sir Henry James, R.E., announcing that an Ordnance Survey of Sinai, to be paid for by voluntary contributions from the public, has already been commenced by his officers, and that he has further, apparently on his own responsibility, ordered the same parties, if they have time, likewise to make and bring home "an accurate plan of the Great Pyramid."

"Strange to say," writes the celebrated and powerful Superintendent of the Ordnance Survey Office at Southampton, "no accurate plan of this Pyramid yet exists;" and he then proceeds to assert that various persons, such as the French *savants* in 1799, Colonel Howard Vyse and Mr Perring in 1837, and "the Astronomer Royal for Scotland" in 1865, are all guilty, in their plans, descriptions, and measures of the Great Pyramid, of a discrepancy of something near 16·5 feet (*i.e.* 29·2 − 12·7 feet) at the corners of the Pyramid. Their numbers producing this discrepancy Sir H. James declares to be "utterly irreconcilable;" but he promises that his Sinai surveyors shall accurately clear up the matter, and that then, for the *first time* in history, there will be procured "trustworthy data for discussing the units of measures employed in the design of the Pyramids."

Now, sir, I am not going to assert that there *are* "accurate" plans of the Great Pyramid already existing, because the term *accurate* has something transcendental and even superhuman about it; and I know by recent visitation of the ground that an enormous amount, perhaps several thousand pound-worth, of excavation must be performed before the site can be fully recognised and got into good order for compensation-bar and microscopic measurement;

so that the best results hitherto obtained are only approximative, say within $\frac{1}{300}$th or $\frac{1}{400}$th of the whole. But I shall, with your leave, proceed to show that the one particular and utter discrepancy in horizontal measurement, to the extent of 16·5 feet in one place alone, or in each of four different places, attributed to the whole of those older authors by Sir Henry James, exists only, entirely and absolutely, in his own mistake.

The Colonel's statement of the beginning of the case is all right enough, viz., that the older authorities mentioned have recorded the *present* and deeply abraded size of the Great Pyramid as about 746 feet long in the side of the base; and its ancient or full size, indicated by the sunk corner-sockets in the rock, as about 764 feet in the same feature, being a total difference on the whole of 18 feet, or 9 feet at either end and on each side. To realise this case, draw two squares on paper, concentric with each other, with parallel sides, and on a scale representing 764 feet for the side of one, and 746 feet for the side of the other square; the latter square will then, of course, lie within the former at a distance of 9 such feet on every side, if measured parallel with two sides, but of 12·7 feet, nearly, if measured on the *diagonals at the corners*.

So far I agree entirely with Sir Henry James, viz., that 12·7 feet *should* be the distance on the diagonal between the adjacent *corners* of the two squares, if 9 feet be the *side* distance, and *both squares be perfect*. But from *that* moment we differ; for, on finding that the *measured* corner distance at the Great Pyramid is not the *computed* 12·7 feet, but 29·2 feet, the Director of the Ordnance Survey instantly rushes into print to insist, "Here is a gross error in measuring; these numbers, furnished by previous Pyramid authors, are utterly irreconcilable;" while I ask, on the contrary, "Are the two squares perfect?" Nay, indeed, the inner one is most imperfect; for it, that is, the present ruinous Great Pyramid building, has its lower corners specially rubbed away, so as to be deficient there—on the diagonal—to some 16·5 feet *more* than anywhere else.

Most persons know, or should know, this fact of the exceeding corner abrasion abundantly; because, over and above many photographs of the Great Pyramid showing such extra dilapidation at its lower corners, and lectured on largely during three years past in Scotland,—Plate 10, vol. v. of the folio of the great French work exhibits the same thing strikingly for the Pyramid's south-east corner: Colonel Howard Vyse's and Mr Perring's enormous folio volume of Pyramid plates shows it again, and excellently, in its "Plate 1," or the plan and horizontal section of the Great Pyramid: Professor Piazzi Smyth's plate plan of the Great Pyramid, in vol. i. of his "Life and Work" thereat—shows every base-corner *more broken away than the sides*. Plate 3 of his vol. iii. shows an example of the same fact on a larger scale, in a section of the north-east corner of the Pyramid; and in vol. i. page 531, he alludes to the Pyramid's present lower corners, over against the sockets, "as having been excessively and unequally broken away in modern times." In vol. ii. page 133, he further says of his numerical results for the measure of the Pyramid's present length of base-side, "They include an attempt to supply its lower corners, which are egregiously broken away, and rendered thereby absurdly blunt in figure." And again, in vol. iii. page 11, in a similar case, he says, "making the best allowance I could for *broken corners* and heaped flanks;" while on page 123 of the same volume, he writes still more pointedly, "My own measures of the mere present masonry courses, correcting by estimation for *the extra breaking away and ruin at the corners*, yielded," &c., &c.

Thus all the extra breaking away in modern times of the lower corners of the present Pyramid, as a dilapidation fact *practically* existing, and as such necessarily increasing a *theoretic* corner distance, measured from a point outside,—was well published years before Sir Henry James took up the case and found an impossibility in it. While if it be further inquired *why* there is such fact of an extra corner breaking, the answer is sufficiently simple, and may be expressed thus:—

(1.) Dilapidators find it easier to knock stones out of the corners, than to pull them out of the sides of the Great Pyramid, where they are wedged, keyed, and dove-tailed together, rendering it necessary to break them to pieces *in situ*, and then haul them out bit by bit.

(2.) The corners are wholly exposed, while the sides are now much heaped, and in so far preserved, by a continually increasing mound of debris falling from above. And,

(3.) The Arabs who hang all day about the corners of the Pyramid expecting the arrival of travellers, are fond of pulling out some of the lowermost stones there, in order to shelter their heads from the burning rays of an Egyptian sun.

All these circumstances combined, evidently could not fail, in the course of centuries, to result in producing much more dilapidation of the Pyramid at the corners of its base, than along the general and very lengthy sides thereof. And if Sir Henry James, in looking over at home the measures of the Pyramid already taken on the spot and published by others, persists in thinking that he is the first to have discovered that the corner distance, *as measured at the corners*, differs by 16·5 feet from the same as computed from the sides, and that such discovery of *his* is utterly unexplainable, except as a damaging accusation of flagrant error in measuring, against both persons, plans, books,

and theories of all who have yet preceded him in, or are still working at, the Great Pyramid subject, he has simply alighted on what the public will understand as a "mare's nest." Wherefore he may as well leave the *Sinaitic* surveyors to go on undisturbed with their arduous work on the mountains of *Sinai*, for which I fear that their stock of public money is far too small as it is.—I am, &c.

(Signed) J. WILSON JOHNSTON, M.D.

LETTER No. 3.—To Colonel Sir Henry James, R.E., Director of the Ordnance Survey; a private letter under date 12th March 1869, from C. Piazzi Smyth, inquiring if Sir H. James had yet taken any steps to remove the aspersions which he had cast on the labours of the French *savants*, Colonel Howard Vyse, Mr Perring, and the Astronomer Royal for Scotland, in the "Athenæum" of 28th November 1868, these aspersions having been demonstrated to him to be groundless more than three months previously.

LETTER No. 4.—*From the "Athenæum," No.* 2160, *March* 20, 1869.

THE PYRAMIDS.

ORDNANCE SURVEY OFFICE, SOUTHAMPTON,
March 15, 1869.

I am anxious to be allowed to correct a statement which is contained in my letter, which appeared in the "Athenæum" of the 28th November last, respecting the measures taken by Professor Piazzi Smyth at the corners of the Great Pyramid.

From the frequent mention of the length of the side of this Pyramid, as it stands, to be 746 feet or thereabouts, and that with the casing-stones the length must have been about 764 feet, it followed that 12·7 feet only had been removed at the corners, and I stated that the measure of about 16·5 feet more, making a total length removed at the corners of 29·2 feet, was irreconcilable with the above measures. I had no desire to misrepresent Professor Smyth, and regret that I had inadvertently fallen into this error, as it appears that this 16·5 feet of the masonry of the Pyramid has also been removed at the corners.

The chief point of interest connected with the dimensions of this Pyramid lies in the fact that, having the corners of the sockets for all four corners of the Pyramid perfectly preserved in the rock in which they are cut, we have the data for ascertaining the length of the common Egyptian cubit at the time the Pyramid was built, in the same manner that we have obtained the length of the Greek foot and cubit from the measures of the Parthenon. Mr Inglis, a practical engineer, measured the distance from corner to corner of the sockets, and found the lengths of the sides to be 9120; 9114; 9102; 9102 inches; the mean being 9110 inches. Stuart obtained 12·138 inches as the length of the Greek foot, from the measures of the Parthenon, and Penrose 12·16 from them; the mean length of the two being 12·149, and the mean cubit therefore 18·224 inches, which, multiplied by 500, gives 9112 inches, differing only 2 inches from Inglis' mean measure. If we take Stuart's length of the Greek cubit, 500 times its length only differs $1\frac{1}{2}$ inch from Inglis' length of two of the sides, being 9102 inches; and if we take Penrose's length of the Greek cubit, it gives us exactly 9120 inches, Inglis' largest measure.

These results appear to me to demonstrate that, as Herodotus has stated, the Egyptian cubit was equal to that of Samos, that is, to the Greek cubit, and that the sides of the Great Pyramid were made exactly 500 Egyptian or Greek cubits, and that the Pyramid covered exactly 25 arunæ or Egyptian acres; the aruna, according to Herodotus, being a square of 100 cubits.

The height of the Pyramid was determined, as I have said before, by giving the structure a rise of 9 in 10 at the corners.

(Signed) HENRY JAMES, *Col. R.E.*

LETTER No. 5.—*Extract from the "Athenæum," No.* 2128, *August* 8, 1868.

THE GREAT PYRAMID OF EGYPT.

The arrangement of the passages was obviously made to facilitate the transport of weights, including the king's body in its case, from the entrance to the centre. The inclination of the ascending passage being made equal to that of the descending, a weight on a truck at the bottom would counterbalance, by means of a rope and pulley, a load descending from the entrance to the point where the passages meet, and be itself drawn up towards the same point, and it would counterbalance the same load when it was being drawn up the ascending passage to the centre, whilst in the same time it descended to its original position. A very slight amount of mechanical skill would be required to re-establish such a mechanical arrangement for visitors to the interior of the Pyramid.

(Signed) HENRY JAMES, *Col. R.E.*

REPORT to the BOARD OF VISITORS of the ROYAL OBSERVATORY, EDINBURGH, at their Visitation held on Wednesday, the 29th of June, 1870, at Three P.M.

Present—The Right Hon. Sir W. Gibson Craig, Bart. (in the Chair); Sir Alexander Grant, Bart.; Adam Black, Esq.; R. M. Smith, Esq.; Rev. Prof. Kelland, M.A.; Prof. Macquorn Rankine, M.A.; Prof. P. G. Tait, M.A. (Secretary); Prof. Piazzi Smyth.

GENTLEMEN,

There are several topics of unusual importance to be brought before you on this occasion, but they may be most conveniently taken up in the usual order of subject hitherto followed.

BUILDINGS.

The Observatory itself is generally, thanks to Mr Matheson of H.M. Office of Works, in an efficient state of repair;—and the new office rooms, with Astronomer's house combined, at No. 15 on the Royal Terrace, are now entered upon. Of the whole house, which has been designed and arranged,—on the part too of Mr Matheson, with much skill and attention to the very peculiar requirements of Observatory business, for which we cannot be too thankful,—the office rooms comprise two entire flats, and these the best in the house. They are therefore, though still rather far removed from the top of the hill as compared with Observatory systems elsewhere, (or 170 feet in vertical height, and 1200 in horizontal distance), and still requiring to be fitted up, an absolute increase of the most important kind to the useful space and accommodation possessed by the Royal Observatory, Edinburgh: not only for library and pen-business, but possibly for museum and working purposes also. Buildings. New Observatory House.

With these additional facilitations I trust that we shall be able to realize, from time to time, still more of the original designs and intentions of the founders of the Observatory; and as a proof that these have never been altogether forgotten by us, through all seasons and circumstances or whenever an opportunity has offered of promoting them, I beg to present to the citizens—who are now living in daily sight and sound of electric Time-Ball and Time-Gun, and familiar acquaintance with several electrically controlled clocks carrying long seconds

Buildings. hands (all of them apparatuses setting forth in their several ways the time found by star observations taken from night to night in the Edinburgh Observatory),—the following picture, drawn by the late Right Hon. Lord Napier, of the untoward state of practical astronomy and the paucity of horological information in this city about the year 1812.

Of the Astronomical Institution of Edinburgh, and what it was founded to improve.

"While every other branch of science," says his Lordship, in an address as President of the Astronomical Institution of Edinburgh, "had been cultivated in the metropolis of Scotland with a degree of ardour and success surpassed in no other University, the inefficiency of the means for promoting that most sublime of all the sciences (Astronomy) was deeply felt and lamented by the learned Professors, as well as by all classes interested in the kindred branches of commerce and navigation; and the stigma thus apparently attached to a University otherwise so celebrated was made the more manifest on a certain occasion, by the arrival in the Firth of Forth of a foreign ship of war, for the express purpose of regulating her chronometers; when, to the grief and indignation of all men of science, and to the utter amazement of those distinguished strangers, there was not to be found (according to the words of the late lamented Playfair) a single man within the city who could tell them what o'clock it was."

The foundation stone of that praiseworthy Institution's admirable building, now the Royal Observatory, on the Calton Hill, which was both proposed and we may here say, destined, to improve the state of things above described, or, as the ultimate object was more classically expressed on an engraved platinum plate at the time,—which was so to act,

NE DIUTIUS
URBI CLARISSIMÆ
SCIENTIAM OMNIUM PULCHERRIMAM ATQUE AMPLISSIMAM
EXCOLENDI FACULTAS DEESSET,—

was laid on the 25th April 1818; and two years afterwards, or just fifty years ago, the building became enterable, when the appropriate instruments for it began to be discussed. Of these however presently in their course.

PRINCIPAL INSTRUMENTS—THE TRANSIT INSTRUMENT.

Transit Instrument.

Having recently taken up the reduction of the Observations made with the Transit Instrument from 1860 to 1869, I have had some remarkable peculiarities with regard to it, not altogether unknown even from the date of its first regular employment in 1834, forced very prominently on my attention. And not only are they now more clearly and extensively exhibited than on any former occasion, but they seem at last to be traced up, or traceable, to both their causes,

and their cure, involving therein the most precious claims which our observations can possess with regard to scientific accuracy of the highest kind. Transit Instrument

For this Observatory was originally intended to be, and has been all along since its period of activity began, whether as a private or a public establishment, pre-eminently a *Meridian* Observatory; devoted more especially, as the very terms of its original dedication attest,

AD SIDERUM CURSUS;

calculated therefore to furnish by its places of the stars, the very "fundamenta astronomiæ," and that by methods which, when applied to absolute positions, have been termed "the Astronomy of Precision." The first large instrument therefore erected in the Edinburgh Observatory was the present Transit Instrument, stated, by the late Professor Wallace in a Report to the Astronomical Institution of the time, or in 1831, "to be justly considered the finest in Europe:" while the important series of star observations made with it, almost from that date up to, and including, the present time, have been the work of one and the same excellent observer, viz. Mr Alexander Wallace, M.A., the First Assistant Astronomer. Original purchase and character of the Instrument.

The object glass of this Transit Instrument, 6·4 inches in diameter, was larger than any other then, that is at the time of its construction or 40 years ago, in use for Meridian observations in this country. It has indeed since that date been far surpassed in some other Observatories, but that we do not regret, for 6·4 inches is still a very respectable size for ordinary meridian observations; and if everything else were as clear and good, most creditable work might still be performed by it in measuring the Right Ascensions of stars. But everything else about it is unfortunately not so straightforward and excellent; in fact there is one thing positively dark and crooked, and that too is the very one on which the whole instrument and the correctness of every observation made with it, most crucially depend; viz. the variability in position, up and down, and from side to side, of the tops of the stone piers on which the instrument rests. Employed for obtaining standard places of stars on the Meridian.

STATEMENT OF THE CASE.

Now on this point I fear that I cannot be very brief. There are too many interests concerned to allow that. On one hand the credit of those eminent and devoted men, the voluntary Members of the Astronomical Institution of Edinburgh who founded the Observatory, built the piers, and established the Instrument; and on the other, the minute and exacting requirements of first-class Meridian Astronomy in the present day.

The late scientific James Jardine, C.E., even more than the architect William Playfair, was charged with the erection of the piers for carrying both the Transit,

Transit Instrument.

and the other Astronomical Instruments; and he rather prided himself (as I am told) on going directly contrary to a very usual idea or necessity among builders elsewhere, in so far that, instead of digging a deep hole and then building a great mass of masonry therein, on soft earth,—he levelled flat the hard porphyritic trap rock of the hill, as it stood *in situ*, and afterwards placed the finished stone piers for the instrument at once thereon, each standing by its own base on the rock, without any foundations of the ordinary kind so to speak.

Mode of founding the piers of the Edinburgh Transit.

I do not know whether his contemporary friends and fellow-citizens were aware that that method, even with all James Jardine's further and almost artistic refinements for producing *border* contact only, at the base of each pier, and reducing cement to a *minimum* thickness of film,—was the very same that was employed in ancient days in the first astronomical building of the whole world and which has held its own firmly for more than twelve times as long as any of the present European Observatories have been standing in any way,—but they did not like it, though they said very little at the time. But as soon as my eminent predecessor, the late Thomas Henderson, found in the course of his admirable observations from 1834 to 1841, that there was an annual fluctuation in the level of the transit axis, following the law of the temperature changes in a thermometer kept under the floor,—then instantly the long-restrained criticisms burst forth, and all the fault, *i.e.*, the cause, was attributed to the piers standing simply and at once on the rock, and not, as in other Observatories on a mass of masonry built in a deep hole.

Temperature fluctuations in level first discovered.

Yet how could there be a differential effect (for that is all which the axis level shows) and to so large an amount, between two piers so close together as those supporting either end of a transit axis only 44 inches long?

There might be, it was argued, a crack in the rock between the two piers, enabling the rock on one side to move independently of that on the other: and one of these sides, it was further alleged, was in reality more exposed than the other to temperature expansions from solar influences, because the Calton Hill was steeper to the south and west, than the north and east.

FIRST ATTEMPTED CORRECTION.

Such was the state of the question at the time of my arrival on the scene: and in my computation and discussion of the several subsequent years of observations which Prof. Henderson left behind him,—I recognised beyond all doubt the perfect propriety and truth of *his* conclusions, viz. that there was an annual fluctuation in the level of the transit axis depending on temperature.

Temperature fluctuations in level re-affirmed.

But as to the idea formed by others *outside* the Observatory, that the manner of acting of that temperature was by the sun shining on the western cliffs of the Calton Hill,—distant 100 feet even at their nearest points of approach,—the very

notion of that was blown to the winds for ever* by comparing the law of level fluctuations with the law of temperature at several depths inside that same rock. For then there was immediately found such a rapidly increasing opposition with the thickness of stone passed through, that the disturbing agencies were thereby shewn to be certainly comprised within a radius of a few inches only from the transit piers themselves; and to be comparatively small in bulk, or very easily affected by changes of atmospheric temperature. Transit Instrument.

When these conclusions were still further strengthened by the discovery, also by myself, that there was a fluctuation likewise in the position of the instrument as regarded the *azimuth* of its axis, and to even four times the amount of *level* disturbance,—the metal bearings for the instrument on the top of the stone piers were examined, and a certain weakness of construction being discovered there,—they were altered in the year 1848. Further temperature fluctuations in azimuth, even more seriously than in level, discovered.

And with what result?

FURTHER PROOF OF FLUCTUATIONS.

Having been satisfied with a little improvement at the time, I never fully looked into the whole question again, until last winter; and can now lay the particulars clearly before the Board by means of several plates at the end of this Report.

Plate 1. Exhibits under the old *régime* the history of a year, at intervals of every 7 days, both in fluctuations of the position of the Transit axis, and in variations of, *first*,—the atmospheric, and *then* the terrestrial, temperature, the latter at several measured depths beneath the surface of the ground. See Plate 1.

Plate 2. Exhibits the same things for the Transit axis and temperature, in a subsequent year under the new *régime* or with the present unadjustable Y bearings. See Plate 2.

On comparing the two plates, the smaller roughnesses of the instrumental curves are seen to be much toned down in Plate 2, but the annual cycle of

* Or rather, such an extinguishing of the critical objections *ought* to have been the case. But, just as with the similarly carping opinion started by a Lord Provost of the time, to the effect that the Calton Hill was in such a constant state of tremor from the passing of carriages on the roads below, that no good astronomical observations could ever be made there,—the accusations still lurk in some minds, and I have had them both flung at me and the Observatory through me, in Society at various times even up to last year. I take this occasion therefore, so far as the shaking of the hill is concerned, to remind all those parties who refuse to attend to what has been published in the way of recent experiments in the matter, and *will* go back to the mere rumoured dictum of a now nameless Lord Provost, that the Astronomical Institution, then in its utmost vigour, appointed a committee of their best members to try by direct experiment what grounds there were for his Lordship's assertion, and that committee consisting of no less eminent men than

Prof. Playfair
Dr Brewster, and
James Jardine

reported after continued experiments that the idea was "chimerical."

Transit Instrument. oscillation exists almost to the same average extent as before. Some improvement therefore in small disturbing causes was effected, but the great disturbing cause remained still untouched. What then could, or can, it be?

See Plate 3. In Plate 3 are given from the mean of ten years, the annual average of the Transit axis fluctuations and the temperature observations which most nearly follow the same law; *i.e.*, of the thermometers whose bulbs are only a few inches deep in the soil; and then the remarkable fact comes out, that while the date of culmination of any instrumental fluctuation is the important index to connect it with the depth of its disturbing thermal cause, and while the level's culmination date comes between the culmination dates of temperatures in 3 inches, and 3 feet, thickness of stone, the azimuthal culmination is much earlier than all of them, indeed earlier than the atmospheric temperature's maximum itself.

See Plate 4. In Plate 4 too, where the "ranges" only, and not the absolute quantities of the instrumental fluctuations and the several temperatures, are inserted—the further peculiar feature appears, that in amount of *range* the azimuthal position of the Transit instrument is more affected, even nine times, by variations of temperature, than the level.

THE PIERS AT FAULT BY EXPERIMENT.

These circumstances led me to suspect that, not the metal bearings above, nor the rock foundation below, but the intervening piers themselves were at fault.

Pier level fluctuations forced by heat of hand lamp. And though large stone piers are too generally considered quite uninfluenced and uninfluencible by ordinary small sources of heat—I yet placed a few little hand lamps at a short horizontal distance of, first one, and then the other, pier, arranging the telescope at the same time to show the effect of an alteration of level of the axis by a neat observation in the mercury trough,—and then watched what took place.

See Plate 7. The results of these experiments are shown in Plate 7.

In every one of them too, the moment the lamps were lighted, away went the level of the axis, indicative of a forced alteration in height of one of the massive stone piers.

Except in one instance, when this weak radiation of heat by hand lamps was applied near the *top* of one of the piers, the *first* effect observed always was, strange to say, a shortening of the height of the pier; and it required much time to elapse before the normal effect of heat in expanding was shown.

This apparent anomaly however, was in reality only a still more delicate, yet decided, proof of how dreadfully sensitive these stone piers are to the faintest heat emanations; and explained at once the extravagances of the azimuthal, over the level, fluctuations already noted from year to year; for it arose in this way.—

The first effect of a lamp shining on one side of the stone pier, is to warm up and therefore lengthen that side and that side only; whereupon the pier

necessarily becomes misshapen, and has its top thrown over so far towards the opposite side, with one corner higher than the other, that the whole vertical height of the pier is effectually shortened. But give the lamp time and its heat gradually penetrates into, if not altogether through, the pier, which thereupon straightens itself up and shows a greater height than at first by the amount of heat that has entered into it. Transit Instrument.

THE PIERS DOUBLY EXPERIMENTED ON.

To test this explanation the experiment on Plate 8 was arranged, whereby the effects produced both in azimuth and level were simultaneously observed; and it will be seen that at the precise period of the anomaly, or negative effect in the level, there was an extra effect in azimuth; and that the whole resulting effect, even at the end of the experiment, was far greater for the azimuth than the level, or realizing all the chief features previously ascertained during astronomical observations. See Plate 8. Fluctuation of the instrument both in azimuth and level from heat artificially applied.

Here then is the state in which things are at this moment. The first and principal instrument in this Observatory, viz. the grand Meridian instrument whose position ought to be one of the most invariable, or at all events one of the most slowly varying things in the world, is mounted on stone piers so tremblingly alive to every ray of heat, that a wretched little hand-lamp cannot look at them without their writhing and wincing under it, and making the telescope mounted in confiding trust upon them, look anywhere but in the plane of the Meridian. Not only the largest amount too, but the most quickly and uncertainly varying of the disturbing effects, and therefore the one most difficult to correct by measure and calculation, (or the one depending more on temporary difference in temperature of two sides of a pier than the absolute temperature,) occurs in that horizontal, or azimuthal, direction where there are no mechanical means for testing the effect during stellar observation, and only occasional astronomical ones, so that the disturbance may have come, affected certain observations injuriously, and gone again before it can be properly inquired into. All the fluctuations in position of the Transit Instrument yet observed, traced up to the action of heat upon the piers.

While too these perplexing errors are produced so easily by a little heat, it may probably be stated that they are practically due to that alone; for as to the much criticised fixings of the bases of the piers, although the mean annual positions do not always correspond to the mean annual temperatures, yet they have come back after twenty years to very nearly the same identical positions they had at first,—while the annual cycle of change has rarely been much interfered with. Moreover the fixing was directly tested as shown at the foot of Plate 8, by weights pulling on the tops of the piers horizontally over a pulley, and all the effect produced was a mere bending of the pier for the time being, and a springing back to beyond the former position the moment the weight was removed. So slight too was even this temporary yielding, that it would take the

Transit Instrument.

force of two horses pulling at a dead pull on the top of the pier, to bring about the amount of angular change which a difference of 25 degrees in the atmospheric temperature may cause at any time.

THE PHYSICAL NATURE OF THE STONE ONLY AT FAULT.

The only real fault therefore after all to be charged against the Edinburgh Transit piers, is, "the physical nature of the stone employed, as to the action of heat upon it." Not indeed a very conspicuous fault or one that an ordinary engineer could be held answerable for overlooking, seeing that the whole alteration in height of one of the piers over the other, from mid-winter to midsummer, is under [illegible] of an inch: but it is within these limits that temperature may, and indeed does, play most prejudicial vagaries with such an astronomical instrument as the Edinburgh Transit ought to be; besides taking away the prestige for high accuracy which our observations ought to possess; and giving us never ending trouble in computing and applying correctional quantities before the real astronomical results can be begun to be harvested in.

[illegible] physical aptitudes of different varieties of stone to be influenced by heat.

Some good might, indeed, and even should, be done by modifying the shape of the piers, guarding them by gabled casings from radiant heat, and equalizing the temperature of their parts by circulating air spirally between them and their cases; and, were it not for the tyrannous hold that ornamental architecture is made to possess over the Observatory, there should be extensions of the Meridian room North and South to hold collimating telescopes and their piers, in the manner now practised in most of the modern Observatories. But all these things, though they may palliate the evil, will never eradicate the cause, viz. the untoward *physical* nature of the stone employed.

That stone derived from the Craigleith quarry I suspect to be bad beyond many other stones, because,

1st. Its heat expansion is said to have been ascertained by the late Alexander Adie to be so great as to equal that of cast iron.

2d. The earth thermometer observations of the late Principal Forbes, (printed in Vol. XVI. of the Transactions of the Royal Society of Edinburgh,) prove that it is far more easily entered by heat, than either our own porphyritic trap on the Calton Hill, or even the sand beds of the Experimental Gardens; and

3d. It is full of abnormal charges of iron salts and oxides, painfully conspicuous now by the positively black patches which exposure to the atmosphere has developed in a few years on many of the Observatory stones.

Now while the engineer of the Astronomical Institution of Edinburgh did, as above mentioned, in the mechanical design of fixing his piers, follow, whether knowingly or unknowingly, the example of that one and mighty building of the early days of the world, erected long before the latterly so much talked of

Transit Instrument.

juventus mundi of Grecian literature, viz. the really primeval Great Pyramid,—and has been completely justified therein by our latest observations;—yet he did not follow the same most ancient example as to the *physical* quality of the stone employed. Each of the two great engineers did no doubt similarly and actually refuse to adopt for their finer and more accurate constructions the rock of the hills whereon their respective buildings stood, and sent to a distance of several miles for a different kind of material: but the earlier engineer, with the result of obtaining a stone which has weathered less *inches* in 3000 years than his hill's rock has done *feet* in 1000 years; and the later engineer to obtain another species of stone over which heat has so much extra hold and disturbing power, that he did thereby introduce a positive evil into the Calton Hill Observatory and one which operates like a perpetual curse on every transit observation that ever has been, or can be, made with our fine instrument mounted as it is.

The modern, compared with a very similar primeval example.

This too well accomplished fact in Edinburgh, does not indeed necessarily prove that the primeval Architect in Egypt, was entirely and absolutely right in the choice of stone which *he* made 4040 years ago;—but I hope before long to institute some experiments which may show whereabouts in a series of many different varieties of stone, the material of the Pyramid, and that of the Edinburgh piers, may chance to come in their several qualities and adaptabilities to form the supports of first-class meridian instruments in any astronomical Observatory intended for the extremest accuracy and the utmost permanence.

A LOCAL OBSERVATION.

A local observation.

On transit of the Pole star, below the Pole as seen by reflection in the Transit Instrument.

The first astronomical observation which I have made in the Observatory, since entering the new house, has been one often talked about before and even to some extent prepared for from the foundation of the Observatory, but never, as I am told, actually taken—I mean a Meridian passage of the Pole star by *reflection*, as seen with the Transit Instrument.

The ancient preparation consisted in a stone pier at a certain height and distance under the floor; but no reflecting trough had been furnished until I recently had an appropriate one made, and have now by its means obtained a useful check upon our usual method of measuring the level error of the axis.

In so far there is nothing unusual; but I should be glad to be informed by any possibly still existing friends of the late James Jardine, C.E., *why* he placed the said reflection-pier in such a position that, not the Pole, nor the Pole star if above the Pole, could ever be seen reflected in it, but only the said star and others near it *when below the Pole.*

By raising the trough upon its pier, stars of greater Polar distance can be commanded *Sub Polo*, but there are no means of depressing the reflecting surface below the top of the pier, or bringing it nearer to the instrument to enable

A [illegible] observation.

it to view either the Pole (had it been a visible point) or any stars *above* the Pole, by reflection.

Why was the reflecting pier of the Transit Instrument built originally to suit the Pole star only at its transit below the Pole?

Is it altogether a baseless suggestion, in an Observatory where the Great Pyramid method of fixing stone-piers was certainly followed, to imagine that that most learned, laconic, self-contained engineer of his day, the first "observer" too of the Astronomical Institution of Edinburgh, Mr Jardine, wished to leave behind him another memorial of his acquaintance with, and respect for, the earliest building of the world connected with *Meridian* observations of stars; and whose characteristic "entrance passage" pointing Northward and in the plane of the astronomical Meridian is directed in that plane (and for a special reason of the utmost value in primeval chronology) not to the Polar point itself nor to the then Polar star crossing the Meridian *above* the Pole, but to the same star when crossing the Meridian *below the Pole?*

THE MURAL CIRCLE.

Mural Circle.

This instrument, wanting some repairs, is now nearly at a stand, chiefly on account of the observer (appointed to it by Government thirteen years ago, after passing successfully a severe intellectual examination under the superintendence of the Civil Service Commissioners) having failed latterly in a moral and self-control point of view, and having now left the place.

H.M. Home Office has been duly informed of the circumstance, and meanwhile the First Assistant and myself are carrying on all the work of the Observatory. There is accordingly now before us a large mass of Mural circle observations by the late observer to be computed, and until that has been done and the results discussed,—the condition of the instrument need not be further entered into.

EQUATORIAL.

Equatorial.

At their meeting in April 1869, the Board memorialized Government on the urgent propriety of carrying out at last the representations made more or less during 18 or 20 years past, as to furnishing this Royal Observatory with its *third* originally intended and principal astronomical instrument, viz. an Equatorial.

No answer having been received up to the month of August, a question on the subject was publicly asked in the House of Commons by the Senior Member of the City, Duncan Maclaren, Esq.; and in the course of the autumn an application was made to me, through H.M. Office of Works, to send in an estimate of what such an instrument would cost if furnished in the usual and orthodox manner.

Now this application I could answer at the time most easily, having just returned from a short tour to several of the principal Observatories and astro-

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nomical workshops on the Continent; and the answer therefore amounted to this:— Equatorial

The standard size of object glass in the present day (1869) for a first class equatorial, is 18 inches in diameter; and if you go to that magnificent Roman Catholic establishment in Munich, which has furnished through three generations the finest object glasses to all the principal Observatories of the world,—Protestant and Catholic,—you may get such an instrument completely fitted up and guaranteed at all points according to a regular printed tariff; and with no other trouble or difficulty to yourself, than merely giving the order and paying the price, viz. 60,000 florins, or about L.5000; while the bringing over to this country and erecting a dome suitable to the great length of the telescope, might be expected to cost about L.2000 more. Example of a standard Equatorial in Germany

But nothing like so high a sum I was assured would ever be granted to Edinburgh for an Equatorial; neither would so large a dome be ever allowed to be erected on this Observatory by reason of æsthetic architectural considerations, supposed to be of far greater importance to the city than anything astronomical.

What size of Dome then, would the authorities allow?

To this end H.M. Government procured an opinion from that most learned and literary architect of the day, viz. James Fergusson, F.R.S., the well known historian of Architecture and developer of a special Philosophy of the science thereof; and he, after full consideration of the building, its style and site—laid down how many inches, and no more, the present very insufficient Dome might be exceeded in *external* dimensions, by a new one, whose *interior* was left to the astronomer to plan as he pleased. Architecture forbids its adoption in the Edinburgh.

A design therefore was soon drawn out by which an *interior* nearly two feet greater both in height and diameter than the present one was obtained; and although that size would have been still too small for a *refracting* telescope of large aperture,—yet such have been the improvements in recent years in the manufacture of *reflecting* telescopes, especially those of silver-on-glass, that I did not despair of getting one equal in power to the orthodox 18 inch objective, but short enough to be used in a 14 foot dome. After communicating therefore with several artists in various countries, I came at last fortunately into correspondence with Mr Grubb of Dublin; and he, after fully inquiring into all particulars, and going over the details of the special equatorial mounting that I had sketched to suit the exigencies of the situation,—undertook to construct a first rate equatorial reflector, carrying a silver-on-glass speculum 24 inches in diameter and of only 120 inches focal length. Another variety invented and adapted for the situation.

All the world has heard of Messrs Grubb & Son's mechanical promptitude and success in preparing the Melbourne reflecting Equatorial, of far larger power than the proposed Edinburgh instrument: and they will bear very

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Equatorial.

shortly of another large telescope which the same firm has just completed, both for the Royal Society of London, and specially to satisfy that prince of spectrum observers, Mr Huggins,—completed it too at a less cost in money, and within a shorter period than an instrument of such calibre and excellence was ever prepared by any optician before.

Hence Messrs Grubb's full ability for the proposed work is most unexceptionably testified to already by the leading scientific authorities in the present day; and the firm's estimate for the Edinburgh Instrument, provided with micrometer, spectroscopes, photographic apparatus, and including the expense of a new Dome—after a certain alteration of the top of the pier, and the neighbouring floors and beams which Mr Matheson with excellent spirit undertook on his part, if sanctioned by his department in London, and a duplicate speculum being promised by a continental artist of ability,—proved so remarkably moderate, that it was received by H.M. Government, when transmitted in the beginning of last January, without, so far as I have heard, any objection.

Unexpected retardation in supply of funds for the instrument.

There seemed thus every prospect, if the items should be brought before Parliament in the present year, of the Royal Observatory of Edinburgh being at last speedily supplied not only with the species of Instrument it has anxiously desiderated ever since its foundation—but with a properly standard example: one capable indeed of taking nearly the same place among most other equatorials of the present day, that our Transit Instrument did, when first erected in 1831, among all the then Transit Instruments of the land; *i.e.* it will have rather larger aperture, though shorter focal length, and be altogether more simple, firm, compact, and not less powerful.

Within the past few days however, and when I was keeping back this report expecting almost momentarily the pleasure of being able to announce that the instrument had been granted by Parliament,—a letter has been received by the Secretary of the Board from H.M. Home Office, in answer to his of April 29th 1869, stating, under date of 6th of May 1870, that the Lords of H.M. Treasury will be prepared to consider the question of the Equatorial before the estimates for 1871 and 2 are framed.

COLOUR CYCLE OF 95 HERCULIS.

Colour Cycle of 95 Herculis.

While the Edinburgh Equatorial is deferred as above from year to year, many phenomena in the heavens which ought to be observed are passing away nearly unseen and unrecorded. Amongst these however I am happy to mention *one* which has just been saved, as it were, by the skin of the teeth, through means of almost a chance observation, but unexceptionable so far as it goes, published in Mr J. G. Barclay's second volume from his own Leyton Observatory.

In 1862, basing upon my observations that year with the fine Equatorial of the late Mr Grant of Elchies and certain older records—I ventured not only to

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re-affirm (see p. 489, vol. 12 of the Edinb. Observations) the perfect truth of my much disputed colour-record of the two components of the double star 95 *Herculis* as seen from the Peak of Teneriffe in 1856,—and which record was to the effect, that they were then both of them *greyish-white;* but also to state, that they would be again seen of the same colour in about 12 years after 1856;—although in the interval every observer should be recording the one star ever so intensely green, and the other even deeply red, and no one except myself had ever seen them either gray or white. Colour Cycle of 95 Herculis.

The crucial epoch of 1868 however passed away, without my having any means of testing the prediction and without hearing of any one else having done so either. But within the last few days Mr J. G. Barclay having kindly presented to the Edinburgh Observatory his last published volume of observations, I found there that he had noted the stars at the date of 1866·46; and how did he record their colours? "Both stars white," and nearly two magnitudes brighter than in their normal green and red condition!

Hence, though my idea of the duration of the colour cycle is shown to have been rather too long, the grand physical fact of such an intensely marked series of chromatic changes on a binary pair of stars (a phenomenon altogether without a known parallel in the whole heavens) is now admirably confirmed.

Here then is opened up a most important case for the application of the more accurate spectroscopic analysis of the present day; but who is to apply it, and through the whole duration of the cyclical change? The stars are so very small and so close together that the largest telescopes with high magnifying powers and under the best atmospheric definition would all be required and their qualities exhausted before sufficient insight could be expected to be obtained into the wondrous chemical changes which are undoubtedly transacting in those two distant suns. While even if there is a telescope anywhere in the country fully equal to all that would be demanded of it in studying this problem, its owner may not have leisure from his other subjects of observation to attend to it. Who will observe these stars spectroscopically?

The Board might therefore set this view of the case before H.M. Government, unless indeed they see any cheaper or more powerful means of getting these observations accomplished elsewhere than in Edinburgh, when of course I should not presume to urge it further upon them.

CLOCKS.

The two separate trains of electrically controlled clocks, Sidereal and Mean-Time, are working well and effectively. Clocks.

The Governing clock of the Sidereal train, and therefore the most important in our whole establishment, and which we were the first Observatory in this country to remove from the very exposed and inclement neighbourhood of the

Clocks.

Transit Instrument and bury in a dark closet with thick non-conducting walls, duly experienced the advantage of that system under the violent change of temperature which took place between the 31st of August and 2nd of September last: although in an English Observatory, famous otherwise for its excellent time observations, all its clocks, not having any such protection, changed their rates by the fearful amount of a second in 24 hours. This was from sheer inability of the so-called compensating pendulum to keep pace with the quickness whereat the large change of atmospheric temperature took place. As an illustration therefore of the character and amount of such protection from temperature changes as a mere dark closet may afford, Plate 9 is introduced at the end of the Report, and gives the history of temperature variations in three localities of our Observatory during six continuous months.

See Plates.

A Barometric or Bathometric equalizer required for the Edinburgh Standard Sidereal Clock.

A new Observatory is however now building in England, where this method of equalizing the temperature about the governing clock has been adopted in principle, and in degree far transcended; for the clock chamber is at the bottom of a dry well forty feet deep in the earth; and besides that, the talented and ingenious owner and designer is to employ a special apparatus for equalizing the barometric pressure at the same time.

This is an advantage which the Edinburgh clock, according to a recent discussion of its going through many months, stands much in need of.

I may mention also that the controlled "observing clock" in the Sidereal train, has had an improvement made in the manner of its striking the seconds on the *outside* of the clock case, which will probably speak for itself to the Board more effectively than anything that can be said for it.

TIME SIGNALS.

Time Signals.

Of our two daily electric Time signals, the *Gun* at the Castle failed rather frequently last autumn, on account it was said of bad fuzes, but the military authorities appear now to have received a better supply.

On March 26th, I am sorry to say that the *Ball* gave erroneous time, to the huge extent too of nearly 30 seconds, and the fact was not published in the papers next day according to our custom when any error takes place. On that day, in consequence of a weakness in the electric current between the Observatory and the Monument, the Ball was dropped by hand, and I was subsequently informed by the party concerned that he had accomplished it with all practical accuracy. The said party has, however, now left the Observatory, and is not therefore likely to compromise the character of our time-signals again.

Otherwise, both of the daily time-signals have been carried out well and satisfactorily through the year; while the system of controlling clocks both in the Post-Office and other parts of the city, has been kept up continuously as usual.

WHAT OBSERVATORY FIRES THE EDINBURGH TIME-GUN ?

Time Signals.

If one or two of the older circumstances of position of the Edinburgh Observatory, as already shewn, are not altogether understood by some persons close by,—we need not be surprised at certain of its newer features of work or usefulness being misapprehended in London. But when one of the most popular scientific journals there stated only last week (p. 50) that it knows "as a matter of hard fact that the Time-guns at ———, Edinburgh and other Northern towns, have been ignited for some years past from Greenwich Observatory," it would be wrong not to speak out and declare that the grand and excellent Greenwich Royal Observatory has never had the smallest share in firing the Edinburgh Time-gun.

Wherefrom, and how, the Edinburgh Time-Gun is fired.

That gun located in the Edinburgh Castle is "ignited" by a "friction fuze" pulled by a Clock close to it, such clock being electrically controlled by and from the normal Mean-time Clock of the Edinburgh Observatory. Not a day nor a night passes without one or more comparisons and corrections being made within the Edinburgh Observatory to secure the Castle Clock (and with that the other controlled clocks in the city) showing true time to the nearest tenth of a second; and the methods of so controlling and correcting the Castle Clock can only be carried out by having a wire from the Observatory to the Castle, exclusively employed in conveying electrical currents positive and negative at every alternate second throughout the twenty-four hours, for that service alone.

Now as there is no special wire for clock-controlling laid down all the way from the Greenwich Observatory to the Edinburgh Castle, and the expense of one would be something fearful both in first cost and after maintenance, the public may rest assured—in spite of the knowledge of "hard facts" asserted by the gentleman in charge of London "Nature," that the firing of the Edinburgh Time-gun has not yet been operated from Greenwich, nor is very likely to be.

THE LIVERPOOL TIME-GUN.

The Liverpool Time-Gun fired from the Liverpool Observatory.

Similarly we may say of the Liverpool Time-gun—if that is one of the guns North of London alluded to by "Nature"—it is not fired from Greenwich, but from the Liverpool Observatory itself, and through the same practical method (possessing immense advantages for those employed in charging and tending the gun) of electrically controlling a clock which works a trigger on the gun-battery ; a service which there too and anywhere, requires a special wire to be in constant use by day and by night, and forbids the idea of seeking help from any other Observatory, however splendid and famous, if several hundred miles away.

PROPOSED NEW TIME-GUNS.

New Time Signals proposed both in America and India on the Edinburgh model.

Further off still, however, than London, I am happy to say that more correct ideas prevail; and therefore, from both a large inland city in America on one side and from Calcutta on the other, we have had applications during the present year for particulars of our method of controlling clocks and firing a Time-gun, with a view to their probable employment in those places.

Now the method of controlling clocks (largely with the Edinburgh Mr Bain's pendulum) is that patented by Mr Jones of Chester and first adopted by the Liverpool Observatory; from which establishment we were merely the earliest parties in Scotland to borrow and employ it. But the electric time-gun is native to Edinburgh, and the lately established Liverpool gun (already I am informed very popular with the citizens there, and of which the works were prepared by Messrs Ritchie and Sons of this city), was a graceful return from Edinburgh for the advantage she had previously received in the matter of controlled clocks from Liverpool.

Double fuze [illegible] Gun.

There is this difference however between the two Time-guns. Duly profiting by our experience here, to the effect that an occasional bad fuze *will* occur, but rarely or never two bad fuzes consecutively,- the Liverpool gun has been supplied with *two* touch-holes, and the clock fires *two* fuzes simultaneously each day, with the good result that there has never been a case of no-fire of the gun yet; and in order to render the ignition of two fuzes as easy as possible for the Clock, Abel's chemical fuzes, fired by a magneto-electric spark between the Clock and the Gun, are adopted there.

A double fuze-fire recommended for the Edinburgh Time-Gun.

As we here in Edinburgh have begun with the mechanical "friction-fuze," we may probably as well continue with that system; but it would be undoubtedly a great improvement and tend immensely to the certainty of having no miss-fire on any day of the year, if we were allowed to bore a second touch-hole in the Castle gun, the Military permitted to use two fuzes each day, and the power of the Clock strengthened to pull them both at the same instant.

METEOROLOGICAL WORK.

Meteorological Work.

The computation of the observations from 55 stations of the hard-working Meteorological Society of Scotland, has been carried on here as before, and appendixed for each month with short descriptions and references to the similar returns for 14 years previously. The sheets thus prepared are sent at the end of every month and every quarter to the Registrar-General of Scotland and have been printed by that officer in his several returns during the past year.

THE EARTH-THERMOMETERS.

Meteorological Work.

The observations made by ourselves with the important battery of large earth-thermometers are still kept up; and the whole series of records, from their first commencement in 1837 to the end of the year 1869, has recently been reduced and submitted to examination on a uniform plan for the detection of any possible *cycles* of temperature of the cosmic kind, other than the annual one. The result has been the discovery of many apparent cycles; some of them of more, and others of less, in some cases of very much less, than one year's duration. These last however do not seem to be distinguishable, by such dark instruments as thermometers, from mere weather changes on the surface of the earth in Scotland; but the former, or those changes lasting continuously for more than a year, are not only more likely *a priori* to be free from that source of error, but one of them has actually been found in fact to have the same period of duration as the visible phenomenon of the black spots on the Sun's disc, or 11·1 years.

Complete reduction of the earth-thermometer observations from their first establishment in 1836 to the end of 1869.

A definite step of insight therefore, into a dominant influence over terrestrial weather changes seems really thus to be made; though not without a starting of new difficulties and a calling of attention to certain features of the said Sun-spot observations, seldom noticed before. I have therefore thought it right to communicate the whole observations and their discussions without loss of time to the R. Society of London, where the study of Solar physical phenomena is being carried on at present with such exceeding fervour and no small amount of success.

ARGUMENT BASED ON THE HISTORY OF OUR EARTH-THERMOMETERS.

The separate specialities of TEACHERS OF SCIENCE on one side, and *Scientific Observers* on the other.

Altogether and looking at the whole of the circumstances of the past 33 years, I trust that the Board will kindly bear with me while I allude to these earth-thermometers as a crucial example of the advantage of the proper services of a public *Observatory*, carried on purely and efficiently as such, in and for the city of Edinburgh. Brought here in 1837 by the late Principal, then Professor, Forbes at the expense of the British Association for the advancement of science, at the same time that he established a similar set both at the Experimental Gardens and the Craigleith Quarry, for the purpose of investigating certain Natural Philosophy problems of a comparatively stationary order,—these remarkable thermometers on the Calton Hill were not only observed for him by my predecessor, Prof. Henderson, during the five years that Professor Forbes required them for his own special objects and studies;—but when, at the conclusion of that time, the two other sets were broken and their series brought violently to an end, the Observatory set,—more tenderly watched over,

Meteorological work.

repaired and defended from stray accidents,—was still continued to be observed with and recorded; and having been so kept up ever since without cessation to the present time, (excepting one only which was broken during an unprecedented frost in 1860,) they have now begun to yield a new series of phenomena, where the progress of *time* is concerned, and celestial changes are thereby brought to light of a kind not dreamed of when the thermometers were first inserted into the Calton Hill,—yet furnishing data for the improvement of the very statical questions first taken up, and of the utmost importance to the increase of our knowledge of the workings of Nature; though it be, however, by steps so minute and slow, that the longer life of a public institution than of a private individual, and the continued attention of an establishment wholly given to observation, and not diverted through half the year to a totally different line of employment, be needed to trace them with certainty and success.

Of Scientific Education as not comprising all that is required for the advancement of science.

ECLIPSE EXPEDITION.

Eclipse expedition.

Vast arrangements are being made in London just now, connected with two or more expeditions to observe the Total Solar Eclipse of next December in Spain and Sicily. Some 60 or 70 observers are expected to co-operate, the Poet-Laureate is to accompany them, and Government assistance is anticipated for conveying the groups and their apparatus of observation to and from the stations to be occupied. The recent solar results, from the above-mentioned Edinburgh earth-thermometer observations, have been already alluded to in more than one metropolitan scientific periodical, as strengthening the claims of the coming eclipse observations to public regard; and I have been asked, recently whether *I* am not also going to join the party.

I regret much that the mere popularity of a question should cause any friends of the Edinburgh Observatory inconsiderately to expect the performance of duties which are neither necessary, nor possible to it in its present circumstances. When in 1858 a similar eclipse, equally important with the approaching one as a natural phenomenon, was to occur visibly in Brazil, and *no* one could then be got to volunteer for the service of observing it, and *no* aid could be obtained from Government—I then agreed to go, when applied to by a private and earnestly scientific gentleman in London, on the understanding that he would be able to procure from a city merchant a certain mercantile commission in Rio, which, without occupying much time, would nearly pay the expense of the voyage; but now, when the wealthy and numerous scientific men of the great Metropolis have enthusiastically taken up the work, and Government is obligingly ready to assist them,—so small and poor an establishment as the Edinburgh Observatory may well withdraw, and leave those powerful parties to go on gloriously in the cause they have lately made so eminently their own.

Reasons for *not* asking for Government assistance to enable the Edinburgh Observatory to compete in the proposed very popular, and already famous, eclipse expedition of next December

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In fact the due and economical utilization of our very small means for anything really useful to the actual development of science, seems to demand more than ever, that instead of following the most popular pursuits of the day in vain imitation, or attempted repetition, of the rich, many and powerful, we should rather stand retiringly on one side and watch for any special branches or points in science which are *not* receiving their just meed of attention from the world. Eclipse expedition.

THE GREAT PYRAMID.

Government Assistance Rendered to that Subject Unexpectedly.

In their Report to H.M. Government on 29th April, 1869, the Board "called attention to the importance of the Great Pyramid being scientifically measured." The Great Pyramid.

The reply just received by the Secretary, states, under date of 6th of May 1870, that "the Lords Commissioners of the Treasury are not disposed to entertain the question relating to the measurement of the Great Pyramid." Government assistance refused to the Edinburgh R. Observatory.

It is therefore not a little remarkable that in the interval, or in August 1869, I had the honour of receiving by post from the Ordnance Survey Office at Southampton and under a cover conspicuously entitled both "On Her Majesty's Service" and "Ordnance Survey Documents," an illustrated quarto pamphlet entitled "Notes on the Great Pyramid of Egypt and the cubits used in its design; by the Director General of the Ordnance Survey," and purporting to contain exactly *such* a measurement as both this Board had applied to have made and the Treasury has refused to sanction; *i.e.*, scientifically complete and worthy of trust. We can therefore hardly do otherwise than enquire now, whether what was then and there done, was executed as accurately and is published as fully as the Board desired when making their application in April 1869. A Government publication on the subject appears from another department.

EXAMINATION OF THE WORK THUS PERFORMED AND PUBLISHED.

On both these points I regret to have to set forth rather distressing failures. The above publication examined.

OF THE PRACTICAL MENSURATION.

A mean of the four sides of the base (assumed to be square) of the Great Pyramid, as measured by the Royal Engineers last year, has been published in the Ordnance pamphlet, not only without documentary particulars of the methods of measure, but with the startling statement accompanying, that its difference by no less than 20 inches from a certain other measure made by a private party several years ago and regarded as equally good, may be termed "agreeing well." Wherefore the mean between these two, or something different by 10 whole inches from the quantity actually measured by the Royal Engineers is employed afterwards in hypothetical discussions as being the true and precise quantity; the entire length of such mean base-side of the Pyramid being all It contains a bad measure of the length of the base-side of the Great Pyramid.

The Great Pyramid.

the time such, that at the ordinary degree of accuracy of the higher surveying of the present day, the error ought not to have amounted to even the thousandth part of ten inches.

The bad base-side measure is the only new measure contained in the Government issued pamphlet.

Further, this much approved and apparently *final* Pyramid base-side measure, so far as Government is concerned, to be thoroughly effective for the enquiry it was intended for, ought to have been applied, not only to certain terminal sockets in the rock (which are indeed spoken of in the Ordnance pamphlet though with some very self-damaging and serious errors of fact),* but also to the traces of the original base-sides themselves along the lines of, and lying under, certain huge heaps of rubbish, as discovered on the north side by the late Colonel Howard Vyse; and we ought to have had also full and precise numerical, photographic and astronomical information on the shape, extent, position, and level of the "pavement" on which the Pyramid partly stands, as a necessary portion of the base-side measure and the only means of thoroughly understanding the original character of the same:†—yet not a word or a figure is there throughout the Ordnance pamphlet on all these requisite features.

Such then, or rough and incomplete to a degree, is the one and only original measure of any part of the Pyramid contained in the said official document; but then follow both an *hypothesis*, and after that a glorying claim of *proof* for the hypothesis, besides some strong assertions foreclosing further research.

OF THE HYPOTHESIS.

An hypothesis invented by authority to establish the bad measure.

The hypothesis above referred to, a pure invention by the Ordnance describing officer, is,—that the *intended* ancient length for the Great Pyramid's base side was,—500 times the length of a cubit 18·2415 British inches long.

The first element of the hypothesis is shown to be without any foundation.

Why the number 500 was picked out and thought so important with the Great Pyramid alone of all the Pyramids of Egypt, is not even attempted to be shown; indeed the same hypothesis-framing officer was contending, only a few months previously, just as stoutly for 360 having been the favourite base-side number in the mind of the primæval designer.

The second element of the hypothesis contradicts the chief metrological datum of all Egyptology.

And why the cubit employed should have had a length, so unheard of in Egyptology for the period, *i.e.* 2170 B.C., and for 1500 years afterwards also,—as to be only 18·2415 British inches long, and not the length of all the ancient Egyptian cubits actually discovered in modern times, and found to be always and invariably something close upon 20·7 British inches long:‡ (and to have been regarded anciently as so awfully religious a matter at that equivalent length, that one of the "justifying" confessions written out on papyrus and

* Treated of more at length in my "Poor Man's Photography at the Great Pyramid;" published by H. Greenwood, 2 York Street, Covent Garden, London, 1870.

† See my "Life and Work at the Great Pyramid," 3 vols, Edinburgh, 1867. See also papers in the Proceedings of the Royal Society, Edinburgh, for April 1868.

‡ See Appendix 1, p. R 75

inserted into every old Egyptian's coffin,—so that his soul might have it ready at hand to repeat before its Maker at the gates of the next world, was—"I have *not shortened* the cubit;" and one of the first sights which breaks upon the awakened gaze of a "justified" soul, after being allowed the supreme bliss of entering such next and immortal world is, according to that soul's testimony in the Egyptian Ritual or Book of the Dead, "I see the God Thoth with the cubit in his hand;") why in fact not only some shortening—a deadly sin, if to any extent, in *Egyptian* eyes—but such a monstrous amount of shortening of the actual cubit rod of Egypt, as from 20·7 to 18·2415 inches, was allowed primevally at the Great Pyramid,—is made to depend on—

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1*st*, A casual mention by Herodotus—1700 years after the Pyramid was built, and merely as a parenthesis in a passage setting forth the superior perquisites enjoyed by the *soldier* class of the people of Egypt, in those latter days,—to the effect that the *Egyptian* cubit, in terms of which such happy soldier's plot of land was then measured out, was of the same length as the *Samian* cubit.*

Herodotus appealed to in the Government pamphlet to support the Hypothesis in its absolute contradiction to all Egyptology.

2*d*, An assertion by the Ordnance describing officer that the expression, "Samian cubit," was equivalent to, or meant, the Greek cubit. And

3*d*, A practical determination of the modern value of such Greek (and therefore (?) Samian) cubit from a measure of that comparatively quite recent, foreign and totally contrasting building to the Great Pyramid,—the Parthenon at Athens.

To establish this last very nice point, or the Greek cubit of the Parthenon period, say of 448 B.C., to be exactly 18·2415 British inches long, the officer asserts that "the Hecatompedon of the Parthenon at Athens was so called because the platform on which the columns stand was made a double square of exactly 100 feet;" but thereupon we are entitled to ask,

The Parthenon appealed to, and its platform erroneously assumed to be exactly a double square.

A. Who is the *ancient* author who makes such a statement, and where? and

B. How can the platform be described as exactly a double square by any *modern* surveyor understanding accuracy, when its breadth is to its length, according to the measures of Mr Penrose, the very Parthenon-referee and voluntary helper of that Ordnance officer, as 101·336 : 228·141 feet; or the latter actually 25·469 feet too long for such a geometrical figure!

Next, what are the grounds for a Greek cubit, even if it *was* 18·2415 inches long, having necessarily, or even probably, been equal to the Samian cubit?

The Samian cubit asserted to have been the Greek cubit.

Simply this, that the Director-General of the Ordnance Survey at Southampton, after quoting learnedly Herodotus, Euterpe, 168, as above for the equality of the Egyptian and Samian cubits, adds to the text saying that the Samian *was* the Grecian, and then takes the Grecian to represent the Samian.†

But what did blue-eyed, innocent Herodotus, so little an authority when venturing to deal with science as to hold that the Sun's winter motion in the heavens is produced by the Etesian winds of Egypt blowing him Southward, but

* See Appendix 2, p. R 77. † See Appendix 3, p. R 77.

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so rich and rare as a moral writer on the social affairs of men,—what did *he* mean when he undoubtedly used the word *Samian* and not Grecian?

If we turn to his book Thalia, 55, he makes a Lacedæmonian speak of the Samians (in their isle so very close to Asia-Minor and so far from Greece) as "foreigners;" and in Thalia, 56, he himself characteristically speaks of a siege of Samos by the Lacedæmonian Dorians as "their first expedition into *Asia*." "Words," says the Rev. Prof. Rawlinson, "which are emphatic. They mark the place which the expedition occupies in the mind of Herodotus. It is an aggression of the Greeks upon *Asia*, and therefore a passage in the history of the great quarrel between Persia and Greece, for all Asia is the King's (i. 4)."

The meaning of Herodotus completely mistaken in the Government pamphlet.

And again at a period subsequent to the above expedition, but just anterior to the personal experience of Herodotus himself, we have the following unmistakable testimony from him, though with even gross rhetorical exaggerations, as to how much more Samos was under the domination of Persians than of Greeks; see his book 8, or Urania, chapter 132 (Rawlinson's translation).

"All beyond that (Eastward of Delos) seemed to the Greeks full of danger; the places were quite unknown to them, and to their fancy swarmed with Persian troops; as for Samos, it appeared as far off as the pillars of Hercules. Thus it came to pass, that at (one and) the very same time the Barbarians were hindered by their fears from venturing any further west than Samos, and the prayers of the Chians failed to induce the Greeks to advance any further east than Delos. Terror guarded the mid region."

The Samian cubit proved to have been the antithesis of the Greek cubit, in the time of Herodotus, because it was then the Persian cubit.

"Samian" then, in the mind of Herodotus meant not Grecian, but the antipodes of Grecian, namely Persian and Asiatic; and when *he* said there, Euterpe 168, that the Egyptian was of the same length as the Samian cubit, he meant to instruct his Athenian audience, that the Egyptian soldier's favoured plot of ground was measured out by a *bigger* cubit than their Greek one, viz., by one of no less than 20·6 or 20·7 inches long, nearly; this having been found in modern times to be the length of the ancient Persian, Babylonian, and other *Asiatic* cubits about the epoch 600 B.C. to 450 B.C., as well as of the Egyptian.*

OF THE CLAIM OF PROOF.

Hence the one Greek sentence adduced by the Ordnance officer, is in reality totally opposed to his bold hypothesis against material Egyptian facts, that the Egyptian cubit in common use for land measure was, at any time in free, ancient Egypt, and least of all in the early, and *ante-soldier*, Great Pyramid age, so short as 18·2415 inches. But next, taking that in old Egypt unknown 18·2415, and multiplying it by his own assertion of a favourite number in the mind of the primæval Great Pyramid builder, or 500, and obtaining thereby,

* See Appendix 4, p. B 78.

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he says, 9120 inches, for a hypothetical length of the Pyramid's base-side,—the officer finds that too short by ten inches for the recent Royal Engineer measure of 9130 inches. So he combines this 9130, not with what he had alone used in his last previous essay in proving by measure his first, or 9168, Pyramid-base side hypothesis,* viz. with Vyse's measure of the North side *giving* 9168 inches, (the base being assumed as square by both parties;) and not with the French Academicians' measure of the same side—though the most ably set-about of the whole of the modern Pyramid base-side measures and giving 9163 inches,—but with the 9110 measure already alluded to; and which he had on his previous, or "9168 hypothesis," occasion just as entirely ignored, as he has the two larger results on the present 9120 hypothesis occasion.†

The Great Pyramid

The claim of proof for the hypothesis still further invalidated by partial and contradictory exhibition of older measures.

Thus then by manipulation of the documents of measure, or by successively concealing some and bringing out others, and *vice versâ*, according to the hypothesis to be established, the Director-General of the Ordnance Survey has accomplished to bring out a second apparent numerical agreement of what should be one and the same thing with a second, but very different, hypothesis of his own, and which is founded on a total mistake which he makes of his only author quoted against known metrological facts. And then, though on fancies thus triply frail, the Director-General has, aided partly by private subscriptions in London and partly by Government means been enabled both to publish his men's rough measure and his own hypothesis and proof (?) thereof most triumphantly; even to scattering over the country in a pamphlet, under cover as "On Her Majesty's Service" and a "Document of the Ordnance Survey," both insulting denunciations‡ against certain private predecessors in the same Pyramid field of enquiry, and "*instruction* for the boys in our national and other schools."

The hypothesis is nevertheless officially declared to be established; and is then founded on as sure fact in certain aggressive critiques.

WHAT IS TO BE DONE.

After the answer just received from Government by the Secretary to the Board, there seems little hope that the cause of Pyramid truth will be allowed to be inquired into any further by this Observatory; and those who can, must be content to bear the above result as arranged to represent the surveying science of this country in the present age by superior authority.

But will the *French* savants submit for ever to have the careful base-side

* In November 1867, the Great Pyramid's mean base side length was affirmed from the same quarter to have been originally intended to be,

$= 360 \times 25{\cdot}488$ inches $= 9175{\cdot}68$, said to be $= 9168$ inches;

and in 1869, ... $= 500 \times 18{\cdot}2415$ inches $= 9120{\cdot}75$, said to be $= 9120$ inches.

† See Appendix 5, p. R 82.

‡ As for example "the extravagant nonsense to be found in modern works on the Great Pyramid;" "the absurd theories contained in those works;" and "the quaint notion formerly maintained that the Pyramids were crystalline excrescences, formed by the action of the sun upon the mud of the valley of the Nile, was sound philosophy compared with the notions which have recently been advanced respecting them."

The Great Pyramid.

surveying work of their celebrated Academicians at the Great Pyramid, under the leadership of Napoleon Bonaparte (with their measured result of 9163 inches) entirely ignored in a public and final British document, in order that one existing Ordnance Officer* may declare his last erroneously built-up hypothesis of an *a priori* 9120 inches "to be confirmed by modern research; *i.e.*, by a 9130, combined with a selected 9110, inch observation alone?" And will this last attempt at measuring the Great Pyramid by the British Government (in so far as it must be viewed partly as their's), will it cover our country with honour when that ever re-arising question of high archæology, or the exact original size, as well as shape, position and internal arrangement of the Great Pyramid, comes to be tested in future times by other nations bringing—to that unique monument of the whole earth spanning all human history—*their* ideas of accuracy of measure and honesty of discussion?

OBSERVATORY OF TYCHO BRAHE.

Observatory of Tycho Brahe.

The Danish Royal Society of Sciences has just offered their gold medal as the prize for a paper on the exactitude with which the Astronomical Meridian of the Observatory of Uranibourg was determined by Tycho Brahe; and have been moved thereto in some measure by seeing in a French scientific journal that *I* had stated such degree of exactitude to be much less than that wherewith the entrance passage into the Great Pyramid is oriented.

While we must all admire the fine patriotic spirit of the Danish Society, and trust that they will elicit some excellent contributions to knowledge, it is rather to be regretted that they mix up two different branches of the subject, only one of which I had attempted to deal with in the comparison quoted.

Orientation of its walls as compared with those of the Great Pyramid.

That one was, the orientation of the buildings themselves, as indicated either by their general exteriors, or any special and more finished portions of their interiors, such as the instrument piers in the one, and the entrance passage in the other, case. For these features of Tycho's Observatory I professed only to quote M. Jomard and the great French work on Egypt, and am not acquainted with any later *practical* examination into the matter; but for the same features in the Great Pyramid I quoted my own observations taken on several different and totally independent occasions with the Playfair Alt. Azimuth Instrument,

* It may be proper here to state, that in a communication to the public papers of the 9th of October 1869, the said officer declares that he does *not* stand alone in his conclusions on this matter; and challenges me to mention, when I next write on the subject, that Sir Thomas Maclear, Astronomer-Royal at the Cape of Good Hope, entirely approves of his method of determining the Egyptian cubit (of 2170 B.C.) from the Greek cubit (of 448 B.C., though the result is in utter antagonism to the numerous, well-preserved Egyptian cubit rules of Memphis and Thebes that have actually come down to us): also that Mr Penrose, the measurer of the Parthenon, has even helped him to bring about a still nearer agreement between it and the (distant as well as long anterior) Great Pyramid.

See also App. 4 to 7, of my "Poor Man's Photography at the Great Pyramid." London, 1870.

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and have given the original Pole-star observations, and particulars of the signals or referring marks on the building, as well as the computed results at full length, in my "Life and Work at the Great Pyramid," published in 3 vols. in 1867. Observatory of Tycho Brahe

I trust therefore that the Danish Royal Society will not shelter themselves under the plea of being acquainted only with a short verbal allusion to these observations in a foreign journal, and say therefore that "a mere mention cannot be of much weight in the eyes of astronomers,"—but that they will, as touches the claims of the Great Pyramid, attend to my published observations both astronomical and mechanical, at least until they can replace them with better ones; and also that they will in the meantime apply to any existing remains of Tycho Brahe's observatory, whether of its enclosing walls or contained piers, measures as unflinchingly severe as those which I applied to the Great Pyramid; and that they will likewise publish the description of the methods, as well as the results of the measure, at least as fully as I have done. The Danish Royal Society of Sciences versus the Great Pyramid.

Should the Society wish also, and as it appears from their programme they do,—besides the above comparisons between the masonry of the two buildings, to show from calculations of Tycho's observations, that his instruments, and the astronomical results deduced from them were of a much higher order of accuracy than the mere stone-work of the Observatory,—by all means let them do so; but having so done, let them not compare such rather ethereal results from Uranibourg with the *stones* of the Great Pyramid, but with similar ethereal astronomical results from thence, such as Mr Petrie's Pyramid sun-distance; and then, not only will the comparison be just, but some very remarkable results for early human history may be duly arrived at.

METROLOGICAL LEGISLATION.

At a time when meetings are being held in most of our large cities to protest against a certain Act of Parliament passed last year, as the protesters say, by surprise and without their then knowing anything of its real meaning or action,—attention may be salutarily called to the nature and bearings of a coming *Metrological* Act which, in either public or private hands, ought, according to a blue-book published towards the end of last Session, to be now rapidly preparing, and will certainly take the great body of the loyal people of this country very disagreeably by surprise when it is suddenly put in force as law: and is then found, as well expressed by Sir John Herschel in the public papers two years ago, to entail both the abolition and disappearance of our ancient national and hereditary measures, and a substitution for them of a modern invention by a foreign metropolis, not so exact or masterly in the reference of its standards to astronomical and geodetical science (though the intention thereto was most praiseworthily strong), not so convenient for social purposes throughout the ordinary life of our lieges, and not gifted with any of that Metrological Legislation. Sir John Herschel opposes the adoption of the French metrical system in Great Britain.

Metrological Legislation.

cementing and preservative power in national crises which the true hereditary possessions of a people with pre-historic descent are always found to possess.

Recent Prussian proceedings in Metrology totally opposed to the whole course of their nationality, and more especially to their recuperative policy since the battle of Jena and up to the present time.

Over and above then the metrological part of the matter being one which, on account of its scientific foundation, in its reference to measures of the earth as a planet, the Astronomer Royal for Scotland is bound both by the terms of his appointment and the duties performed by Government astronomers elsewhere, to occupy himself with and even act the part of a public watchman concerning,—I had an opportunity on the Continent lately of witnessing a similar surprise, in the same identical matter, accomplished upon the greater part of the German people, in either the strangest forgetfulness of, or most utter contempt for, their early historical associations, by the Prussian Government, and of hearing divers remarks from scientific men there on the effects it is beginning to produce,—which may prove useful experience to this country at the present juncture.

But as some Members of the Board have expressed themselves averse to anything with a possible political application, though mainly scientific, being introduced into this Report,—I leave my private and individual statement of the case in their hands; and can only request, nay earnestly beseech, them to attend in time and as philosophers to the remarkable, indeed hitherto unexampled, epoch which is now supervening touching the metrology of the world.

Metrology never of such wide-world importance as now, throughout all the times of European history.

Whether for good or ill certain national distinctions and heir-looms coeval with language are being daily swept, or attempted to be swept, away; and there is a growing conviction among the masses both of the importance of metrology in itself, and the necessity of its standards having a scientific reference by even commensurabilities in their every branch to the similar features of the earth as a whole.

Of a pre-historic day, when an apparently faultless system of Metrology partially obtained and was remarkably commemorated in masonry of the most perdurable kind.

In fact both this and other countries are only now beginning to emerge out of a long night of 4000 years of positive and literal heathen darkness on the subject, during which they neither knew nor cared whence their metrologies, or even themselves had come. And yet, in the early and long pre-Grecian days of the world, before any of the man-devised and degrading idolatries of the East had begun, there was apparently a period, of which some things very like proofs are now being gathered, when—most passing strange to say—by a limited yet powerful number, the noble nature was understood, and the strict correctness as well as due preservation of metrological standards was more deeply appreciated, honourably considered and conscientiously attended to, than they have ever been since, at any period of the earth's subsequent history, until the recent rise of the French metrical system.*

ROYAL OBSERVATORY EDINBURGH,
24th May 1870.

C. PIAZZI SMYTH.

* See also Note to Appendix 1 on p. R 76, and to Appendix 4 with its Note on pp. R 78 to R 82

APPENDIX TO REPORT FOR 1870.

Page R 68, *Last Par.*

Length of the Ancient Egyptian Cubit, or Cubit of Memphis; the established, and Government standard of linear measure in that country during idolatrous times, from 2200 B.C. to 320 B.C.

See "Manners and Customs of the Ancient Egyptians," by Sir Gardner Wilkinson; vol. iv. pp. 24 to 34. 3d edition 1847.

		Inches.
An ancient wooden cubit found at Memphis, by M Jomard,	=	20·47291
Another, now in the Turin Museum,	=	20·57869
Another, ...	=	20·61806
Another, ...	=	20·65843
Cubit of Elephantine Nilometer,	=	20·62500
Do. do. measured by M. Jomard,	=	20·74840
Mr Harris' double cubit of Karnak, composed of two cubits, each, ...	=	20·65000
(A cubit in the British Museum reported to have been measured by the Ordnance Survey Officers in 1868 A.D., and found, ...	=	20·69900)

Mean, or ancient "profane" Egyptian cubit from recovered examples thereof, chiefly in wood and therefore without doubt somewhat shrunk in size; dates probably between 1900 B.C. and 450 B.C., . = 20·63 nearly

Length of the Ancient "profane" Egyptian Cubit, or Cubit of the Idolatrous Workmen of Memphis, as possibly indicated by measures taken by C. Piazzi Smyth in 1865 A.D., upon certain subsidiary features in the interior of the Great Pyramid; date of whose building = 2170 B.C.

See his "Life and Work at the Great Pyramid," vol. ii p. 340. Edinburgh, 1867 A.D.

Parts of the Great Pyramid measured.	Measured Length in British Inches.	Assumed to contain of the ancient Egyptian Cubit the following Numbers.	Consequent Length of such Cubit in British Inches.
Breadth of entrance passage, ...	41·5	2	20·75
Breadth of North doorway in Grand gallery,	42·2	2	21·10
Breadth of Grand gallery (mean), . . .	82·4	4	20·60
Breadth between Ramps (mean), ...	41·8	2	20·90
Breadth of South doorway of Grand gallery,	41·4	2	20·70
Mean breadth of East and West Ramps, . .	20·1	1	20·10
Mean height at right-angles to incline of do. do. . . .	21·0	1	21·00
King's chamber, length,	412·6	20	20·63
breadth,	206·3	10	20·63
height,	230·1	11	20·91

Mean, or ancient "profane" Egyptian cubit, from apparent stone equivalents, date 2170 B.C., . . = 20·73

Length of the ancient "profane" Egyptian Cubit, or Cubit of Memphis, as determined by Sir Isaac Newton upon the measures of certain interior parts of the Great Pyramid, and one exterior but certainly erroneous measure of its base-side length, by Professor Greaves of Oxford, in 1638 A.D.,—he having then measured only on the ruin divested of its casing stones, and partly buried in rubbish.

Parts of the Great Pyramid measured.	Measured Length in British Feet.	Assumed to contain of Cubits of Memphis.	Consequent Length of each Cubit, or ancient Cubit of Memphis.	
			British Feet.	British Inches.
Entrance passage, breadth,	3·463	2	1·732	20·784
King's chamber, length, . .	34·38	20	1·719	20·628
King's chamber, breadth, . .	17·19	10	1·719	20·628
Grand gallery, breadth, . .	6·87	4	1·718	20·616
Ramps, breadth between,	3·438	2	1·716	20·592
height of	1·717	1	1·717	20·604
breadth of	1·717	1	1·717	20·604
Base side of Great Pyramid (?), .	693·	400	1·732	20·784

Mean length in British inches for the ancient Egyptian cubit, of date 2170 B.C., ... } = 20·66

Length of the ancient Egyptian cubit, of date 2200 B.C., as determined by an Eastern and scientific Egyptian officer, Kekekyan Bey, in his "Treatise on the Chronology of Siriadic Monuments," London 1863 and Cairo 1865, in British feet = 1·72091, in British inches nearly, ... = 20·65

Length of the ancient profane Egyptian cubit, from 2200 B.C. to 320 B.C., or the date of the probable introduction into Alexandria of the Greek cubit of the Lagidæ;—as employed by C. Piazzi Smyth in his successive Pyramid publications from 1864 A.D. to the present time,—being the nearest tenth of an inch which is thought safe to trust to in the existing state of Egyptological knowledge; in British inches * . . . . = 20·7

* Although this cubit of 20·7 inches, nearly, may have had its reign, as the Government and national cubit of idolatrous Egypt, interfered with after a most remarkable duration of 1900 years by the new and much shorter cubit introduced by the Ptolemies from Greece about 320 B.C., it was by no means extinguished instantly by that proceeding.

Of hereditary metrology among nations.

A true hereditary and traditional national measure is something almost as vital as a language, sometimes much more so; and to stamp it out utterly and instantly is not within either the province, or the power, of any government of men for the time being.

Long existence of even the profane Egyptian cubit.

Hence, even at this present day or 2200 years since the Lagidean attempt to annihilate the Egyptian cubit then found in the land, and after the successive fires of Greek, Roman, Arab, and Turkish dominations have passed over it, this remarkable cubit of 20·7 inches long (not 18·2 inches like "the cubit of a man") is found still, with very little alteration (and that little in a *contrary* direction to the Greek cubit), to form the standard of measure in the Nilometer at Cairo; and it records there yet that wondrous annual inundation of the most notable river of the whole world, the Nile,—without which there would have been neither early Egyptian civilization, nor modern Egyptian luxury, nor indeed any national Egypt worth the name in history.

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The ancient profane cubit of Egypt (20·7 inches long, nearly) has therefore thus existed in the world as an acknowledged, an active, and a useful standard of measure, though generally in the hands of idolatrous peoples, for no less than 4100 years. And, without going back on the traces of a still earlier and better standard 25 inches long, nearly,—when any reflecting person only considers for a moment what human society was at the beginning of that 4100 year period, and what it is now at the end; and also how many royal families, populous nations, powerful governments, schools of philosophy, religions and languages have arisen, flourished, and perished for ever since those 4100 years began their eventful course,—he can hardly but allow that there is at least one element of greatness in Metrology, which few other branches of human science possess in an equal degree.

Nobleness of the subject of hereditary metrology.

APPENDIX No. 2.

Page R 69, *Par.* 2.

THE WORDS OF HERODOTUS.

The whole of the passage, including the original parenthesis, in Herodotus as referred to, runs thus in Mr Rawlinson's translation :—

Herodotus, Book 2 entitled Euterpe, ch. 168.

"The warrior class in Egypt had certain privileges in which none of the rest of the Egyptians participated except the priests. In the first place each man had 12 *aruræ* of land assigned to him free from tax. (The *arura* is a square of a hundred Egyptian cubits, the Egyptian cubit being of the same length as the Samian.) All the warrior class enjoyed this privilege together; but there were other advantages which came to each in rotation, the same man never obtaining them twice. A thousand Colosirians, and the same number of Hermotybians, formed in alternate years the body-guard of the king; and during this year of service these persons, besides their *aruræ*, received a daily portion of meat and drink, consisting of 5 lbs. of baked bread, two pounds of beef, and four cups* of wine."

* Or rather, as interpreted by Sir Gardner Wilkinson, four *arusters*, or a little more than two pints of wine.

APPENDIX No. 3.

Page R 69, *Par.* 9.

SAMIAN FOR GRECIAN ?

I have recently found a similar mistake in Don V. V. Queipo's Metrology; almost excusable, however in him, because,

1*st*, He was dealing so largely with the weights and measures of Egypt in the times of both the Ptolemies and the subsequent Romans, when Greek and Roman metrologies were without doubt imported into Alexandria, and enforced upon the enslaved and mixed Egyptians there.

2*d*, He only attempted to carry up the Greek cubit of the Ptolemies some three or four generations to the age of Herodotus; when, though Greeks had never up to that time borne rule in Egypt, yet they were then beginning to abound as immigrants, mercenaries and merchants. And

3*d*, He makes no attempt apparently to deny that the numerous well-preserved ancient Egyptian cubit rules of about 20·7 inches long, did really represent the ancient Egyptian cubit; and he does not venture to say that the native Egyptian cubit of Memphis in the time of the Great

Pyramid, viz. 2170 B.C., a time when Greece had not yet been heard of in the world, was of any length at all like the far subsequent Greek cubit of 448 B.C., viz., 18·2415 British inches, or could be determined from that as being equal to it and the same thing.

To overbalance however more completely against Don Queipo's mistake having been in so far actually committed, the three following examples may be quoted of great men who have *not* misunderstood Herodotus when he used the term *Samian* :—

1st, Sir Isaac Newton, who in his "dissertation on cubits," speaks with certainty of "the cubit of Samos, which Herodotus represents as equal to the cubit of Memphis;" according to him = 20·63 British inches.

2d, Sir Gardner Wilkinson in his "Manners and Customs of the Ancient Egyptians," vol. 4 of Edition 3,—who uses independently almost the same words and figures. And

3d, Dr Brandis of Berlin who indexes in his book of 1866 A.D. the expression "Babylonische elle von 530 Mill. (20·866 British inches) = der ägyptischen u Samischen." See also his page 21 ;—

None of these parties having any doubt at the time that the Greek cubit was 18·2 inches nearly, and that Herodotus meant by "Samian" to indicate a *different* length from it; viz., the Egyptian cubit of 20·7 inches nearly.

So far as I am aware, not a single example of a *Samian* cubit rod has been preserved; nor is there any other ancient notice of its length besides that of Herodotus, stating as above in mere words, that it was equal in length to the Egyptian cubit near the times of King Amasis, in 560 B.C., and his own in 450 B.C.; and of which, or such Egyptian cubit rod as used by native Egyptians under their native kings, many examples have been preserved and have been measured by the savants of various modern nations as shown in Appendix I. What other result then is open to us, than to conclude, especially when quoting Herodotus as our great authority, that the Samian cubit was of the same length as we find the Egyptian, of the times alluded to by Herodotus, both to be and to have been ?

APPENDIX No. 4.

Page R 70, *Par.* 5.

ASIATIC CUBITS, 600 B.C. TO 450 B.C.

The records of Asiatic, do not seem to be by any means so well or abundantly preserved as those of Egyptian, cubits. Indeed I have looked through many modern works on the history, topography, arts and sciences of the great ancient empires of the Asian East without finding the length of their standard of measure honoured with the smallest notice. In the earlier metrological works too of modern times, not only is the *foot* standard thrust into the first rank from modern European predilections, but neither to foot, nor to cubit of any peoples, whether Egyptian or Mesopotamian, is a *date* ever attached, nor any certain and absolute significance connected with the expressions "old, antique," &c.

Hence when *certain* writers speak of the *ancient* Egyptian cubit as being 18·2 British inches long (nearly), they are with perfect innocence alluding to the Ptolemean epoch, when a Greek cubit *was* imported into Egypt as well as a Greek ruler, at a date of about 320 B.C. For with *those* writers, everything before the final destruction of the Roman empire by the Goths, is "Ancient Egypt;" and the line of the Ptolemies, therefore, something so exceedingly antique—that they even give those "lewd Princes" the honour of having built the Pyramids (every one of which was in reality finished and sealed up more than 1500 years before the first Ptolemy ever set foot on Egyptian soil); and the claim may be seen pleasantly set forth by our greatest poet Shakespeare. But all these popular errors arising in ignorance of, or depending on contempt for, true and real chronology,—need not in our present proceedings prejudice in the smallest degree what the native Egyptians once did for, and amongst, themselves 1900 years earlier with their own religious, albeit idolatrous and profane, cubit of 20·7 British inches long (nearly).

In the learned and painstaking work, however, of Dr Brandis of Berlin in 1866 A.D., on the Babylonian measures, weights, and money of, and immediately preceding, the times of Alexander the Great, say 332 B.C. to 600 B.C.,—we evidently touch at once on the system in use throughout the *Persian* empire in its latter days of glory and despotic power; and we are told by the Doctor at p. 21, that the Babylonian ell, or cubit varied between 20·866, and

20·670 British inches

Don V. V. Queipo also in his Metrology, vol. i. pages 277, 278, and 280 (1859), considers "that the length of 0·525 m. = 20·670 British inches, which M. Oppert establishes for the length of the Babylonian cubit, was really that of both Persia and Chaldæa"; *i.e.*, in the later imperial times of those countries, say under Darius and Xerxes.

At some much earlier date he holds that there was among the Persians a decidedly larger cubit = 25·2 British inches nearly, which is very similar to what Sir Isaac Newton concluded for an ancient Chaldean cubit, and also for a prototype of the *sacred* cubit of the Hebrews under Moses, 25 inches long nearly, which he believes the Israelites possessed amongst themselves *before they went down to Egypt*. It reminds also of that symbolical measure of 25·025 British inches, the record or remembrance of an older time, supposed to be typified in the more internal arrangements of the Great Pyramid, such as the niche in the Queen's Chamber, and forming the most appropriate, as well as scientific, earth-commensurable standard that was ever employed by man.

But the particulars of such a *very* primeval 25 inch standard,—*i.e.*, entirely anterior to 2000 B.C., except as carried downwards among the Hebrew people and their descendants and co-religionists at special periods in their history,—do not in any way belong to the far more modern times which we are now dealing with; viz., those alluded to by Herodotus in Euterpe 168, or, 500 B.C., nearly, and to what the Royal Persian cubit, ruling from Thrace in the West to Bactria and India in the East, was *then*; and *that* Persian cubit has been shown by Sir Isaac Newton in his "dissertation on cubits" to be probably equal to 20·112; by Dr Hincks and Dr Norris as the Babylonian cubit = 20·85, and 21·0 inches; and by Don V. V. Queipo and others to 20·670 British inches.

Hence the mere list of successive determinations of the cubit of the ruling people throughout Asia, idolatrous also, in the time of Herodotus, runs thus,

	20·866
	20·670
	20·112
	20·850
	21·000
	20·670
Approximate mean for the Persian and Asiatic cubit of about 500 B.C. in British inches (but not the earliest cubit-standard in those countries),	= 20·69 nearly.

Moreover that Persia did impose its own standards of measure on its subjugated peoples as an early, necessary piece of conformity for them to attend to,—we have an instance in Herodotus, Book 6 or Erato, ch. 42, where he records that the Ionian rebellion under Histiæus was no sooner subdued, than Artaphernes called the deputies of the various Ionian cities together, *and took the measurement of their whole country in parasangs, a Persian measure of length*, and settled thereupon the tributes which the various cities were to pay.*

* ON CUBITS SO-CALLED. The name of "cubits,"—perseveringly applied in the present age of the world by our nation to the above-described ancient standard measures of Egypt, Persia, Chaldæa and Palestine; and which, being either 20·7 or 25·0 inches in length, nearly, are far too long to be *cubits* either according to the anatomical reference of the human *fore-arm* (supposed to be alluded to in the word "cubitus"), or according to the standard of length called *cubitus* by the Romans in their day, and measuring, just as does the human fore-arm from the elbow to the extremity of the middle finger, 18 inches nearly,—the name, I say, is not a little unfortunate and misleading to the greater part of the world. Name of cubit, where originated and why.

For such part of the world is only too prone to follow the mere verbal signification, and inclined consequently to shorten those more ancient standards, (which flourished among men at least 1500 years before the word *cubitus* was invented in Rome,) until it has brought them more into accordance with the fore-arm length of men in the present day; and which length they philosophically believe must always have obtained very nearly as the average of any large numbers of mankind throughout all the periods of human history. Cubits, both by name and by nature.

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But strict metrological science cannot give up one jot of the proved material length of those earlier standards to mere philological prejudice of a subsequent age; and we may well therefore enquire by what names the said *longer-than-cubit* standards were known in primeval times amongst the nations who used them.

Cubits, neither by name nor by nature.

Turning first to that ancient race, well termed by Bunsen "the monumental people of the earth," and whose mission was "to record history and the affairs of men," viz., the inhabitants of Egypt,—we are told by most hieroglyphic scholars (such as Osburn, G. Wilkinson, Birch and others) that the Egyptian linear standard of 20·7 inches long, was called

Such cubits in Egypt from 2200 B.C. to 300 A.D.

"meh," "mah," "mahi," or "mai."

Mr Osburn too particularly relates that the same mode of representation was adhered to from the date of the Great Pyramid in 2170 B.C., to the times of Dioclesian in 290 A.D.; and that its significance was, "justified" or "measured off." Other hierologists do not seem so confident on this point and introduce part of a human arm into the hieroglyphic; such part however exhibiting most certainly a portion of the upper, as well as all the lower, or fore, arm; so much so indeed, that if measured round the elbow corner to its upper extremity, the length would easily amount to 20·7 inches, though to the elbow from the end of the middle finger might only register 18 inches.

That given, and always duly preserved, proportion, however, of the upper arm added to the fore-arm, would never in any ordinary man amount to 25 inches, *i.e.* the length of the sacred *Hebrew* standard of linear measure. By what name then was that standard known to the Hebrews themselves, though our authorised Bible always translates it confidently as "cubit"?

Such cubits also, but different from the Egyptian, among the Hebrews.

By a word said to have been pronounced "amma"; and meaning according to some, "the *Mother*-measure"; and by others "*præivit*"; *i.e.*, he or it went before; and which phrase some have asserted *therefore* to imply "the *fore* part of the arm." Seeing however that the ancient sacred Hebrew standard is so much as a third longer than that anatomical reference, or in other words, that it is by no manner of means that length,—we seem rather to be authorised to fall back upon the "præivit" in its more literal signification, and view it—in conjunction with what has already been stated in Appendix 4 on the exceeding antiquity of that standard of measure,—as descriptive of what the sacred Hebrew standard did, or at least is believed by many persons to have done, in the early Chaldæan world, viz., that it "præivit," or preceded in point of time all other standards of linear measure amongst men of every land and tongue; and for this reason also necessarily *went before*, or was *fundamental to*, all other measures of its own country; all such measures, whether larger or smaller, being arranged in even and definite, either measures, or multiples, of that earlier standard.

Their real name there.

Their noble nature.

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That "præivit" measure too, or, the sacred "amma," I may perhaps be excused for reminding, is, as clearly as we have yet been able to determine it, and certainly if assumed equal to 25·025 inches, an even ten-millionth of the length of the Polar semi-axis of the earth, the most appropriate reference for linear measure that the whole globe contains, whether viewed by reason of the rectitude and unity of the line itself, or the large and equal interest which all nations may well feel in its existence. Cubits erroneously so-called, but of noble nature, continued.

Approaching the subject again from the side of the cuneiform inscriptions of Assyrian and Babylonian monuments, we learn from those well versed scholars therein H. Fox Talbot, Esq., and Dr Edwin Norris, that the sound of the word expressing in those countries their cubit measures about the time of Nebuchadnezzar, or say 700 B.C., was generally Among the cuneiform writing peoples of Assyria.

"ammat"

occasionally however it was

"hu,"

supposed to be derived from an earlier race of inhabitants in that central land.

From yet another side some doubt has been thrown upon the word "amma" having really been in use among the Hebrews before the time of Daniel; for though it is found in Genesis, that is attempted to be explained by the recopying of the Scriptures in the time of Ezra by Jews largely influenced in their language by the long Babylonian captivity.

In the absence then of any contemporary material Hebrew document of much earlier time—which, if well preserved and capable of being proved authentic, would settle the controversy beyond all dispute,—I am happy to be able to append the following philological contribution from a gentleman who may ere long publish some further researches into this, hitherto, too little studied, though important, subject alike of scientific and literary antiquity.

(*Contributed.*)

"1. The only Hebrew word for cubit is אַמָּה 'Am-mâh, a word exceedingly common throughout Scripture. Interim philological essay touching the earlier forms or foundations of the Hebrew word for cubit in the Scriptures.

"2. There is no doubt that the word is connected with אֵם 'Em, Mother, a primitive word manifestly taken from the inarticulate utterances of the child, as our 'Mama.'

"3. From אֵם proceed a number of words mainly expressive of family connection. In some cases the idea of 'mother' seems quite lost in that of 'connection' or dependency. This at least is so if אָמָה 'Â-mâh, a handmaid, is from this root.

"4. Our word אַמָּה Am-mah has in the O. T. probably three distinct meanings—two of which stand in obvious connection with אֵם, mother. (1.) In Isaiah vi. 4, our version has 'posts of the door;' it is properly 'the am-mōth' (plural of am-mah) of the thresholds. The meaning is clearly the bases or 'matrices' of the thresholds. As Delitzsch fairly observes, Am-mah is to Em as matrix to mater. (2.) In 2 Sam. viii. 1, we read in E. V. that David took Metheg-ammah out of the hand of the Philistines. Probably this is wrong. The Hebrew is Metheg-ha-ammah = the bridle of the ammah. On this critics differ. Gesenius, Fürst, &c., render 'the bridle of the metropolis,' which keeps the connection with 'mother.' The meaning is, that David destroyed the autonomy of the Philistines and took the reins of their capital into his own hand. *Cf.* 1 Chron. xviii. 1, which is the parallel passage.

Others make ammah here = arm, and Ewald explains 'David took from the Philistines their power to bridle in Israel, as a rider bridles his horse with the rein held fast on his arm.' But Ewald is (I judge from a foot note to this passage of his Geschichte Israels) a little at a loss to see why the hand rather than the arm should not hold the reins! So far then, the relation to אם (mother) is clear, and any meaning like *arm* vague and, I judge, improbable.

"5. We pass now to the leading use of the word as a measure. Here I observe—

"α. That the lexicographers are agreed that the word must have first meant the forearm, and thence the measure.

"β. There is, however, no passage where Am-mah occurs in the sense of forearm; except we must put this sense on it in Deut. iii. 11, 'four cubits—after the cubit of a man.' Literally 'in' [that is *measured in terms of*] 'the cubit of a man.' The construction is a common one. *e.g.* Ex. xxvii. 9, 'a hundred cubits' is literally a hundred in [terms of] the cubit. So that it is even here not so clear that the 'man's cubit' means 'man's forearm.' It may be simply a species of the measure.

"γ. The attempts to deduce the meaning 'forearm' from the root אם are various. *Fürst* gets it through the idea of *connection* = The link between hand and body. Alii aliter.

"δ. Gesenius in Thesauro gives the following:—He compares *Maltese*, in which omm = mother, omma = trunk of a tree, as *Mater* in Virgil, Georgics ii. 23. Accordingly *he* supposes that Am-mah differs from Em only in being metaphorically used, *i.e.* of the 'caput origo et fundamentum rei.' Of this general sense he makes it a case that the forearm should be called 'mater brachii.' But why the forearm should be regarded as mater brachii he does not explain. So, as there is no direct proof that the word did in historical times mean the arm, I see no reason why you should not try to connect the usual meaning as a standard of measure, with the notion of a foundation, origin, principle. I don't profess to be clear on this, but, so far as I can see, if you say that Am-mah means the 'fundamental' measure you are keeping quite as close to common sense and the requirements of philology as if you seek a roundabout explanation through the 'Mater Brachii.'

"I should add that Deut. iii. 11 has not the air of being part of Moses' speech. It has the appearance of an antiquarian note of a much later date."

APPENDIX No. 5.

Page R 71, *Par.* 1.

PUBLISHED MEASURES OF GREAT PYRAMID'S BASE-SIDE LENGTH.

The documents of modern measure for the "socket" length of the base-side of the Great Pyramid (the base being assumed to be square) which the Ordnance Officer had fully before him when he first entered voluntarily and publicly into the Great Pyramid discussion in November 1867, were those exhibited compendiously in pp. 124 and 125 of my "Life and Work at the Great Pyramid;" and they were expressed there thus,

"By Messrs Aiton and Inglis

North side	= 9120	British	Inches.
South Side	= 9114	"	"
East side	= 9102	"	"
West side	= 9102	"	"
Approximate mean	= 9110	"	"

"And for the North side only,

By the French Academicians	= 9163 Br. In.
Col. Howard Vyse	= 9168 "
Mahmoud Bey	= 9162 "

"Concluded mean for the whole on principles stated at length = 9142 (with a probable error of 25 inches more or less)."

By a different, and I am bound to say a completer, course of weighting the original observations according to their apparent degrees of care, excellence, or defect (See my Antiquity of Intellectual Man pp. 204, 205 and 396 to 413; also my "Poor Man's Photography at the Great Pyramid" App. iii. p. 8) Mr W. Petrie deduced as the most probable mean result,

9165 British Inches.

To this of course I not only take no objection, but invite any one else, who may not be inclined to agree either with it or with my 9142 conclusion, to show the world what ought to be the true mean to be adopted and used as representing all that modern science has yet been able to ascertain by measure as to the real original "socket" length of the mean base-side of the Great Pyramid; including of course now the later Royal Engineer measure of 9130 made in 1869 A.D.

But such an arithmetical result when once

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obtained, ought—according to all the principles of honesty universally respected in astronomical discussions—if accepted at all, to be equally abided by (within its limits of probable error) on the part of any theorist, whatever hypothesis of original causation for the size of the Pyramid he may be entertaining for the moment. Wherefore no special license can be allowed an Ordnance Officer when dealing with the Pyramid question for Government,—seeing that the Great Pyramid is in large part an astronomical, and not a military, monument of any kind or degree,—to pick out and exclusively publish, only the *maximum* of the individual, separate measures when he has to test one hypothesis by himself giving a large figure; and only the *minimum* of the same measures when he has on a subsequent occasion to test another and very different hypothesis but equally of his own and giving a small figure, for the originally *intended* length of one and the same feature of the grandly permanent ancient building.

Whether the representatives of practical science in our day will care to go down to posterity, with no better attempts than the above described rude examples made in their time, to ascertain by instrumental measure the true length of what all parties are now allowing as *a metrological question of one kind or another* (whether a tombic use was, or was not, also made of the monument) *in the primeval days of the world*,—viz. the length to be given to, and which was actually bestowed on, a side of the square base of the Great Pyramid by its ancient and unknown architect,—is of course a totally different question from the proper theoretical use to be taken out of the conflicting numbers of recent observation for that length already obtained. And if I have confined myself now to this latter branch of the topic, and have said nothing in favour of a new measurement being attempted under circumstances far more favourable for mathematical accuracy and general efficiency than any yet undertaken, it is only because I have written and printed not a little in various publications on that subject already during several years past—and, as recent occurrences show, with rather a negative, than positive, result in favour of the end proposed.

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SEE PLATES 53 AND 54.

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INTRODUCTION.

HAVING enjoyed unaccustomed facilities for gazing on the Northern regions of the night-sky during this last winter, I have endeavoured to utilise them by attempting some spectroscopic observations of the Auroras which have been so frequent.

The Observatory was not indeed possessed of any proper spectroscope, nor allowed to order, nor enabled to purchase one; but, beginning on the foundation of one of the little hand spectroscopes prepared in London for the Indian eclipse of 1868, I gradually manufactured something both a little more dispersive and better adapted to faint light in broad beams. There were no arrangements for instrumental mensuration of spectrum-place, but much pains were given to securing a simultaneous reference spectrum with many known lines,—such as the five groups of acetylene, together with sodium, lithium, and thallium, besides requiring that both the focussing-screw, slit-screw, and light adjuster should be abundantly and conveniently within command on all occasions.

These features of practical order, joined to that familiarity with, and confidence in, the results so far as obtained, which can only arise from frequent repetition of observations, are all my hope, in the total want of better instruments, for having at last some apparently crucial points worthy of presentation to the notice of Members of the Royal Astronomical Society.

AURORA.

The Auroral Spectrum had been already described by its discoverer, M. Angström, as consisting mainly of one thin green line: and to this I generally subscribe. For out of 20 different occasions, as per foot-note,* and excepting a little stray light

* 1.	28th August 1870.	Low circular arc to N.N.W.
2.	29th „	Low circular arc to N.W.
3.	3d September	Low arc to N.N.W.
4.	24th „	General auroral light through a cloudy sky.
5.	25th „	Do. do.

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of more refrangible character, when the slit was extravagantly widened, 18 of the nights exhibited only one well-defined green line; and this equally from all parts of the sky where any of the Aurora might be visible.

Amongst these 18 occasions, one of them (12th Feb. 1871) was a red Aurora to the eye, but exhibited no red line in the spectroscope; while other two (24th Sept. 1870 and 9th April 1871), described subsequently as grandly red Auroras elsewhere, occurred on heavily clouded nights at Edinburgh; and though my curiosity was excited by the almost preternatural brightness of the heavens on both occasions, to try the spectroscope on the clouds, and they gave the *green* line well,—they gave that line only.

Of the remaining two occasions out of the whole 20, one of them was the startlingly brilliant as well as red and varied aurora of the 24th of October 1870; and the other the more moderately red Aurora of the 20th of the same month. The former showed three blue and violet lines faintly (but whose places I had then no means of determining), besides a red line in addition to the ordinary green one; and the latter the same red line only in addition to the said green one.

But that green line always preponderated in intensity far above the red, even in the reddest parts of the Aurora; while in the very brightest of the green portions, as seen by the eye brighter than any of the red portions, the prism appeared to be totally unable to filter out any red light, though too under dispersive conditions, when either twilight or faint gas-light yielded a totally different result.

Hence, to all *practical* intents and purposes the *ordinary* Aurora consists, absolutely or almost entirely, of light of one refrangibility only; and of so sharply defined a character therein, that with a narrow slit it forms as infinitely fine a line, and accurately measurable, when bright enough, as any observer could desire.

6. 13th October	Low arc to N.W., with transverse streamers shooting from N. to S. over all the sky.
7. 20th „	Red and green aurora chiefly to N.E.
8. 25th „	Grand aurora red green and blue over all the sky.
9. 12th February 1871	Transverse band S. and S.E. of zenith, occasionally red and radiating.
10. 9th March	Low auroral arch N. to W.
11. 14th „	Auroral gleam to N.W.
12. 16th „	Auroral arch to N.W.
13. 17th „	Auroral arch to N.N.W.
14. 27th „	Auroral arch, low to N.W.
15. 28th „	Auroral arch, low to N.W.
16. 9th April	General auroral light through sky heavily clouded, said to have been a red aurora elsewhere.
17. 12th „	Upward shooting beams of aurora N. to N.W.
18. 20th „	Long low arc of auroral glow to N.W.
19. 28th „	Elliptical arches, low to N.W. and N.
20. 8th May	Long low auroral arc N. and N.W.
21. 6th August	Midnight auroral arc to the N.W.; Moon rising to N.E.
22. 21st „ 11 P.M.	Auroral arc, bright and large from W., round by N.W. to N. and N.N.E.; a few dark clouds in front.
23. 7th September	Midnight auroral lights N. and N.W., in upward shooting beams.
24. 14th October, 10 P.M.	Auroral light to the N.W. amongst clouds.

The spectral place of this normal line has been given by various authorities thus—

According to M. Angström, Wave-length,	=	5567
M. Otto Strüve,	. .	5552
Professor Winlock,	. .	5570
Mr A. Clark, Jun.,	. .	5690

The differences are without doubt owing to the uncertainties of night observations, and the want of close references or good mensuration apparatus. The sodium line has been usually recommended, but is too far off, or at Wave-length 5892, and as usually manufactured is too bright. The acetylene lines, on the contrary, when produced in a simple manner, are well suited both for intensity, number, and place. For place indeed especially, seeing that the second line, of equal brightness with the first, of the acetylene's *citron* band or group of lines coincides as precisely as my imperfect spectroscope can show it, with the place of the one Aurora line.

Any possible shifting, therefore, of that Auroral line under different phases of the cosmic phenomenon,—and my observations *may* not by any means yet include every variety of Aurora,—would be immediately perceptible to mere eye-observation, wherever such an acetylene reference should be employed: and the authoritative fixation of the exact place of that particular acetylene line, Citron 2, were it undertaken by those who possess the powerful spectrometers of the day, would furnish a notable observational milestone to all who use comparison spectra at night.

My own approximate attempt makes the lines W.L. = 5579;* and as such I

* Since the above was written, Professor Swan has favoured me with the results of a recent computation by himself, which he describes thus in a letter of date 25th May 1871, and though not so complete as what he proposes still to undertake, may be yet worth inserting here.

'Taking my observed deviations for the sun lines C, D, E, and F, and for the carbo-hydrogen 'lines B, $B_1 B_2 B_3$ (your citron group), and assuming Angström's wave lengths for C, D, E, and F, I 'have computed the wave lengths of B, B_1, B_2, B_3. For this purpose I have employed Lagrange's 'well-known and very beautiful theorem for interpolation. I have verified the results by protraction, 'but this necessarily only roughly, for as the largest scale that I could conveniently use, I took the 'side of the little squares on a paper ruled in squares as 100, which makes *unity* somewhat less than '0·02 inch. The agreements have been closer than I expected,—no attempt was made to *help* them,—'but the last two figures I think may yet be doubtful in each number. Five figure logs. were 'employed in the computation.

'WAVE LENGTHS OF LINES IN CARBO-HYDROGEN SPECTRUM.

Line.	Wave Length Computed.	Wave Length Protracted.
B	5629·8	5630
B_1	5576·7	5570
B_2	5532·9	5525
B_3	5495·1	5488

Reference to Plate 1 will show my own computation to have been,

5630
5579
5535
and 5497.

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have introduced it into Plate 53, where the general appearance of many spectra and forms of Aurora is given on a special system which, though adopting M. Angström's wave-length numbers from his Normal Solar Spectrum Memoir of 1868, as a species of name known to and understood by all, has fitted them to a scale of equal parts, founded on Professor Swan's observations in 1856 for the angles of minimum deviation of both solar and acetylene lines; and observers will probably recognise that this method gives them much more nearly what they *see* in all prisms than any diffraction prism can possibly do.

ZODIACAL LIGHT.

M. Angstrom has stated, in full cognisance of its vast cosmical import, that the Zodiacal Light is characterised by *the same green* line as the Aurora, and everything from M. Angström deserves exceeding respect.

Yet no observational phenomenon of grand character should be allowed to rest on one observer alone; and while I have not yet heard of any other *spectroscopic* examination, there have recently appeared in scientific journals so many mistaken descriptions of what the writers *called* the Zodiacal Light, but which was evidently either Aurora, or Twilight, or shadows of clouds below the horizon, that I recently thought it worth while to try what my own poor spectroscope would give on the real thing; my opportunities having been many for becoming acquainted with the Zodiacal Light's true appearance, first in the clear air of many mountain tops in South Africa; second on the Peak of Teneriffe; and third on various occasions at sea in southern latitudes.* I watched, therefore, through a large part of the last winter and spring, or from February to April inclusive, but never got any trace of the genuine Zodiacal Light; the atmosphere of Edinburgh never being sufficiently free either from smoke or reflected glare of gas-light illumination.

On eight especially of the above occasions,† I observed the last of the blue twilight fade away out of the sky, noted its residual, ill-defined, continuous spectrum without visible dark lines as it went, was startled one evening by a *bright* line, which proved the beginning of an Aurora for that night, but never saw any line due to Zodiacal Light alone, either in the Auroral or any other part of the spectrum.

The observation should doubtless be repeated again, from a station as appropriate

* Transactions Roy. Soc. Edin., vol. 20 for 1853, pp. 489–501. Philosophical Transactions, vol. 148 for 1858, pp. 490–494.

† (1.) 9th March 1871, at about 8h. 30m. P.M.
(2.) 10th " at about same time.
(3.) 13th " 7h. 40m. to 8h. 40m P.M.
(4.) 14th " about 9h. P.M.
(5.) 15th " " 8h. to 9h. P.M.
(6.) 16th " 7h. 25m. to 9h. 30m. P.M.
(7.) 18th 8h. to 9h. P.M.
(8.) 10th April 8h. 25m. to 9h. 10m. P.M. Twilight not quite gone up to 9h. P.M.

for the faintness of the Zodiacal Light as for perfect freedom from all suspicion of Auroras, and is perhaps well worthy of a geographical expedition for its research. On much the same grounds, too, as the solar eclipses which have of late been so frequently honoured in that manner; for M. Angström's result has not only important bearings thereon, but as it stands, these bearings are of a not slightly perplexing character for most of the savants who have recently been cultivating the physics of the sun under total eclipse, and have especially been spectroscoping the Corona, which is, according to most theories of the Zodiacal Light, simply the very densest and most central portion thereof; or inversely, the Zodiacal Light is merely the faintest, most outward and distant part of the Corona; so faint indeed that it cannot appear on the sky during the very moderate darkness of a total solar eclipse by the *Moon*, but requires a total solar eclipse by the *earth* and with a margin to spare of the eclipsing body to the extent of 18 degrees at least beyond the Sun's limb.

CORONA.

Beginning with the very clear account of the eclipse of 1869 contained in the Washington Observatory volume published last year, and ending with such notices as have yet appeared in the current journals descriptive of the eclipse of 1870,—the observers of both years seem to insist much on two points as having been established by them in the spectroscopy of the Solar Corona, viz.:

1*st*, That it shows a faint continuous spectrum without any dark solar lines; and

2*d*, That it exhibits one bright line in the green; similarly with the Aurora according to some but not according to others; yet if the opinion of the some be allowed to rule, then with the Zodiacal Light also, as published by M. Angström.

The physical significance of the faint continuous spectrum alleged, turns wholly on whether it had really no dark solar lines at all, or whether they were there but could not be seen on account of inappropriate instrumental and physical conditions. I suspect the latter to be the chief reason, for having recently experimented on the ordinary twilight with a thallium-coloured flame burning before the object-glass of the telescope, I have had no difficulty in seeing the thallium's bright green line, *together with a faint continuous spectrum* of the twilight sky, chiefly in the citron region of the spectrum, and without any perceptible dark lines; the visibility of these last depending on combinations of the brightness of the sky, width of slit, and dispersion of prisms, to a much greater degree than for bright-line vision.

One bright green line, however, truly belonging to the Corona far outside the Chromosphere and *its many* lines, was seen by the solar observers; and its place, first determined only approximately and then erroneously stated in several

publications to coincide with the Aurora line, was afterwards more accurately measured, and found to be far from the Aurora line or to have a Wave-length 5322, the very place however of an iron line, as since announced, on Angström's Solar spectrum map.

Was it therefore an iron-produced line?

When there are 450 iron lines known in the solar spectrum, and W.L. 5322 is by no means the chief of these either in breadth or intensity,—there does not seem much foundation to go upon; and the chief interest centres in the cosmical relationship, if not actual identity, sometimes asserted of the Corona line, however produced, with the lines of either or both the Zodiacal Light and Aurora. These two latter phenomena, as already stated, are said by Angström to show only one and the same line; and now it has been further asserted by *some* other physicists that the solar Corona is nothing but a perpetual solar Aurora, and indicates the ingredient of its remarkable green line to be Auroral and to form one of the most mysterious, important and widely-spread elements throughout the whole solar and even sidereal system.

The assertion has, however, been strangely rash; for, if Angström's aurora line be the one intended (and it ought to be, seeing that it constitutes practically the whole of 18 out of 20 auroras, and is the chief part of all), its place is W.L. 5579, while the Corona line's place is W.L. 5322, or the former is coincident with acetylene citron 2, and the latter nearly with the chief thallium line: a diverse and distant pair of chemical lines which any one can introduce into his own spectroscope and then contemplate their immense distance asunder, vastly beyond the range of any mere error of observation or known power in nature to make any such spectral change in. While if, on the other hand, it is not M. Angström's Aurora line that is intended, but one of those *other* Aurora lines which are seldom seen, are even then infinitely fainter than his line, and are sometimes attributed to super-imposed spectra, and *have never had any of their places very accurately measured*, of what practical importance would exact coincidence be there, even if it had been proved.

For surely it is the chief Aurora line we have to explain, if any; and as that chief and almost sole one is now said pretty confidently by chemical physicists to be a form of oxygen spectrum, while the Corona line is asserted to be connected either with iron, or some element which is totally unknown to our chemists, there seems less ground than ever for asserting a close physical connection, based on spectrum analysis, between the solar Corona and terrestrial Aurora. The generalization has indeed rested mainly on the belief that either phenomenon contained, or consisted of, a green line in its spectrum; but even that statement is not quite true, for if the solar Corona line is green the Aurora line, when bright enough to show its colour, may be seen to be yellow-green, or citron, and therefore cannot be coincident with a green one.

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THE CITRON REGION OF THE SPECTRUM.

Yet the approximation of these two striking, greenish spectral lines, the Coronal and the Auroral, each the ruling feature of its own phenomenon, though one be connected with the earth and the other with the sun, has something of peculiar interest in it, and occurs in a remarkable portion of the spectrum, viz., between the yellow and full green; a portion which also includes

(1.) The maximum of solar light according to Fraunhofer, or W.L. 5600 nearly;

(2.) The last residual portion of twilight according to my own experiments, or W.L. = 5300 nearly; and

(3.) Similarly, the dividing line of colour = W.L. 5700; or where on one side faint light goes off into cold blue greys, and in the other into warm brown greys.

In this very region, too, it is, that the most numerously-lined acetylene belt is found, viz., the yellow-green; or to make one word of it suitably with the vegetable names of some other parts of the spectrum, the *citron* band.

In Plate 53, under small dispersion, the lines of this band are represented thick and close. But there is hardly any more charming sight in spectroscopy, than under larger dispersion, and with a narrow slit, to view how infinitely fine, and beautifully sharp, clear, and clean these lines can become.

Something of this effect is represented on Plate 54, and with its additional representations of spectral lines, sometimes sharp and sometimes cloudy to various and curiously characteristic degrees, of other elements, such as boron, calcium, thallium, barium and copper, besides the aurora and twilight, from direct observation, may indicate how useful a scale, to those who are unable to command any other than flame spectra for night work, the acetylene lines may become.

ACETYLENE.

But what is acetylene, and can the constancy of its many lines be trusted?

A very necessary question is this, because what I have ventured to call acetylene flame is at this moment one of the most hotly disputed mysteries on the face of the earth. Yet the thing itself is known and met with everywhere.

It is in fact the blue base of every kind of flame which is employed by mankind for artificial illumination, whether by coal gas, oil, wax, tallow, wood, and almost anything and everything that can possibly be named.

Carbo-hydrogen, Professor Swan called it in 1856, when he found that no excess of carbon on one side nor hydrogen on the other, so long as both were there, made any difference in the resulting spectrum. A substance then which in one shape or another is in every house, and wherewith you cannot get any other than one form of spectrum

though adulterations be never so rife, must possess some admirable properties for a standard reference spectrum at *night when the solar lines are no longer visible.*

Dr Attfield,* taking up the question after Prof. Swan, and amid the excitement caused by the then recent publications of MM. Bunsen and Kirchoff, pronounced that, in the language of their immortal discoveries, the spectrum was really that of the incandescent or glowing vapour of carbon. In this statement he was followed by M. Morren in France† and many others, who all complimented him on his discovery, attested its perfect truth, and reformed thereon the theory of flame.‡

But then, after a while, M. Lielegg§ in Austria openly declared his conviction that carbon vapour was only an hypothesis. The Editor of the "Chemical News," in London, asked pointedly, but without being answered, "if carbon was not the most refractory substance known: if it had not resisted any and every method possible to man for producing volatilisation by heat: and why, therefore, should he be asked to believe that it was going off freely in that state in the very coolest part of the flame of every wax candle or even farthing rushlight?" And finally, M. Angström shows that not the sun itself is hot enough to exhibit carbon lines. "Acetylene," he says, "Swan's spectrum may be: but carbon,—never!"

Chemists, therefore, can give us no certainty out of their science as to what substance the acetylene spectrum represents; though practice seems to say that the spectrum itself is abundantly constant.

At least I have tried it in various forms, contrasting together in the same field of view the faintest blue in the base of the quiet flame of a little alcohol lamp with a thin wick of 7 threads only, and a roaring flame of coal-gas, urged to desperation with a blast of compressed air driven forcibly through the middle of it. The former, in the lower part of the field of view, merely looked like a reflection in dark water of the several separate bands of the other spectrum occupying the upper part of the field.

* Phil. Trans. 1862, p. 221. † Annales de Chimie et de Physique, for 1865, p. 305.

‡ The modification is stated thus by M. Morren.

The blue part at the base of the flame is not oxide of carbon, nor is it protocarbonate of hydrogen, but it is carbon in vapour, which gas is blue and very transparent.

It is heated up outside by a thin coat of hydrogen, which burns first and cooled inside by new vapour being liberated. Afterwards going up into the flame where there is much hydrogen it becomes white hot, and then at the top of the flame it comes into contact with air or oxygen and becomes carbonic acid.

§ Prof. Lielegg on Spectra of Flames containing Carbon.—*Academy of Sciences, Vienna*, 1868; also *Phil. Magazine*, iv. series, xxxvii. p. 203.

‖ M. Lielegg considers the spectra of alcohol,
wax candles,
coal-gas, and
olefiant gas
essentially the same; but cyanogen and carbonic oxide essentially different.

Now these last do not contain hydrogen but the former do; therefore he considers that the so-called carbon vapour spectrum is the spectrum of some compound of carbon and hydrogen.

He thinks that in the glass tubes heated by electric sparks such compounds may be decomposed and composed again, and therefore that form of the experiment cannot be clear or satisfactory.

The only difference, therefore, between the two that I have been able to make out, is the greater brilliancy as well as decision of the high-pressure form; for it has less false glare or continuous nebula, splits up every band more easily into its component lines, and distinguishes the colours better; but the spectral place of each line, so far as can be observed, seems to remain untouched.

"Like the columns of a Grecian portico seen in perspective," said Dr Attfield, (corrected for his omission of the red), "are the successive lines in each of the five coloured groups of this spectrum, viz., the red,* the citron, the green, the blue, and the violet." Or, as occurred to myself with a direct vision prism used simply and without any slit,—"like one tall amber-tinted cypress tree in the midst of a garden of coloured hedges; or, if the simile must be architectural, like the central tower and successive coloured walls of Ecbatane, the city of the Medes;" for the tall flame-cone, that makes the tree or the tower, is nearly monochromatic in the yellow part of the spectrum, and only the low blue nucleus within its base is acted on prismatically, and extends itself on either side of the cone, and at measured intervals through all the tints of the spectrum.† An admirable example, however, is it in that way, or without any slit at all, of the solar spectroscopists' happy method of viewing the shape of the sun's red prominences, in any one or other of their several coloured editions, separately at pleasure.

The full simplicity of that method cannot be employed on the Aurora, by reason of the great breadth of its beams and their indefinite outlines; but the chief features may be made out with no other apparatus than simply a prism held in the hand and window-shutters *not quite closed.*

Thus in an upper room with a Northern exposure, I have placed the edges of the window-shutters, not the $\frac{1}{300}$th of an inch apart as with sidereal spectroscopists but a good half inch asunder,—and then retiring therefrom about 20 feet, lo! *a line* of light appears to the naked eye between the window-shutters if there be any Aurora in the sky; and on looking at it through a direct vision prism, lo! there is still a line of light, and nothing more; one would almost think that the prism had lost its natural powers of dispersion. But if by a little change of his standing place the observer, with the prism still to his eye, can bring a distant gas-light to appear beween the crevice of the window-shutters, lo! *its continuous* spectrum shoots out horizontally on either side of the vertical line of Auroral light, which is then seen to stand over the citron region of such continuous gas spectrum.

* Prof. Swan had overlooked the red in 1856, or considered it only as an accidental impurity, and Dr Attfield, though operating on a much brighter edition of acetylene flame, makes no mention of a red portion, but it was well described, measured, and pictured by M. Morren in 1865 as containing, when bright, so many as six lines. M. Liegegg in 1868 measures five lines in the red, insists on such red band really belonging to the coal-gas acetylene flame, and quotes both MM. Plucker and Hittorf, *Phil. Trans.* vol. clv. part 1, p. 15, 1865, and also M. H. C. Dibbits, *Akademische Proefscrift*, Rotterdam, 1863, for having given pictures of carbon spectra, but without any notice of the red lines which he is sure belong to coal-gas.

† See the last spectrum but one in Plate 53.

Or if a spirit lamp be placed bodily either in, or just behind, the window-shutter opening, then the separate bands of its acetylene spectrum will be seen as gay as a flower garden, and with the window-shutter's line of pale Aurora standing over *not quite* the beginning of the citron band, because over the second, and not the first, line composing it.

To make this observation most satisfactorily as to the acetylene lines and colours, the alcohol must be chemically of the purest, the wick of the lamp tall and thin, and the upper part of the flame, which frequently gives out both a continuous spectrum and a too vivid sodium line, hid by a screen; and then all the many bands come out distinctly from red to violet.

HYDROGEN.

Yet, while the above is the unfailing and most multilinear character of acetylene or carbo-hydrogen flame, how totally different is not that of pure hydrogen?

Classic as that gas has now become for its three notable lines, duly described and pictured in every treatise on spectroscopy, and truly so when the gas is electrically heated in a closed glass tube, yet, when tried as a flame in the open atmosphere, who would have thought, from the books, that nothing whatever of its spectrum would be seen, not even though it be burned at high pressure and driven by a blow-pipe blast, and of hydrogen within hydrogen. Accompanying impurities may then be shown, as the sodium line, calcium lines, and traces of copper and zinc; but of the three hydrogen lines—nothing! See Plate 53, lowest spectrum.

Dr Attfield, in his paper in the "Philosophical Transactions," vol. clii., says at p. 224, in speaking of the spectrum of what *he* calls carbon, but which Prof. Swan before him called carbo-hydrogen, and others have since called acetylene flame, "it differs greatly from that of every other element I am acquainted with; and though, in each of the experiments described, it was of course accompanied by the spectrum of either nitrogen, hydrogen, sulphur, or oxygen, its diagnosis was not thereby interfered with: it is, in fact, most widely different from, and cannot possibly be confounded with, either of them."

How the learned Doctor was enabled to see, as quite a matter of course, let us say, the *hydrogen* spectrum, when burning a carbo-hydrogen flame, totally passes all my experience,* looking as I did most earnestly for any trace of the true hydrogen lines, but seeing only the well-defined and most different groups of carbo-hydrogen or acetylene. Nor, as I have already stated, even when burning pure hydrogen

* I should here confess that *my* experience was and is poverty-stricken, and did not reach Dr Attfield's even in his flame experiments; for he saturated his coal-gas with benzole, used pure oxygen in place of atmospheric air, and burnt his gases at a safely oxyhydrogen jet made of platinum. I must leave therefore to richer men than myself to try whether these conditions of chemical luxury will explain the differences observed.

with atmospheric air, was there anything of its lines seen by me; and to this case I will confine myself.

The explanation lately offered by a friend who had previously asserted the exact similarity of the spectra obtained from ordinary flames, and from electric sparks in glass tubes, takes this form—"the lines ought to appear, as I said, because they only require sufficient heat to come out, and there is quite heat enough in hydrogen flame for that purpose; but then, as the hydrogen, in necessarily forming the flame, becomes combined with oxygen, all the extreme heat is spent on the resulting compound, or water in the shape of steam; and therefore the true hydrogen lines cannot appear; and they never will be seen in any hydrogen flame in an atmosphere like that of the earth containing *oxygen* as one of its constituents."

This is disappointing, to say the least of it, for those who ardently desire to use the hydrogen lines as a reference, but, like myself, cannot afford the requisite electrical apparatus to produce pure incandescence without combustion.

There are applications, however, of the knowledge so obtained, which I have not seen stated. Thus when the star T in the Northern Crown blazed out so suddenly in May 1866, it was largely spoken of as being "on *fire*" in a *flame* of hydrogen, and forming "an awful *conflagration* in space,"—the well-known hydrogen lines being seen so bright. But evidently we ought rather to say that these lines being so seen is just the very reason why there could have been no fire, no flame, no conflagration or combustion going on, as we understand such things on this earth; *i.e.*, as some form of chemical combination of hydrogen with oxygen.

Now in the sun, the most advanced spectroscopists state that there is no oxygen. No wonder, then, that the hydrogen lines come out there so vividly in the red prominences, for they are simply incandescent and cannot burn or enflame. But then if there is no oxygen, can there be any Aurora, even as some physicists have been recently asserting that there is perpetually? or can the Solar Corona possibly exhibit the characteristic line of the Terrestrial Aurora, when the latter has been authoritatively declared to have a form of *oxygen* spectrum?

Certainly the one line which is seen in the Solar Corona is now known to be by no means in the place of the Terrestrial Aurora line, and in so far frees the Sun from that once implied charge of containing oxygen. But then, again, if Angström's statement of the Zodiacal Light showing the Aurora line is to hold, and the Aurora line is oxygen, there must be oxygen in the Zodiacal Light; and in that case no community of substance between it and anything forming either the gaseous chromosphere or atmosphere or the still rarer and more ethereal Corona around the sun. In short the Zodiacal Light must *then* be held to be terrestrial, and not Solar as we have hitherto been taught to believe.

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STEAM.

If the true hydrogen lines were lost on burning that gas with oxygen (*i.e.*, in so far as oxygen is contained in atmospheric air) and because hot watery vapour or *steam* was thereby generated,—why were not the *steam* spectral lines seen?

But what are steam spectral lines like, and where are they situated in the spectrum?

At the present moment, and as I have set forth more at length in a separate paper on "Telluric spectral lines" further on, the only person who has seen these steam lines is M. Janssen of Paris; and he has witnessed them only negatively, or as black Fraunhofer lines on the continuous bright spectrum of something else behind; or of several gas-lights shining through a thickness of 150 feet of high-pressure steam. M. Janssen too has not yet, so far as I can learn, published the precise places from observation of these black or reversed steam-lines, though he has announced rather enigmatically that they coincide with *some* of the telluric lines seen in the Solar spectrum at low altitudes: other some of these lines being attributable, he now allows with M. Angstrom, to compound permanent gases in the atmosphere, such as carbonic acid.

Hence there seems a peculiar vacuum just now of exact information touching steam spectral lines; and one is inclined to ask,

(1.) Is it beyond the power of man to make steam so incandescent as to give forth its bright lines, which should be very bright *if* in their reversed state they form, according to M. Janssen, some of the strongest marked features in the whole range of the telluric solar spectrum? And

(2.) Why does not one of the rich central Societies of the Metropolis, who have been so active in getting up Eclipse spectroscopic expeditions year after year, supplement M. Janssen's imperfectly described and less completely published observations of the reversed state of steam lines, by such a series of new, original and independent measures and descriptions as would enable all other persons to understand "steam lines" as well as only M. Janssen by himself appears now to do?

CARBON.

Connected again with carbo-hydrogen or acetylene, and its flame burning freely in an atmosphere containing oxygen, there is another application which should not be passed over.

In Dr Huggins' admirable paper in the Philosophical Transactions for 1868* a carbon spectrum is attributed to Comet II of that year.

The learned author appears surprised to find so intractable a material vaporized and glowing in so faintly luminous a body; and though he reminds that *another*

* Vol. 158, pp. 555 to 564.

comet, viz., that of 1843, approached the sun so closely as to be exposed to a fearful heat as compared with the earth, yet if M. Angström is right, that not the sun itself is hot enough to vaporize carbon, why then the near approach of the Comet of 1843 (whose spectrum no man knows), and still less the comparatively very distant approach of Comet II of 1868 is not likely to have been eminently availing.

That comet, however, showed certain three spectral perspective bands, which Dr Huggins identifies with *the spectrum of carbon* as electrically produced by himself, and duly pictured by him in the same place* as well as copied into numerous works on spectrum analysis, and evidently considered there to be most standard and true. Let it be allowed therefore that Dr Huggins' methods, whatever they were, did produce a genuine and incontestable carbon spectrum, and that such phenomenon was correctly pictured by him and most successfully from his own researches. Then on examining such picture we shall find that there are curious agreements with, and oppositions to, the acetylene flame spectrum as described and employed by ourselves.

Thus, the three large bands or groups of lines which the Doctor gives, *appear* generally to be the citron, the green, and the blue of acetylene; but if his experiments gave these, how came they not to give also the red and the violet bands, which are just as essentially a part of the acetylene spectrum as any of the others? Indeed the violet band, though not the very brightest of the whole, comes at least second in that scale whenever I have tried it.

Yet when we examine the minuter features of the great spectroscopist's *apparent* acetylene lines in his real carbon spectrum—so far as they go,—by minuter tests, they vary from the flame or true acetylene again, but in a different manner; for the 4th and 5th lines of his blue band are at a distance asunder of less than $\frac{1}{2}$ of the 1st and 2d, instead of being nearly equal; while more remarkably still, the second line in his citron band is a much thinner or fainter one than the first, and much closer to it than the general acetylene interval; instead of the said second line of the citron being exactly and remarkably equal in brightness to the first line, and at a rather greater distance therefrom than the general acetylene interval.

But this second line of the citron band of acetylene being by far the most important of the whole, because the very one with which the Aurora line appears so interestingly to coincide, Dr Huggins' form of the acetylene, or more properly his electric spark carbon spectrum, can hardly be recommended to observers of auroral phenomena, though it may be abundantly important otherwise.

* There is a scale attached to the pictures, but unfortunately it is not the same scale which Dr Huggins employed in his earlier tables of the spectra of the elements, and with which Dr Wolcot Gibbs in America did the world a service when he reduced their numbers to wave-lengths.

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CONCLUSION.

The final and chief result of the present paper, if it contains anything worthy of notice at all, must, I apprehend, be considered to be, that further spectroscopic observations of the *Zodiacal Light* are urgently required. By far the most bulky member, or constituent, of the whole planetary system, if solar, but a mere vapour of one part of the earth, if terrestrial, the Zodiacal Light is one of the most unsettled subjects of the present day; and the whole question of whether it is solar or whether it is terrestrial, whether sublime or almost ridiculous, may turn upon whether it has, or has not, the Auroral line in its spectrum. The observation will be extremely difficult from the faintness of the light to be operated upon; for ordinary Auroral glows are noon day compared to the true Zodiacal Light, even when seen at its best from high and juxta-tropical mountain tops. A *special* form of spectroscope therefore will be required and a *particular* expedition; but in these days when one solar eclipse has, with the applause of the public, twenty expeditions fitted out for its observation, it does not seem very extravagant to ask for *one* observing party to be duly prepared for the Zodiacal Light alone.

P.S.—Last night, 4th February 1872, from 7^h 30^m to 9^h 0^m p.m. there was a brilliant display of many-coloured Aurora, which brought out prominently the action of an important medium or element not directly recognizable by the spectroscope. The reds of the Aurora for instance varied to the eye most energetically from lurid red, or Potassium α red on one side, through pure scarlet, or Lithium α red, up to crimson, [illegible] α red. But in the spectroscope only one red line was seen and its place [illegible], was found rather more refrangible than Lithium α, which I had in the [illegible] of the field of view at the same time. The Aurora red line was therefore and remained all the time, [illegible] all the red tints observed with the eye.

If it then [illegible] from that [illegible] red tending to orange and yellow produced [illegible] more or less of the standard green Aurora line and [illegible] green and blue [illegible].

But if it [illegible] the variations from the standard red towards the crimson, damask and lurid [illegible] produced, I can only suggest that it was by mixture of the said standard red with portions of that peculiar blackness which generally characterizes the inside of the low Auroral arcs on the N.N.W. horizon. That blackness was peculiarly present there during the brightest part of the Auroral display overhead [illegible] from all azimuths to a point 18° South and 3° East of the zenith; and I [illegible] that it could be traced occasionally in upward shooting streamers mingling with and discoloring those of green and red light. But while these green and red lights, though ever so intimately mingled to the eye, are instantly separated by the spectroscope and deposited by it visibly into their proper and constant spectrum places, we cannot see what the instrument does with this other commingling element which turns bright [illegible] red into deep damask red, if said element be of a dark or black nature.

Under such circumstances it would seem to be a worthy problem for those who have telescopic star spectroscopes to observe the spectrum of a star, when shining, as one may be occasionally seen to do, through the very thickest of that dark and black (but not cloudy) auroral arc so frequent towards the N.N.W. part of the horizon.

C. P. S.

REPORT presented to, and read before, the BOARD OF VISITORS, APPOINTED BY GOVERNMENT FOR THE ROYAL OBSERVATORY, EDINBURGH, at their Visitation held on Thursday, the 27th of July 1871, at 4 P.M.

Present—Adam Black, Esq., in the Chair; Sir Alexander Grant, Bart., Principal of the University; Dr Christison, President of the Royal Society, Ed.; R. M. Smith, Esq., F.R.S.E.; Rev. P. Kelland, M.A., Professor of Mathematics, Un^{y}. Ed.; P. G. Tait, M.A., Professor of Natural Philosophy, Un^{y}. Ed.; and The Astronomer-Royal for Scotland:

Letters were read explaining the absence of the Chairman, Sir William Gibson-Craig, Bart., the Lord Justice-General, and Prof. Macquorn Rankine, C.E., the latter having to visit Portsmouth to experiment on Government ships.

INTRODUCTION.

At the present interesting stage in the history of this Observatory, when, by a vote of the British Parliament, the establishment of instruments is about to be increased by one example of far superior size and power to any that we have hitherto possessed,—it would seem to be expedient to put on record, before describing the work of the year just concluded, a few condensed particulars touching the situation, characteristics, and past history of the Observatory; in so far at least as these should be constantly borne in mind, when arranging any new schemes to form the continuous work of the office in future. I append therefore here the following *five* heads from a document recently and independently prepared:—

1. This Royal Observatory is but a small establishment; peculiarly circumscribed too and, as it were, hedged in on several sides,—yet enjoying some distinctive features of foundation, neighbourhood, and opportunities which have already enabled it to perform a considerable amount of useful work, either not at all, or very little, attended to elsewhere; and it might, under more favourable circumstances for development than it has yet enjoyed, be enabled to accomplish much more of the same characteristic service for *the advancement of science.*

2. It is a Government Observatory, under the charge immediately of the Secretary of State for Home Affairs; whose Office, in conjunction with the Treasury, is pledged for now more than a quarter of a century, to the members of the late Astronomical Institution of Edinburgh, (the original founders of the Observatory with their own private and voluntary subscriptions), to keep it up in all future time as "a proper and independent Royal Observatory." Its personal establishment consists of a Director, appointed and entitled by Government, "Astronomer-Royal for Scotland,"

and two Assistant Observers. While its instrumental equipment notably includes an eight-feet Transit Instrument and a six-foot Mural Circle, to which a reflecting Equatorial of large aperture but very short focal length is now about to be added by H. M. Government.

3. The *situation* is on the summit of the Calton Hill in the midst of the city of Edinburgh, with an admirable foundation of porphyritic trap-rock for the Meridian piers; but inordinately exposed to violent winds, superabundant smoke, and injurious chemical vapours; with no opportunity either for adding to, or altering in any manner, the actual building, the masonry of which, while it is exceedingly substantial, architectural even to successful classicism, and ornamental to the city, is yet on a very contracted scale. The building moreover is inconveniently isolated, too little protected, and with the Astronomer's house a long way off, near the foot of the hill, and without possibility of being brought any nearer.

4. The path of work and usefulness chosen for this Observatory by Thomas Henderson, the first appointed Astronomer Royal for Scotland, in 1834, had sage reference to, and an earnest desire to make the best of, all these ruling data of circumstance; and consisted mainly, in *Meridian observations* for place, chiefly of small stars. The system so begun has,—with due regard to the precedence and deservedly high claims of the Royal Observatory, Greenwich,—been continued up to the present time and has been found exceedingly appropriate: 12 quarto volumes of the observations thus obtained have been printed, a 13th is now in progress at the press: and the system, it is to be hoped, will never be given up so long as the nation cultivates exact Astronomy; the most precious foundations of which noblest of the sciences, in the dynamics of the starry heavens, may be confidently expected to be thus furnished, illustrated and strengthened as generation after generation of observers passes away.

5. Coincidently however both with the above work, and some other phases of usefulness to the community which may be gathered from the present and previous Reports on the employments of the current years,—the present Director has aimed at introducing certain extra-Meridian observations of a more special and experimental character as part of his role of duties. For if some of these additional researches *are* of so nice or discriminating a character that they require to be followed up, not on the Calton Hill nor indeed in any portion of our cold and cloudy high-latitude part of the Northern Hemisphere, but by occasional expeditions to more Southern, favourable and sometimes even distant regions of the Earth's surface,—he considers that his forced non-residence at his Observatory,—a drawback to him when at home, unknown amongst all the other public Observatories of the country,—besides the damp and murkiness of its situation even at the best,—points him out preeminently as the one of all others of the British professional astronomers to be charged with the duty of cultivating "peripatetic," as well as "stationary," astronomy. And while the greater part of the Edinburgh Astronomer's observations may still have to be made at home, and the arrangements of the Observatory should be such as to facilitate them there to the utmost possible degree,—there should yet be introduced a certain power of adaptation in any new extra-meridian instrument for being separated easily into its component parts, transported with safety, and re-erected with facility in an entirely different latitude.

BUILDINGS.

In the course of the past year, the principal feature to be noticed touching the buildings and general circumstances of the Observatory, has been the late happy carrying out by H.M. Government of the long desired and important scheme of an Astronomer's house, not only with supplementary rooms for Observatory purposes, but so much nearer to the Observatory than was the last house, as almost to remove from this Observatory a grave disability under which it has always hitherto laboured, as compared with every other similar establishment both in this and other countries; viz. the distance of the astronomer's residence from the scene of his labours.

Not only has this improvement enabled the astronomer to spend a greater part of every 24 hours at the instruments and in the computing room than during

previous years,—but there has been wakened up among old friends of the Observatory and of Astronomy in Scotland, a fresh interest in the establishment, with increased confidence in its future usefulness and prospects of permanency; generous and sympathetic feelings; which have resulted already in the presentation of several valuable pictures, busts and engraved portraits of some of those worthy men who, often as Members of the late Astronomical Institution of Edinburgh, were 50 years ago the true and original founders of this Observatory, then a private one, and to whose untiring and in some cases self-sacrificing exertions in their day it is now owing that Edinburgh possesses, and has possessed for the last 37 years, a permanent Government establishment for prosecuting the most ancient, yet still the most vigorous and advancing, of all the sciences.

These characteristic and with us historical and professional works of art, I have therefore thought it my duty thankfully to receive in the name of the R. Observatory, Edinburgh; and propose to mount them, when the furnishings and fittings are completed, in the large room of the new house appropriated to observatory purposes,—where I trust they may eventually become the nucleus for attracting still further memorials of all those men who have in any way, whether in earlier or later times, aided in promoting the progress of Astronomy in Scotland.

In Appendix I. p. 16, is contained a list of the presents thus received; while Plate I., originally prepared to illustrate the situation of our rock thermometers which are alluded to farther on, will give a good idea of the relative position of the Observatory and its new appendage, the house No. 15 Royal Terrace.

INSTRUMENTS.

Within the past few days Parliament has promptly ratified the proposal at last set before it by H.M. Government and fulfilled the earnest recommendations of this Board, repeated through 20 years, by granting the sum required for supplying the Royal Observatory, Edinburgh, with the cheapest possible form of Equatorial compatible with the optical power and mechanical fittings considered necessary in the present day.

I am not yet able to state the precise manner in which all the details of the work will be settled; but Mr Matheson, Local Superintendent of H.M. Office of Works, who has already brought to a happy issue so many other examples of varied and difficult structure required about this Observatory, will have a general superintendence; and Mr Howard Grubb of Dublin, who, with his eminent father before him, has deservedly obtained a world-wide fame for equatorials, will be the artist chiefly relied on, and is to visit Edinburgh on August 3d to commence operations.

In the meanwhile our proceedings in the Observatory have been much directed to clearing off arrears of past work, both as salutary in itself and highly expedient before commencing with a new instrument.

PERSONAL STAFF.

At the time of the presentation of last year's Report, I was carrying on the duties of the Observatory aided by a single assistant only, he being however the long appointed and much experienced First Assistant, Mr Alexander Wallace, M.A. But shortly thereafter, H.M. Government allowing the necessary funds, Mr John Walter Nichol, strongly recommended from the Natural Philosophy Laboratory by Prof. Tait, was engaged as a temporary Second Assistant; and has acquitted himself so admirably therein, that after passing two special examinations before the Civil Service Commissioners, and undergoing with credit a still further probation of 6 months in the Observatory, he has at length been permanently appointed by H.M. Home Office.

Some portions of the year thus elapsed have been rather interfered with by matters not of the nature of astronomical observation (the official letters relating to the case of the Second Assistant alone amounting to no fewer than 32); but nevertheless so exemplary has been the attendance and unwearied the labours of both assistants whenever present, by night as well as by day and through both winter and summer, that a larger amount of useful work has been accomplished on the whole during the last 12 months than in almost any previous year: and has been distributed as follows.

OFFICE WORK.

Under this head may be grouped, *firstly* our Time services to the public, and, *secondly* the Meteorological calculations for the Registrar General of Births, Deaths, and Marriages in Scotland.

(1) *Of the Time services.* To this end, uninterrupted observations of Clock-stars have been kept up throughout the year, together with examinations of the position of the Transit Instrument. Therewith the true local time has been daily obtained, then reduced to Greenwich time, and disseminated through the city partly by aid of electric-controlled clocks and partly by the two simultaneous signals of time-ball and time-gun.

Of the latter method I reported last year that the only practical defect was the occasional failure of one of the military fuses employed in igniting the powder, and that such faults would be greatly diminished if the gun were to be supplied with two touchholes, two fuses each day, and the electric-clock enabled to pull them both at the same instant.

The Secretary to the Board having been instructed thereon to write to the General commanding the district, recommending such alteration, that eminent officer graciously complied: and, in spite of the heterodox complexion of the proposal in a military point of view, the alteration was made, partly by the Master-gunner and his artisans and partly by Messrs Ritchie & Sons, the Observatory Clockmakers in this city: with a degree of resulting success too in practice which must be exceedingly

gratifying to all concerned. For though in the year extending from June 1, 1869 to June 1, 1870 under the old regime of firing with a single touchhole and single fuse, there were no less than *twenty* cases of mis-fire, with their consequent days of no gun signal to the city and surrounding country; yet from the 4th of October 1870, when the new double method came fairly into operation, up to the 30th of June 1871, there has not been a single case of failure.*

The only improvable feature now left outstanding for consideration, is the weakness of the sound, on days of N. East wind, over important parts of the city and especially in the direction of Leith and its valuable shipping interests, a matter which an increased charge of powder would at once tend greatly to ameliorate: and might easily be compassed, for while the Time-Gun receives now only 3 lbs. of powder per day, the guns employed on the same battery in the Castle, when ordinary military salutes are being fired, receive, it is said, 8 lbs. each for every charge.

Time services abroad.—The populous and rapidly growing city of Cincinnati in America, as represented to us by the Honble. A. S. Goshorn, President of the City Council, and Prof. Cleveland Abbe, Director of the Observatory there, having determined to disseminate the true time to their citizens nearly on the Edinburgh plan,—have applied *first* to Messrs Ritchie & Son, clockmakers here, to make them both a governing Mean-Time Clock, fitted with one of Mr Sang's Edinburgh-invented adjusters, and a large clock with four faces to be thence controlled and to ring electrically all the fire-bells of the city at one o'clock exact, besides showing the true time accurately to the fraction of a second both day and night; and *secondly* they have written to me as Astronomer-Royal for Scotland, to receive the clocks into the R. Observatory here, and test their performance before being sent to America.

As the citizens of Cincinnati are evidently most anxious for the work to be exemplary, and other cities in the far West are already waiting to see the result of the movement made at Cincinnati, I have thought it right to promise my best services in the cause,—and Mr Ritchie informs me that the clocks will be ready to undergo their astronomical trial in about three weeks.

(2) *Of the Meteorological Office work.* The computation of the bidiurnal observations made at 55 stations of the Meteorological Society of Scotland and the exhibition of the results for each station and also for the whole country every month and every quarter, in the several forms required for the Registrar-General of Births, Deaths, and Marriages in Scotland, has been carried on unfailingly as usual; and, although with some external aid of an interesting character, has consumed a very large portion of our time; in fact but for the persevering conscientiousness with which both the Assistants have discharged their duties at all seasons, it could not have been kept up.

* On the first of July there was at last a case of no gun fire, but it was not the fault of the fuses, or of any part of the military arrangements.

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SCIENTIFIC WORK.

This divides itself into two kinds, the Regular and the Occasional.

(1) The Regular scientific work of the Edinburgh Observatory is the determination of the absolute places of stars with both Meridian Instruments.

Observations of this nature having much accumulated on our hands, we had already turned our attention to the computation of them at the time of last year's Report, and being soon thereafter granted leave by Government to begin the printing of a new volume, the 13th of the series,—we have been carrying on computations and press readings ever since; and with this result,

A. The Transit observations are completely reduced from 1860 to 1868.

B. The Mural Circle observations, from 1860 to 1868.

C. The Annual Catalogues of star mean-places with both instruments are prepared from 1860 to 1865.

D. The printing of the above has advanced from 1860 to 1864, and altogether 350 quarto pages, chiefly numerical, have been printed off.

On completing the separate star catalogues up to 1869, I have it in view to prepare a collective catalogue of the whole of the stars observed at the R. Observatory, Edinburgh, since its earliest days of full scientific activity, viz., from 1834 to 1869; and to employ such a catalogue largely, if not chiefly, in improving the accuracy of the truly Imperial stellar Catalogue prepared by the late ever to be lamented, and incomparable book-keeper, so to speak, of the Stars, Francis Baily, and published by the British Association for the advancement of Science in 1845.

A certain little practical difficulty is indeed impeding our way in this matter just now, as I may mention at the meeting.

OCCASIONAL SCIENTIFIC WORK.

Under this head come several subjects, often of a very special and for the time of most engrossing character; and first amongst them I should mention

THE ROCK THERMOMETERS.

In last year's report I noted having reduced the whole series of these invaluable observations, made here between 1837 and 1869, on a uniform plan, and having sent them on 2nd March 1870 to the Royal Society of London in a condensed form and with an accompanying discussion both on the supra-annual cycles of temperature which they clearly evinced, and their relations with the somewhat similar cyclical changes in the Sun's spotted surface.

Although nothing but an abstract of that paper to the extent of a few lines has been published, after its reading, by the said Society, several persons in different parts of the world have opened up correspondence with me about it; while two

eminent astronomers, one of them being Mr Stone the newly appointed Astronomer Royal at the Cape of Good Hope, and the other Mr Cleveland Abbe, Director of the Cincinnati Observatory, have since then, but it is believed quite independently, published similar deductions touching the earth temperatures in reference to sun-spots; Mr Stone basing on 30 years of South African temperature observed by his indefatigable predecessor Sir T. Maclear; and Mr Abbe* on 60 years' temperature observed on the elevated station of the Hohenpeissenberg near Munich, under the superintendence of Dr Lamont, the Bavarian Astronomer Royal; all three parties using the same famous series of observations of sun-spots, as made by M. Schwabe and discussed by Prof. Wolf. More recently still a skilful Canadian writer, basing on the returns of the Toronto Observatory for many years past, considers that he has established a connection between the amount of annual rain-fall there and the sun-spots; and of these again with the periods and dates of several interlacing streams of circum-solar meteors. And within the last three days the learned Radcliffe Astronomer announces in a printed Report, that the *mean* azimuthal direction of the wind at Oxford, rigorously computed from automatic records during the last eight years, varies year by year through a range of 58° on the whole, between *maximum* and *minimum* of visible Sun-spots; the tendency of the wind to a Westward direction increasing with the number of spots.

These results touch closely on the hopes of physicists to render Meteorology more of an exact science by getting at its cosmical relations,—but they also touch equally close on another point where the highest science is at present completely dumb, although too it is the very point where the utmost amount of benefit might be conferred on the largest numbers of the people; viz., some approximate indications of the character of the seasons for a year or two beforehand; or indeed, very much as I did make a first attempt, for the two winters of 1870–71 and 1871–72, in the paper sent to the R. Society in the spring of last year.

How intimately the well-being of the poor generally, as well as of the agricultural classes, depends on those characteristics of weather, which no scientific Society can at present foretell, and no Ministry prevent in their destructive effects to the national revenue when they do come, the following letter may serve as a better example than anything that I could prepare on theory alone.

"Webb's Green, Hales Owen, 12th June 1871.

"To C. Piazzi Smyth Esq. Edinburgh. Copy.

"Sir,—I am a reader of Chambers' Journal and a farmer of some 600 acres. In the publication of Messrs Chambers I read that you had expressed an opinion from certain observations you had made that the late winter would be very severe. For the general run of weather prophets I have very little respect; but every respect for opinions that are the result of scientific induction.

"Consequently I conducted my farming operations with due regard to your prognostication, and as the result has been a profit to me, I write to thank you. Gratitude has been defined as 'a lively sense of favours to come' and from that view and in consideration of the present weather if you could give me your opinion of the weather that you think likely to prevail for some time to come I should feel much obliged.

"I have not troubled you with this epistle entirely from a selfish point of view, for besides being a farmer I am unfortunately an employer of a very underpaid class of workmen, hand rail makers.

* Mr Cleveland Abbe's conclusions were published by him in the July number of Silliman's American Journal for 1870, or only four months after the communication of my paper in London; his calculations having been commenced in 1869, as indeed mine had been also.

"Now that stocks of wheat are exhausted, meat is a luxury to which railers cannot aspire; and if the season continues ungenial, before the harvest of 1872 there may be absolute scarcity of bread. I want to get up a fund for emigration, but if you could give me any information as to the probabilities of season that would dispel my gloomy anticipations for next winter, I should rejoice.—I am, &c. &c.

(Signed) "THOMAS BISSELL."

But I have so little desire to incur responsibility for any weather predictions, that I gladly seize this opportunity of laying the leading particulars of the past observations before the Board in a convenient graphical shape, as in Plates 2 to 5 of the Report, but Nos. 11 and 15 of the volume; and on which I will merely make the following explanatory remarks:—

1. The most striking and positive feature of the whole series of observations is the great heat-wave which occurs every eleven years and a fraction, and nearly coincidently with the beginning of the increase of each sun-spot cycle of the same eleven year duration. The last observed occurrences of such heat-wave, which is very short lived and of a totally different *shape* from the sun-spot curve, were in 1834·8, 1846·4, 1857·8 and 1868·8; whence, allowing for the greater uncertainty in the earlier observation, we may expect the next occurrence of the phenomenon in or about 1880·0.

2. The next largest feature is the extreme cold close on either side of the great heat-wave: this phenomenon is not quite so certain as the heat-wave, partly on account of the excessive depth and duration of the particular cold wave which followed the hot wave of the peculiar season of 1834·8. That excessive cold period, marking as it did the several successive years 1836, 37, and 38, was however apparently a rare consequence of an eleven year minimum occurring simultaneously with the minimum of a much longer cycle of some 40 or more years and which has not returned within itself since our observations began. Depending therefore chiefly on our later observed periods or from 1846·4 to 1857·8, and from the latter up to 1868·8, we may perhaps be justified in concluding that the minimum temperature of the present cold wave was reached in 1871·1; and that the next similar cold wave will occur in 1878·8.

3. Between the dates of these two cold waves, there are located, according to all the cycles observed, even including that earlier one otherwise exceptional, 3 moderate and nearly equidistant heat-waves, with their two intervening and very moderate cold waves, but their characters are quite unimportant as compared with what is alluded to under heads 1 and 2.

AURORA AND FAINT LIGHT SPECTROSCOPY.

The fine open views of the Northern sky commanded by the upper flat of the new Observatory house, induced me last winter to make up a kind of spectroscope adapted to observe the Auroras which were then so frequent.

Having no funds strictly for the purpose, the instrument was a rough affair and not to be compared for a moment to those magnificent examples now possessed by almost all spectroscopists in the South, through aid of Government grants or wealthy Central Societies. Yet it enabled me to bring out some particulars touching

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the spectra of Aurora, Zodiacal Light, Twilight and Solar Corona which I had not seen mentioned before; and as they promised to be useful points to attend to in future Eclipse observations, I sent a paper on the subject on the 30th of May, in preparation for the meeting to be held in the beginning of June, to the R. Astronomical Society, London, where, as it had been announced, astronomers are already consulting over the steps to be taken at the coming eclipse of next December.

The paper does not seem to have been read at that meeting, or otherwise published; but for Edinburgh, it may be of interest to notice, that I made my chief referring spectrum in all the above observations the carbo-hydrogen, or perhaps more appropriately to be called *acetylene*, lines seen in the blue base of flame: a spectrum with which Prof. Swan, while still residing in this city, made his name so indelibly connected in 1856 by prism measures, pronounced since then to be classical for their accuracy, though performed long before spectroscopy had become known to the public; and which lines he then hoped would be used some day as an astronomical reference. Now then, they have not only become so, to a moderate extent, in my hands; but the one chief, most eminently characteristic, and almost *only* line in the spectrum of the ordinary celestial Aurora, or the line with wave-length 5579, is found to coincide, as exactly as my imperfect apparatus enables me to judge, with the second line, and that a very distinct one, and equal in brightness to the first line, in the citron-band of this interesting carbo-hydrogen, or acetylene, flame. The coincidence is indeed something so near, if not absolutely exact, that the position of the spectrum place of that celebrated Aurora line is now reduced from the difficulties of absolute measure through all spectrum space, to the micrometric ascertainment of an exceedingly small interval between itself and a standard terrestrial chemical line always at hand: a line moreover charmingly sharp and well defined with a narrow slit, and presenting to the observer only a differential task, like that of close double star measurement in extra-meridian astronomy.

SUN SPECTROSCOPY.

When by dint chiefly of my own hands and labour, and with certain parts skilfully furnished to me by Mr James Bryson, optician in Princes Street, the above faint-light spectroscope was at last made up, I presently turned it to the Sun,—in order not only to repeat certain observations of my own in 1856 on the Peak of Teneriffe, the priority of which has not been generally attended to by modern writers on spectroscopy,—but also to establish the equally decided priority, and for an earlier date still, of the late Principal James David Forbes touching the colours of the spectrum of aqueous vapour, and its application to certain meteorological questions; a most important physical discovery in its day, and by the most eminent physicist as well as exact experimenter Scotland has ever produced, but which seems to have dropped out of notice in quarters where it should never have been forgotten.

A further account of this case will therefore be found in Appendix II. p. 18 to

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23, as well as a graphical representation in plate 8; consisting indeed merely in eye sketches, and therefore only to be fully trusted for the *leading* features of the *stronger* lines; but these containing some most remarkable points.

METROLOGICAL CORRESPONDENCE.

In the original copy of my Report of last year, I had the honour of laying before the Board what I considered to be a matter both of duty in me to represent, and of peculiar knowledge gained from my professional point of view to set forth,—touching the existence of an international association of most questionable character, actively organizing at that time in London, Paris, and Berlin, and adopting the French metrical system as a powerful and suitable means for beginning the removal of national boundaries and the rooting up of traditional beliefs.

And what has been the history of the present year thus far?

That some of those very men, under the name of Communists, have broken forth, armed both with the metre and the metrical chronology of the first French revolution, which abolishes the system of the Christian era as well as the week of 7 days; and, though the calamity just accomplished has fallen chiefly on Paris, there are entanglements of the now universally recognised *Internationale* and threatenings of a Servile war to come, which our newspapers are daily discovering to be more serious both for London and the European capitals generally.

In short, this question of Metrology, wherein *some* of our Philosophers are,—strange to say, because of course from totally opposite reasons,—at one with the Communists, is much more momentous, entangled and difficult for all humanity, than has hitherto been suspected by the Public;—while, by the Grace of God and the nature of things beyond human control, clear insight into the deep foundations of the subject appertains perhaps more to Astronomers than to any other class of men; wherefore both in England, France, Russia and some other countries, their respective central astronomers have been appointed long since to the chief charge of their Boards or Offices for Standards of Weight and Measure.

For this reason perhaps, though I have no such express appointment or responsibility, I have yet had the honour of receiving, unsought, several communications from America,—where French-metrical agitators had a few years ago almost committed that great people to heedlessly adopting the metre system; and these American communications show most clearly, that their native Anglo-Saxon population is now largely awakening to the priceless import of *national* metrology and the preciousness of the gift of *hereditary* standards; while it is further reprinting and extensively distributing the masterly report on Weights and Measures by their late most eminent statesman, and excellent example of a *thorough* man in every sense, John Quincey Adams.

A copy of that Report sent to myself,* I have carefully read and admired for its

* In a book called "The Metrical System," by Prof. Charles Davies, New York.

wonderfully powerful judgments on, and rather stern condemnation of, both the French metrical, and the modern English, metrologies, as well as for its almost intuitive and most sympathetic knowledge both of the requirements of man and the necessary characteristics of whatever shall be, or will be enabled to become, the Metrology of the future,—for some large improvement on the present state of things in all countries, its author is confident must and will appear before long for the benefit of suffering humanity; and he even sketches some leading principles which the system will possess; or indicates a system with earth-globe commensurability something like the French, but more resembling in its units and standards, the old Anglo-Saxon weights and measures, especially in their eminent suitability for the poor, the weak, the little-educated, who still unhappily form the mass of the population of every nation: and though J. Quincey Adams has no distinct idea how, or whence, or when exactly such a perfect system is to arise he advises his countrymen to *wait*, keeping true to their hereditary metrology meanwhile until the thing so desired shall be manifested. In our own country the title of a Bill to be brought before Parliament during the present session, evinces little of the information and none of the faith of the great American statesman;* but Metrical agitation has begun, is even rapidly increasing and its subject has been pronounced to be inferior in importance for human civilization only to religion and language.

OUT-TURN OF WORK.

Several additional subjects of observation to the many here touched on, have been asked of this Observatory within the year; but we have either had no spare time to attend to them, or no money to procure the requisite apparatus; while in some instances the subjects appeared to me more appropriate for other Observatories and were therefore at once declined.

In the two last years' Reports I mentioned the reasons which, *on principle*, kept me from interfering with either the now late eclipse of 1870, or the coming transit-of-Venus expeditions. Other and wealthier observers had taken up those researches, extensively, powerfully; and although the Edinburgh Observatory had volunteered years ago, after making one successful essay, to go on prosecuting peripatetic astronomy in a regular manner, Government had not accepted the offer.

These facts surely should have proved convincing to most minds as to the propriety of our now attending to other things at home. But the marvellous facility with which the London eclipse observers obtained last winter from Government, without any formality of going to Parliament, both the sum of £3000 and the loan of Government ships for the voyage; and also the expectation recently indulged in by Metropolitan Scientific Journals, that some of the same parties are soon to receive no less than £5000 for the photographic part alone of the Transit of

* Since the above paragraph was written, the said Bill, by a private Member, was brought up for a second reading on 26th July 1871, and rejected by a majority of five; chiefly however to give Government an opportunity on so imperial a question of bringing in a Bill of their own.

Venus expeditions,—£10,000 having already been voted for the astronomical portion, —all these events seem to have caused some of our friends in Scotland to think that I was wrong, as representing the Edinburgh Observatory, to have been absent from the popular Eclipse party last December.

Under these circumstances I am greatly encouraged to find that the Astronomer Royal has come out, and refers so forcibly in his last Report before the Greenwich Visitors, to the impolicy and actual waste of public money when several observatories each do the same thing,—that some of the London scientific journals, (even those which were loudest last autumn in demanding three great English expeditions to observe the eclipse,—not because the eclipse would otherwise pass away unrecorded, but because so very many excellent, experienced, and professional American Astronomers had come over armed at all points to observe it from various stations, and many of the brilliant and famous French, Spanish, and Italian Astronomers were being also gathered along the line),—even those very same journals, I say, have been so instantly convinced by the Astronomer Royal's logic, that they now turn round on certain one or two small and very economical Observatories unnamed, and indicate that the sooner *they* attend to his warning the better.

Strengthened therefore by these symptoms of public opinion generally,—I request attention, both to what we have worked at in this R. Observatory during the past year, and to the several schemes of usefulness which we should have entered upon if more liberally supplied with means: such enquiries, for instance, as,

(1.) A repetition of our own unique Teneriffe astronomical experiment, with its numerous applications in physical science.

(2.) Star observations at sea by aid of the principle of free revolution.

(3.) Practical investigation of the Great Pyramid as the oldest astronomical monument of the earth, erected before all written, but not before all still recoverable, history of man, if that research be diligently and effectively followed up.

(4.) The qualities of various rocks for special astronomical and metrological purposes, as partly described in last year's report.

(5.) Spectroscopic and thermo-electric examination of the Zodiacal Light, as seen from inter-tropical stations, the Aurora and Twilight. And

(6.) Certain other questions bordering on meteorology and physics, already commenced to be observed by myself; particularly researches in different climates on the causes affecting the accuracy of determinations of the earth's surface mean temperature; the constancy of earth-surface positions during 4000 years; the methods of chronology in use before history; solar and stellar radiation under crucial conditions; and the application of photography to record various physical and instrumental appearances not hitherto brought under its domain.

The mere mention of these heads will, I think, testify that I have ever been most anxious to avoid crossing any other man's path, especially if he also be in the service of the same Government, and still more so if he be from that source paid

more abundantly or have a larger establishment; this qualification being introduced from no ungenerous motive, but purely from a practical appreciation of what is, at one and the same time, both the most effective and most economical course to be pursued. Nor is there any difficulty in the present day of frequent Reports to Boards of Visitors, for the head of any Government scientific establishment, while preserving that proper degree of intellectual freedom which is essential to the advance of knowledge and the promotion of science for its own sake—yet to avoid the subjects of others as completely as though ordered so to do by a Persian despot, under whom routine might flourish, but ethereal science would be certain to die.

Or, if there be any feature in these reports still improvable and capable of fitting them more eminently for this object of enabling each semi-independent local director to choose his course so as not to cross the paths of his neighbours, it is this, viz., that besides the "out-turn" of work so characteristically described in some of these documents, there should also be equally mentioned therein the "in-put" of Government funds, both direct and indirect, producing that result. Seeing that when we are told that another establishment turns out ten times as much finished work as we do, we should require to learn whether that object is not obtained by means of much more than ten times the number of officers and amount of revenue.

OF THE FUTURE EFFICIENCY OF THE OBSERVATORY.

But though we may thus have struggled not unsuccessfully up to the present time, it has been by an overtasking of our strength, and at a wearing anxiety to prevent any break-down in the regular daily, monthly, quarterly, annual out-turns of work for the public and Government which none but the Director of the establishment can fully be aware of.

He has two assistants certainly; but the first of these, after 37 years of faithful services, has a salary which may be described as starvation rate to a Master of Arts of any University, and will encourage no one of equal powers by nature and education to follow his line of life: while the second assistant has succeeded to a rather worse paid office: and where, though the severe examinations of the Civil Service Commissioners have hitherto brought out a high order of ability, they cannot induce it to remain, when the extra lowness of salary and hardness of the work, beyond the rule of other Government offices and professional occupations, come to be appreciated. Indeed in the recent case a worse disaster befel, directly attributable to the too economical system enforced.

Even the Observatory itself is so insufficiently paid and found in the most necessary means to efficiency,—that, while no great instrumental improvement can be attempted, many small items of mechanical work and necessary repairs, required for the current business of the Observatory too urgently to brook delay, can only be met by the Astronomer drawing on his scanty private salary; and he has actually

had on that account to stop recently all the newer researches he had begun under heads 4, 5, and 6 of p. B 110, and to let the book-binding fall into arrear.

In short, to make the Observatory really equal to all that is demanded of it day by day, or to promote its due efficiency as an office after the manner and example of all larger and longer established Government offices, would require for the several heads just mentioned, and exclusive of any bettering of the salary of the Astronomer Royal for Scotland, the responsible person for the whole machine working well, an annual addition to its present budget of not less than £750.* (Appendix III.)

Whether the Board should apply to Government at once for this increase to the annual allowance, capable of meeting all probable wants for many years, or wait until some signal misfortune or remarkable break-down to business occurs in consequence of the poverty-stricken style of the establishment, they will doubtless bear in mind, in addition to the place which they would like to see the Edinburgh Royal Observatory occupying in Astronomy, accordantly with the desires of its founders, the Members of the late Astronomical Institution of Edinburgh, and its own efforts during more than a generation past, they will, I repeat, doubtless bear salutarily in mind, that the progress of knowledge throughout the world is at the present time increasing with almost fearful rapidity, instrumental appliances become antiquated not merely in a generation but in a few years only, or even less, some new form of, by way of example, either spectroscopic or galvanic registration, coming out and eclipsing its predecessors almost every six months; while it is rather ominous for our position to see that every other Astronomical Observatory in the country has renewed its Meridian Instruments far within the period that our now antique examples have been standing here. Wherefore, never more than at the present time has it been so urgently desirable, that the Edinburgh Royal Observatory,—whose Governmental connection was weakly begun in 1833, in uncertainty as to whether it would prove a successful experiment, but strengthened in 1846 after eleven years of satisfactory trial, and since then has had 25 years still further experience and large extension of its duties,—should now be fully established in means increased at least for *efficiency*; and though still remaining small, and confined to its own subjects, yet, for its size it should be enabled somewhat to compete with other Observatories in the glorious and useful race of instrumental discovery which not only Great Britain but every civilized country in this passing age is so eminently distinguishing itself in.

C. PIAZZI SMYTH.

Astronomer Royal for Scotland and Professor of Practical Astronomy in the University of Edinburgh.

* [Note by the Board of Visitors. To the above sum of £750 should be added, for the salary of the Astronomer Royal of Scotland £300, the whole additional sum necessary for the efficient working of the Observatory being thus, as shown in detail at p. B 123, £1050.

(Signed) P. G. TAIT, *Hon. Sec.*

APPENDICES TO REPORT.

PLATES.

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APPENDIX I.

PRESENTS RECEIVED FOR THE NEW OBSERVATORY ROOMS

Subject.	Donors.
1. Bust of the late Robert Stevenson, C.E., builder of the Bell Rock Lighthouse; [illegible] from the year [illegible] of the Practical Science Club, which, in 1811, grew into the Astronomical Institution of Edinburgh.	David Stevenson, C.E.
Bust of the late Professor Playfair, President of the Astronomical Institution of Edinburgh from 1812 to 1819. An altitude-azimuth instrument presented to him by his students, when Playfair exchanged the chair of Mathematics for that of Natural Philosophy in 1805, was willed by him to the Observatory, and performed important service in 1865, when employed by the present Astronomer in comparing the ancient lines of the Great Pyramid of Egypt with the Polar star in both azimuth and altitude,	The Misses Wallace, daughters of the late Professor Wallace.
3. Portrait in oil of the late William Wallace, LL.D., F.R.S.E., Professor of Mathematics in the University, and for many years Honorary Observer to the Astronomical Institution of Edinburgh. The meridian instruments of the Observatory were procured and erected during the time of his incumbency,	The same.
4. Portrait in oil of Baron Napier of Merchiston, the inventor of Logarithms A.D. 1600; of which notable invention by a worthy of Edinburgh, and of the claim of its author to the gratitude of posterity, the Marquis Laplace wrote, after the lapse of two centuries, "By reducing to a few days the labour of many months, it, Napier's invention, doubles, as it were, the life of an astronomer, besides freeing him from the errors and disgust inseparable from long calculations. As an invention it is particularly gratifying to the human mind, emanating as it does exclusively from within itself. In the arts, man avails himself of the materials and forces of nature; in this instance the work is wholly his,	The Misses WALLACE, daughters of the late Professor Wallace
5. Bust of Sir Isaac Newton,	The same.
6. Cast of the face, after death, of Sir Isaac Newton,	The same.
7. Phrenological bust, cast from the life, of the late Sir John Herschel, Bart., in the year 1833,	C. P. S.
8. A similar bust of Sir Thomas Maclear, late Astronomer Royal at the Cape of Good Hope,	The same.
9. A similar bust of the late Dr Lee, of Hartwell House, Bucks; who generously lent several instruments, and more especially a 6-inch object-glass to the Royal Observatory, Edinburgh, from 1850 to 1864,	The same.
10. Portrait, in engraving, of the late Thomas Thomson, Esq., Principal Clerk of Session, and for many years Senior Director of the Astronomical Institution of Edinburgh. He originated in 1829, the proposal for conveying the then excellently-built Observatory of the Astronomical Institution to H. M. Government, as the surest	

Subjects.	*Donors.*
method of carrying out in permanency the high scientific intentions of the founders of the Institution. Under that proposal, the unlimited *use* of the Observatory and of the instruments contained in it was made over in 1834 to Prof. Henderson, the first appointed "Astronomer-Royal for Scotland," and second holder of the Chair of Practical Astronomy in the University of Edinburgh, .	J. T. Gibson-Craig, Esq., F.R.S.E.
11. Two portraits, in engraving, of the late General Sir Thomas Macdougall Brisbane, Bart., the last President of the Astronomical Institution of Edinburgh; and under whom, in 1846, not only the use, but the absolute possession also of the Observatory and all rights of property of the Astronomical Institution of Edinburgh —after an active and useful existence of thirty-five years,— were finally handed over to H. M. Government, on the condition of the Institution's late Observatory on the Calton Hill being always maintained as a proper and independent Royal Observatory, and held responsible only to the department of Government by whom its Director, the Astronomer-Royal for Scotland, should be appointed. Sir T. Brisbane was also the donor, in the year 1855, of a new Sidereal Transit Clock of exquisite workmanship by Dent of London; and it is still in position, controlling electrically the rates of going of all the other Sidereal Clocks in the Royal Observatory, Edinburgh, ...	C. P. S.
12. Portrait, in engraving, of the late Right Hon. Lord Rutherfurd, President of the Board of Visitors of the Royal Observatory, Edinburgh, in 1852 and 1853, as duly appointed by H. M. Government. Within his Lordship's period of office, the present Time-Ball, with its electric trigger and clock connections, was established on the summit of Nelson Monument, and the daily time-services therewith to the public, of the Royal Observatory Edinburgh, began,	The same.

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APPENDIX II.

ON TELLURIC SPECTRAL LINES AND THE COLOUR OF CERTAIN STARS;

See also Plate 8.

By C. PIAZZI SMYTH, R. Observatory, Edinburgh.

July 1871.

Seeing that a considerable part of the following paper is a reclamation of priority over several observers during the last eight or ten years, and not only in favour of this Observatory in 1856, but also for the late Principal Forbes in 1839,—it might have appeared sooner. It would have done so too, if I could only have had the use, any earlier than the present season, of a spectroscope of anything like sufficient power to repeat the observations made at those two separate dates; but such an instrument was all along entirely wanting to the Observatory, and has not even now been obtained without a struggle.

SOLAR AS WELL AS TELLURIC LINES ANNOUNCED IN 1856.

Few treatises on the telluric lines in the solar spectrum begin without very properly acknowledging the priority of the late eminent Sir David Brewster, in having discovered an increase of the Fraunhofer lines at low altitudes of the sun, or when the light of that luminary is passing through an extra length of the denser parts of the earth's atmosphere.

Such lines were also observed by myself, (very markedly and abundantly too and found to be clear, sharp, fine and black,) on the Peak of Teneriffe in 1856, with a non-measuring spectroscope lent me for that one occasion; but what I attached still more importance to was, that over and above, and even in and among, those evidently telluric, because *growing* lines as the sun went down, there were certain other lines which remained absolutely and imperturbably constant amidst all the change going on around them. Whence I drew the conclusion that those constant lines must be connected with the sun, even as the variable ones were with the earth.*

The full enunciation of that view was not allowed me in the Philosophical Transactions for 1858, p. 505, where the Teneriffe spectral observations were reported on. Indeed so peculiar were the ideas held then by authority as to what was useful in spectroscopy,—that some objection was verbally taken to my presuming to publish the red ends of the spectra by themselves; for, as the critical remark made to me put it, "the blue end of the spectrum is just as important as the red end, and what is the use of the one without the other."

I argued that the whole question of *solar versus telluric* lines was made or unmade by the opposite habitudes of lines contained within a very small part of the red or orange portion of the spectrum; and every one now knows that vast questions in physics have been settled since then by what takes place within very much smaller spectral spaces still.

But in that day, 1856, as I have said, my whole argument and conclusion found scant favour; and was at length formally discountenanced when the Royal Society, London, printed fully and conspicuously Sir David Brewster's and Dr Gladstone's spectrum paper of 1860; wherein, while those learned authors did give me credit for having described *telluric* lines, they not only said nothing of my simultaneous conclusion for a solar origin to others, but positively advanced a theory of their own to the effect that "*none* of the spectral lines were solar, but all telluric."

"It seems more natural" they said at p. 158 of Philosophical Transactions for 1860, "to refer all the lines to one cause;" and again

"That the earth's atmosphere has much to do with the manifestation of these lines is beyond all question, and the analogy of such gases as nitrous acid, or bromine vapour, suggests the idea that they may originate *wholly in the air that encircles our globe*."*

Such then was the adverse opinion of the highest authority in London, in February 1860,—against my solar conclusion for *some* of the lines at a date four years previously. But I held on notwithstanding, and was presently rewarded even in that same year 1860, by seeing the publication of the immortal discoveries of MM. Bunsen and Kirchhoff, demonstrating by new, original, and powerful methods which all the world has since received, that a very large proportion of the Fraunhofer spectral lines are certainly solar, though some may be telluric.

* "At mid day, there was not any great difference between the system of lines which we saw, and the received estimation of them; but as the sun approached the horizon, they grew in numbers, thickness, and definition in the most extraordinary manner. Careful drawings made both morning and evening, at length satisfactorily demonstrated, from the variation of some lines and the constancy of others,—that there are certain of them which are produced by our own atmosphere, and others by some medium much more distant, and probably depending on the nature of solar light."—P. 201 of "Teneriffe an Astronomer's Experiment." Published in January 1858.

* The Italics are mine, *C.P.S.*

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THE TENERIFFE OBSERVATIONS TESTED.

But thereon immediately arose a question, similar to that which every practical observer of a past day must submit to, when the subject which he worked at while it was still a mystery has come to be plain, open, well understood ground; viz.—how far have the individual conclusions of 1856, for *particular* spectral lines been confirmed by modern discovery? Have those lines for instance, which I ventured to pronounce solar, turned out to be solar, and similarly of the telluric?

If Plate 8 of this Report be examined,* where there are 9 of the Teneriffe spectra arranged in order of decreasing solar altitude, the most striking examples of constancy, are the two lines of D and the line C, whereof modern spectroscopy tells us that the former is produced by the solar sodium, and the latter by the solar hydrogen. While again the most notable of the *growing* lines are B, a (by some observers called C_1)† and the group beyond D, and all these are pronounced to be telluric in M. Angstrom's admirable charts of his normal solar spectrum published in 1868.

The mere cursory and travelling observations of 1856 have thus them been admirably and doubly confirmed, by resident observers in subsequent times, for all those lines to which I had assigned either the solar or telluric character; and they were *all* the principal lines contained in such part of the spectrum as was always well in view and fit for observation, whether the sun was at the time high or low.

But with another part of the spectrum, viz. the extremest of the red end, there was an anomaly which I have only lately been able to clear up practically and it was of this nature; if Plate 8 and its first nine Teneriffe diagrams be referred to again for this purpose, it will be seen that the red end of the spectrum from between B and *a* continually grows towards the side of less refrangibility, so as presently to reach and show *a*, and at last to reach and show A also, as the sun descends in the atmosphere. It almost seems at first sight as if increase of atmospheric intervening air, actually made invisible radiations, beyond the ordinary red end, become visible!

Prof. Stokes acutely suggested in 1856, that the anomaly was owing to an instrumental defect in the high sun observations; or to the observer's eye not having been then protected by "cobalt blue glasses."

Sir David Brewster and Dr Gladstone in 1860 gave similar praise to the wonderful advantage of using cobalt blue glasses for the red end of the spectrum, and they had such glasses to their hand and used them accordingly. Yet for all that, their large plate of spectrums in the Philosophical Transactions for 1860, in its figs. 6 and 7, shows the luminous part of the extreme red end of the spectrum much larger and more brilliant for a low, than a high, sun; and a similar opinion is expressed by Lt. Hennessey in the Proceedings of the Royal Society, London, for 1870, vol. xix. p. 123 with reference to his observations made with a very powerful and expensive kind of spectroscope of the more modern kind, then very recently made for, and lent to, him by that wealthy Society.

Now I had no cobalt blue glasses at Teneriffe, and have since had no spectroscope of any pretension to even moderate dispersive power until within the last six months; during which I have been able to make up a rather rough and cheap apparatus, but which, being furnished with two direct-vision prisms,* and a small opera glass for examining telescope, is sufficient at least to show the D line easily and perfectly double. This instrument then, (for eye notes alone and unprovided with any measuring apparatus) I have applied to the eye end of a 6 inch equatorial, and have experimented therewith, using glasses of many colours as red, blue, purple, brown &c. and variously applied, or sometimes before the object glass of the collecting telescope and sometimes behind the eye-piece of the examining telescope.

The result has been, that with coloured glasses properly used, and of almost any colour except green, the red end of the spectrum can be seen with the ordinary narrow line slit, not only up to A, the usual extreme of many observers, but up to Y, and this at *any* time of the day; nay indeed even rather better when the Sun is high, than low, if it be only at the time bright and free from intervening clouds.

These observed facts are graphically represented in the middle part of plate 8; and, in so far as may be concluded from a different instrument, in a different climate and at a different date by an interval of fifteen years, demonstrate that the shortening of the red ends of the spectrum at Teneriffe with increase of Solar altitude was merely due to internal reflected glare of the brighter and more refrangible part of the spectrum—out of the immediate eye-piece field though it might be—overlaying and rendering indistinguishable the direct spectrum light.

This one anomaly being thus happily explained and removed out of the way,—the Edinburgh observations in 1871 perfectly bear out the acknowledged Teneriffe observations in 1856, or in establishing that

* This plate I have redrawn from the Teneriffe note-books and it is therefore slightly different from the plate xxxv. of the Phil. Trans. for 1858; first of all by voluntarily leaving out the green part of the spectrum as needless to this enquiry, and second, as correcting the engraver's error of making both *b* and C, too thick on Aug. 8, P.M., as well as one or two other features of less importance: the above C enlargement being further proved to be a mistake in copying, by referring to the letterpress of Phil. Trans. for 1858, p. 505, where C is taken as the very type of all *constant* lines.

† I was misled recently by the Phil. Mag. translating from the "Comptes Rendus," and converting C_1 into C; that is accusing C—nearly the most constant and solar of all the lines, of being the one most affected by the amount of terrestial atmosphere that it is seen through. But *a* and *a* are almost as exceptionable.

* One of these prisms, the only one to be bought at the time in Edinburgh, has some serious striæ in its substance; yet, strangely enough, they do not seem sensibly to interfere with its action as to definition of the lines, perhaps because so little magnified.

1st. D and C are constant and solar.

2nd, B, a, and the group more refrangible than D, are variable and telluric. And

3rd, there is exact similarity between telluric and solar lines, when well seen, as to all features of sharpness, fineness and blackness.

TELLURIC LINES *Versus* NEBULOUS BANDS.

The point last alluded to contains another reclamation worth making at this time, for, in Sir D. Brewster's and Dr Gladstone's large plate in the Philosophical Transactions for 1860, they unfortunately represent the telluric lines as broad tinted bands.* Whence it comes that we find M. Janssen in the French Academy in 1866 (Comptes Rendus, vol. 63, p. 290) taking credit to himself, (after studying the telluric lines in Italy †) for discovering that Brewster's and Gladstone's broad and nebulous telluric bands were really composed of fine and sharp lines exactly similar in appearance to the Solar lines; and he then puts forward the further discovery for himself and France, viz. that the atmosphere of the earth acts on the Solar spectrum exactly as does the atmosphere of the Sun, notwithstanding the immense difference of temperature between them. That is to say, that the earth's atmosphere produces the same sort of fine lines though in a different part of the spectrum; the telluric lines occurring chiefly at the red end, and the solar lines mostly at the violet end.

So many years therefore did it take the spectroscopic science of Europe, to shake itself free from the erroneous ideas of nebulous telluric bands imported into the subject in 1860 by Sir David Brewster, Dr Gladstone, and the Royal Society of London,—though the previous Teneriffe observations were all the time telling the true story; and this not from any superior skill in the observer or excellence in the instrument he employed, but on account of the vivid and powerful manner in which the atmospheric conditions of a high mountain station present the problem to an observer there. Wherefore we may well conclude, that had only a small fraction of the sum which Solar eclipse expeditions have cost this country since 1856, been utilized in sending a very few, even two or three only, of the same observers to make physical observations on the Peak of Teneriffe in 1857 and the following years, the progress of spectroscopy and the honour of this country therein would have been much advanced.

Returning however to the actual progress of events,—when the true phenomenal appearance of the telluric spectral lines was once duly ascertained and generally recognised under M. Janssen,—men advanced towards the next feature of their problem, or endeavoured to ascertain what particular element it might be in the atmosphere which caused these telluric lines; and therein they speedily pronounced largely for aqueous vapour.

AQUEOUS VAPOUR.

Dr Gladstone in 1861,* expressed rather a contrary opinion; and in a different enquiry I have recently set before the Royal Astronomical Society of London the peculiar inertness in spectroscopy of hydrogen when in the act of combining with oxygen. But on the other hand Prof. Josiah P. Cooke, jr. of Cambridge, America, in 1866† enlarges on the distinctness with which new lines appeared in the small space between the two D lines, in wet weather, and in even immediate accordance with the indications of a hygrometer at the place of observation.

And again M. Janssen at the French Academy in the same year positively declares for aqueous vapour making by far the greater part of, if not all, the telluric lines; while he attributes his success in seeing them, not only in the solar spectrum, but on one occasion in the light of a wood fire a few miles off, to the ray of vision therefrom, grazing the watery surface of the broad Lake of Geneva. After this, a chamber proof seems the only thing further required, and that test M. Janssen performed on a most magnificent scale by looking at an artificial light through a column of seven atmosphere pressure steam 150 feet long, enclosed in an iron pipe with glazed ends.

When using this apparatus, not only does he claim to have seen the very lines produced by watery vapour on the otherwise continuous spectrum of gas-light passed through the tube, but he made this important chromatic discovery; viz. that steam is opaque to blue and violet light, though very transparent to red and yellow; that hence its colour, usually supposed to be *nil*, is orange-red; that it is redder and redder according to the density of the steam; and that therein lies the explanation of the red colour of stormy and rainy sunsets.

Now this series of chromatic discoveries *is* important:

* Lieut. Hennessey also speaks of air bands, as something totally different from telluric lines; but being placed with him between A and Y, there was not probably light enough in that part of the spectrum to see them well with a narrow slit, without which no fine lines can appear anywhere.

† The following information on the progress of M. Janssen is contained in the Comptes Rendus, vol. 58, p. 795, for 1864.

"REPORT OF COMMITTEE OF THE ACADEMY,
" Members MM. Pouillet,
" Le Verrier,
" Faye, and
" Fizeau,—
" who testify that M. Janssen was charged by the Minister of Public
" Instruction in 1862, to proceed to the clearer climate of Italy and
" study the spectra of Sun and stars. That he did proceed there
" accordingly, and had specially studied the modifications which the
" Sun's spectrum experiences when the Sun is near the horizon.
" By ingenious optical arrangements of his own invention he had
" pushed the matter further than had been done before his time; and
" had discovered,
" (1) that Brewster's broad bands were divisible into fine lines,
" (2) that they could be seen, though varying in intensity at all
" hours of the day.
" Wherefore the Minister is recommended to increase M. Janssen's
" allowances and to permit him a longer period of residence in
" Italy."

A striking contrast to the proceedings of the British Government in reference to the observations made during the experiment on the Peak of Teneriffe, with its climate still finer and more appropriate for physical researches than that of Italy.

* Proceedings of Royal Society London, vol. xi. p. 305.

† Philosophical Magazine 4th series, vol. xxxi. p. 337.

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but the *first* making of it, and with a prism, is without doubt due to the late Principal Forbes so long ago as 1839; for he described, though from a different sort of steam experiment, each and every one of all these same facts in detail, including a long discussion on the colours of the atmosphere in consequence, in two papers contained in the Transactions of the Royal Society of Edinburgh, vol. iv. pp. 273–291,—of which no mention is made by M. Janssen.

I have thought it a duty therefore incumbent on me, who had the honour of receiving a copy of Principal Forbes's papers from himself in 1846, not only to bring up again before the public the claims of the late eminent physical philosopher of Edinburgh to the prism discovery of the whole of the above-mentioned chromatic characteristics of steam both in art and nature, but to repeat the more refined *spectroscopic* portion of his observations in the one point where alone they differed in result from M. Janssen's; viz. as to the production of black lines on the otherwise continuous, though partial, spectrum of transmitted light; for, while M. Janssen positively states that he saw such lines clearly and abundantly, Principal Forbes though seeing all the phenomena of colour just as well and using a slit apparatus and looking for lines, could not see them.

Experiments on Steam After Principal Forbes.

Through the obliging intervention of Mr Alexander Slight, engine-works, Leith Walk, and the kindness of Mr Thomas Wheatley, locomotive superintendent of the North British Railway, I was enabled to experiment on a jet of high pressure steam at St Margaret's Railway Works, both on June 28, and on June 30, 1871.

Principal Forbes had already found, when employing steam from a ¼ inch nozzle, that the red colour of light transmitted by it, increased according to pressure, up to the extent of his highest steam, viz., 50 lbs. on the square inch; and in such jet was strongest at about 20 inches distance from the place of escape. We, therefore, on our first day extended the range of pressure to 100 lbs., and finally to 130 lbs., with jet distances varying from 20 to 36 inches—the nozzle of escape being still 0·25 inch in diameter, and all passage ways between it and the boiler being somewhat larger. But on the second day we used steam of the constant pressure of 130 lbs., at a fixed distance in the jet of 34 inches; and it may be sufficient to describe the results of this day only.

The apparatus I may say worked exceedingly well throughout the experiment—thanks in a great measure to Mr Wheatley, jun., who had assisted in making the arrangements as sanctioned by his father, while all the officials at St Margaret's Works vied with each other and with their chief in assisting. A special railway engine was told off to get up its steam in the great circular engine-house, which steam was then brought down to the platform between two engines by a 12-foot copper pipe and there led into a fixed nozzle for vertical escape prepared by Mr Slight.

Mr Slight likewise mounted there, on the said platform, and about 11 inches behind the jet, a large lantern containing an intense light given by ten fish-tail gas burners arranged one behind the other; while at 56 inches distance in front of the jet, and looking through it at the gas-light was the object glass of the collecting telescope of my spectroscopic apparatus, prepared last winter for auroral observation but now focussed for the centre of the gas lights.

Besides Mr Slight and myself, my Wife was also present, while both Mr Wallace and Mr Nichol from the Observatory assisted.

The comparison spectrum, (and only method of approximating to measure,) consisted of daylight from bright white clouds, obtained through a door close by and reflected into the small prism of the spectroscope so as to be visible simultaneously, through part of the same slit and prisms, with the gas and steam spectrum.

Not only too was the daylight spectrum thus well seen as to its colours, but the several lines C, D, E, b^1, b^2, b^3 and ^{4},F, G were abundantly visible, B occasionally so, and many other finer lines as well. This was of course a distinct proof that the spectroscope was then and there in a state for showing fine lines, if they had existed either in the continuous spectrum of the gas-jets or could be produced therein by passing through a steam jet of 130 lbs. pressure: while, if any lines had appeared of the exceeding blackness of some of the Telluric lines which crop out in the spectrum of a setting sun, they would have been in that apparatus exceedingly distinct.

Each person present was then invited to look into the spectroscope and behold there, in the lower part of the field of view, the daylight spectrum with its well known lines, and in the upper, the gas light spectrum, considerably brighter than the other but without any lines; (see the third and lowest division of plate 8 or 55). The steam jet was then allowed to play for several minutes between the observer and the light, its effect on the gas-spectrum being noted, and then the pure gas-spectrum was restored by cutting off the steam.

This experiment was performed for each person in succession, *firstly* with a low dispersive power easily including in one field of view the whole spectrum, if visible, from A to H, or even from Y to K; and *secondly* with a higher dispersive power showing little more than from B to E at one time.

Every observer agreed that no visible lines whatever were produced by the steam, but only certain chromatic effects of broad surface character, and nearly as follows; viz., all the violet and almost all the blue disappeared, also the least refrangible part of the red end,—leaving thus a very much shortened spectrum; but shortened far more at the violet, than the red, end; while within the portion left outstanding or from between B and C to nearly as far as F, both the true yellow and all the vividness of the

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orange seemed to be struck out,—the whole red or reddish part of the spectrum consisting of a sort of bluish rosy pink, until it passed at once into green, at a little beyond D, with hardly any interstitial yellow appearing at all.

After perfectly satisfying ourselves of these results from *steam*, we then passed the same gas-light through a flat-sided glass pot filled with water, boiling hot and taken out of the same engine which had previously been rendering up its steam; but no spectral change on the pure gas-light through air could then be detected—either in the shape of lines, or in alterations of colour, or shortening of either end of the spectrum; only longitudinal markings appeared, due to the roughness of the glass forming the pot.

Hence these recent experiments have not altered, but have eminently confirmed those of the late Principal Forbes in 1839; showing most undoubtedly that not water, but steam in a certain transitional state between an invisible gas and an opaque cloud is necessary to produce the chromatic effects on the spectrum described above and also represented in the third division of Plate 8; but that no lines are visible when the experiment is conducted merely on the scale of one jet of steam from a quarter inch nozzle.

Would lines then be seen if a dozen such jets, or one very large jet, were to be employed?

That I cannot say, but would only warn anyone who would try, that he must set up an intensely powerful light for transmission, seeing that even our ten-flame gas burner looked very dull when seen through the one small steam jet; which rose indeed 10 to 15 feet high in the quiet air of the engine-house and was feathered more or less by visible vapour through its whole extent, save only the first 2 or 3 inches from the nozzle, and there the colour effect disappears.

Of Steam Spectral Lines, after M. Janssen.

Hence while M. Janssen must evidently yield the priority of his discovery (by a different sort of experiment though it be) of the colour of steam, to Principal Forbes,—he stands alone, so far as I know, in all the world as being the only man who has yet seen the black lines produced in the spectrum of steam artificially raised. And as, also in so far only as I know, he has not yet published either chart, or numerical measures of these lines,—all the world must go to him for information as to where, precisely, in the spectrum those lines are situated.

He has indeed, or his friends have for him, described his steam lines generally *in words* as being in the same places as the telluric lines of Sun-set. But that is not sufficiently definitive for the present day, wherein, while some telluric lines once said by M. Janssen to be due to watery vapour, have been recently pronounced by M. Angstrom of Upsala to be due to carbonic acid gas,—I am even inclined to doubt whether they are telluric at all.*

But besides this, M. Janssen himself has thrown a not slightly disquieting aspect over the whole affair of his experiments on steam and from a most unexpected quarter; as thus

(1.) In 1866 M. Janssen had declared in the Comptes Rendus that his acquisition of the spectrum of watery vapour would enable him to tell whether that capital element of life was contained in the atmosphere of other planets and stars: and he at once announced that he had already ascertained that it was wanting in the sun. A similar conclusion in so far, to that which I recently had the honour of laying before the Royal Astronomical Society, but from a totally different spectroscopic feature, in my paper on "Auroral and other faint spectra under small dispersion."

(2.) But in 1869, and again in the Comptes Rendus, vol. 68, p. 1546, M. Janssen, while he gives the gratify-

* In the Comptes Rendus, vol. 63, p. 200, Aug. 1866, M. Janssen states that besides other lines specified, the very notable line A is due to watery vapour.

In the following year, and in the same publication, M. Angstrom announces his discovery that both A, and *a*—while still telluric—are due not to watery vapour but to some compound gas, most probably carbonic acid.

Thereupon M. Janssen in the same volume,—in so far as I understand his explanation, not very satisfactory to me even after having read it over two or three times,—M. Janssen, I say, admits what M. Angstrom tells, but claims priority for himself, insomuch as he had, when mentioning what aqueous vapour does touching telluric lines, in a manner *quantified the predicate*, and thereby retained a broad margin for any other possible gases.

For myself, since I have been able, with properly arranged coloured glasses, to see both A and *a* as well in a high, as a low, sun spectrum,—I should be glad to hear what are the proofs obtained elsewhere that these lines are telluric and not solar.

And here I beg to be allowed a word of explanation.

In a low sun-spectrum the lines, say those several finer lines composing the so called line, or really band of lines forming *a*, do indeed appear to be thicker and blacker than with a high sun spectrum: but, as it seems to me, only because they are then seen under more favourable circumstances of accompaniment and juxtaposition of light, by means of the chromatic effect of the whole atmosphere shutting off all stray illumination far more effectually than can be done artificially by any arrangement of coloured glasses attached to the spectroscope: the effect being not so much a direct one on the lines themselves, as an indirect one on the light behind, and on either side of them. Thus with certain combinations of coloured glasses it can be easily shown, that according as there is one cobalt-blue glass less or more, the line C is made to appear either half as broad only, or nearly double as broad, as B; B then remaining constant, and C being the variable. But in such case it is also easy to recognise, that whenever C is seen narrow, its spectral background is very bright; but that when it is seen thick and broad, the cobalt-blue glass has caused a local darkening to come over that part of the background; *i.e.* the background of C, but not extending so far as B.

Again some other occasional changes in spectral lines appear also to be fictitious, and to depend largely on mechanical impurities in the air: for after having been accustomed in the winter time, when looking at the sun through dense smoke of a city, to see B, *a* and the group more refrangible than D, dirty and like old dusty cobwebs confusing each other,—yet with the self-same apparatus in summer time when the sun set to me, not amongst chimneypots but in pure air over sea and distant hills, each and all of these lines were sharp, clean, separate and distinct, or like so many individual fine black wires held before a clear and bright sky.

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ing intelligence that he has, from his temporary mountain observing station in the Himalayas, discovered several stars containing watery vapour,—yet adds thereto, that the spectrum of watery vapour in these stars is so much more strongly marked than anything he has been accustomed to, that he must repeat his chamber experiments on steam, employing greater thicknesses and densities of it than before.

THE COLOUR OF CERTAIN STARS.

In one of Dr Huggins' early investigations, already become classic in the annals of spectroscopy, he mentions that the spectrum of an orange coloured star was marked by having many strong black Fraunhofer-lines in the blue and violet; which lines, by necessarily cutting off or eating up the chief part of the blue and violet, leave the red, yellow and green outstanding, whence was produced a resulting orange light for the whole star. And again a blue star, was found by him to give a spectrum with many strong black lines in the red and yellow, cutting off therefore the chief part of that coloured light, and leaving the blue and violet predominant.

This was at least a very simple theory of coloured stars, dealing as it did with Fraunhofer's black lines and their spectral distribution, only.

But M. Janssen records (Comptes Rendus, vol. 68, p. 1546) that the stars in which he found proofs of watery vapour, were very generally *orange* and *red* stars; while, of watery vapour as contained in the telluric atmosphere, he had previously announced that its characteristic black lines are at the *red and yellow* end of the spectrum. Whence a conclusion can only be drawn totally at variance with that of Dr Huggins,—or, that a red and orange star may sometimes have its principal black lines not in the *opposite*, but in the *same*, end of its spectrum.

This mutual contradiction of two of the greatest spectroscopists of the age may lead to some further resources of Nature, for producing colour, being discovered, other than the black spectral lines acting by negation only. And herein, Principal Forbes', and the recent St Margaret's works', experiments on steam, as well as M. Janssen's own, may be worthily brought into view; for these all testify that *before* any black lines are produced in the continuous spectrum of light passing through steam, a *chromatic* effect by a totally different, and we may say, a far more powerful agency, is produced.

Totally different I venture to suggest, because all the blue and violet range of the spectrum is stopped off without any visible sign of separate, distinct, black lines; and when such features do afterwards appear, they come out, not where the obscuration was densest and remains most complete, but, according to M. Janssen in the red part, where there has been no obscuration by surface at all.

Hence, unless it can be shown, that watery vapour surrounding the photosphere of a star, acts in a radically different spectral manner than when it intervenes between an observer and the incandescent carbon of a gas-light,—it would seem (and I speak here in doubt and with the view of eliciting information and deriving instruction) that its *first* effect must be an action, of which a Fraunhofer-line measuring apparatus can take no account.

Such stopping out of large spectral regions by shadow or surface obscuration might indeed at last, when carried to extreme, leave only bright lines, interstitial among such broad dark spaces, or the very polar opposite of a spectrum with black lines;—but meanwhile there remains the anomaly that for a steam-made *red* light, when its black lines *are* at length seen, they are said by M. Janssen not to be, where they ought to be according to Dr Huggins, in the blue and violet,—but, in the red and yellow!

More than ever necessary is it therefore that steam black lines should be accurately identifiable by place, and certainly distinguishable from other lines near them in the spectrum. Wherefore if M. Janssen should not speedily publish his observations, which it is believed are just such numerical observations of spectrum place as the world now requires,—it is much to be hoped that our own country, whose welfare is so largely bound up with steam, will speedily enable some of our native astronomers to experiment on watery vapour to an extent, and with a purity and power of spectral measure, that shall give us a standard British authority for what are, as well as what are not, steam spectral lines; and this not only in their reversed state or as black Fraunhofer lines, but, by appropriate experiments, as bright lines also.

C. P. S.

P.S.—Respecting Plate 8 of this Report, but 55 of Volume XIII., while I am desirous to warn readers once again,—that being based on eye sketches only, and of features so almost infinitely numerous, and totally anomalous both as to any order either of fineness or distance apart as are the Fraunhofer lines of the Solar spectrum, and with so little time allowed even by Nature to view those of Telluric origin,—the plate cannot pretend to be trustworthy for more than the leading features of the strongest lines,—yet I am bound to acknowledge the untiring anxieties and efforts of Messrs W. & A. K. Johnston, the scientific engravers, to represent not only all the details given in my original drawings, but such developments of them also as subsequent descriptions were able to assist them with. The same exceeding care, skill, and intelligent zeal will be found to characterise also their treatment of Plates 10, 53, 54 and others in Vol. XIII.; nor has the late much to be lamented death of one of the chief partners in the Firm,—though a profound loss which the world at large will feel and long deplore,—been allowed to interfere with the most indefatigable attentions being paid to fulfil even the very last of my desiderated revises.

C. P. S.

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APPENDIX III.

Financial Statement of the Royal Observatory, Edinburgh for 1871, with Details of the Annual Sums required to ensure the Efficiency of the Institution, as alluded to on pages E 111, E 112.

The whole of these sums are derived from Parliamentary Grants, and there are no others.

	Present Allowances from H.M. Treasury.	Additional Allowances sought from H.M. Treasury.
A.—PERSONAL SALARIES.		
(1.) The Astronomer Royal for Scotland, under the name, by a pay-office accident or convenience, of "Professor of Practical Astronomy in the University of Edinburgh" (an entirely Honorary or fictitious appointment as well for emolument as for any obligatory work connected with it), but in intention, and according to express statement under Royal signature in the present incumbent's own appointment during Her Majesty's Reign, and his Predecessor's appointment in the late Reign,—for the duties of the former, *i.e.* the Astronomer Royal's, office alone; or, for "applying himself with diligence and zeal to making Astronomical observations with the instruments of the Royal Observatory, Edinburgh, for the improvement of Astronomy, Geography, Navigation, and other allied sciences,"—documentary evidence of which appropriation of his time is ordered to be reported at stated intervals to H. M. Principal Secretary of State for Home Affairs: *per annum*,	£300 0 0	
(1.') The Astronomer Royal for Scotland, both by name and in intention, . (This is a late addition, accorded by Government, on account of the total insufficiency of the former sum, after an experience of 30 years, for the duties of the situation.)	100 0 0	£300 0 0
(1.'') A residence (nearly free) for the same officer at 15 Royal Terrace, Edinburgh. This is a new house, recently built by Government, containing several public rooms for the use of the Royal Observatory, besides the Astronomer's private apartments; and is so very much more suitable to Astronomical life and work than the Astronomer's former house, that it must be regarded as a most admirable move on the part of H. M. Government, and the chief boon they have conferred on the Observatory of the late Astronomical Institution of Edinburgh since they first came into use or possession of that building 37 years ago.		
(2.) The first Assistant Observer, after 37 years of service, *per annum*, . .	200 0 0	100 0 0
(2.') A free, but too contracted, residence in the tower called "the Old Observatory," within the grounds of the present Royal Observatory. An important situation to be occupied by a resident officer; but the present building is most defective, and urgently requires some improvement and extension for the permanent efficiency of the office and its holder.		
(3.) The second Assistant Observer, *per annum*, ...	100 0 0	100 0 0
(3.') Additional Meteorological computation pay, *per ann.*; increasing by £10 *per ann.* to £50, ...	10 0 0	
(3.'') *No* residence yet accorded, but held to be very desirable.		

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	Present Allowances from H. M. Treasury.	Additional Allowances sought from H. M. Treasury
B.—OBSERVATORY ALLOWANCES.		
(1.) For lighting, cleaning, warming, servants' wages, repair of instruments, book binding, postage, stationery, and *all* contingent expenses, except the architectural maintenance of the buildings, *per annum*, ...	£250 0 0	£550 0 0
(This sum, though more than it used to be, and though it has improved the internal condition of the Observatory greatly over its state several years ago,—is yet found to be sadly insufficient; for it allows of no purchase of new apparatus, no important improvements or salutary changes such as experience and use suggest from time to time, no special investigations of physical circumstances and difficulties which often crop up during long series of astronomical observations, no purchase of new books, not even the complete binding of the old and present ones, and limits the foreign correspondence.)		
(2.) For Meteorological computations for the Registrar-General of Births, Deaths, &c., in Scotland; also printing, stationery, &c., for the same, *per annum*, .	100 0 0	
(3.) The architectural maintenance of the Royal Observatory buildings is assigned by Government to the Office of H. M. Works, and is attended to by the local Superintendent thereof, R. Matheson, Esq., in a first-rate and most satisfactory manner.		
(4.) The printing of the Astronomical Observations is conducted, by order of Government, under the care and superintendence of H. M. Stationery Office, and is highly approved.		
(5.) There is a Board of Visitors to the Royal Observatory, Edinburgh, consisting of 10 Members, 5 official and 5 unofficial, but all of them decided on, and appointed by H. M. Government; the unofficial Members being so chosen as to represent both the late Astronomical Institution of Edinburgh which originated and actually built the present Observatory, and several other Associations, and Classes of Citizens, some of whom have in latter years been more or less donors to, and benefactors of, the Observatory, in its various efforts for *advancing* Astronomy. This Board receives a printed Report from the Astronomer once a year, and communicates thereon with H. M. Government, as represented by the principal Secretary of State for Home Affairs.		
The services of the Board are entirely Honorary, except in the receipt of a copy of the publications of the Observatory, and perhaps may remain so; but the Astronomer R. for Scotland considers that a salary for the Member who acts as *Secretary to the Board* would be highly expedient, in view of the more onerous and positive character of the duties which fall to his share, and require to be both promptly and punctually performed. C. P. S.		
Total additional allowance, as per Note on page R 112, to secure the efficiency of the Institution, ...		£1050 0 0

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APPENDIX IV.

ANNUAL MEANS FOR QUARTERLY EPOCHS, OF THE ROCK THERMOMETERS AT THE ROYAL OBSERVATORY, EDINBURGH, FROM 1837 TO 1871, GRAPHICALLY REPRESENTED ON PLATE 3 OF REPORT, BUT 12 OF VOLUME XIII.

Date.		t 1. 24 French feet deep Therm.	t 2. 12 French feet deep Therm.	t 3. 6 French feet deep Therm.	t 4. 3 French feet deep Therm.
		°F.	°F.	°F.	°F.
1837	·00	...	...	...	...
	·25	...	...	...	...
	·50	47·26	46·66	46·26	46·08
	·75	47·18	46·62	45·94	45·40
1838	·00	47·12	46·56	45·94	45·40
	·25	47·04	46·36	45·58	44·99
	·50	46·94	46·16	45·39	44·81
	·75	46·82	46·07	45·43	45·02
1839	·00	46·75	46·08	45·52	45·17
	·25	46·72	46·13	45·60	45·21
	·50	46·69	46·15	45·67	45·33
	·75	46·68	46·21	45·81	45·58
1840	·00	46·70	46·39	46·14	45·94
	·25	46·75	46·45	46·09	45·82
	·50	46·77	46·44	46·02	45·68
	·75	46·77	46·38	45·88	45·54
1841	·00	46·76	46·41	46·00	45·67
	·25	46·76	46·44	46·03	45·73
	·50	46·78	46·48	46·06	45·70
	·75	46·79	46·48	46·12	45·79
1842	·00	46·80	46·18	46·16	45·99
	·25	46·82	46·62	46·52	46·49
	·50	46·88	46·81	46·78	46·85
	·75	46·99	47·08	47·06	46·98
1843	·00	47·10	47·12	46·79	46·41
	·25	47·15	46·99	46·58	46·27
	·50	47·14	46·92	46·49	46·18
	·75	47·13	46·92	46·52	46·20
1844	·00	47·13	46·97	46·82	46·74
	·25	47·17	47·10	46·85	46·54
	·50	47·21	47·11	46·83	46·44
	·75	47·23	46·97	46·52	46·13
1845	·00	47·20	46·83	46·25	45·74
	·25	47·13	46·68	46·04	45·52
	·50	47·06	46·56	45·97	45·57
	·75	47·01	46·64	46·37	46·32
1846	·00	47·03	46·85	46·71	46·69
	·25	47·12	47·19	47·32	47·49
	·50	47·29	47·60	47·76	47·78
	·75	47·48	47·74	47·54	47·24
1847	·00	47·60	47·70	47·37	46·92
	·25	47·64	47·56	47·08	46·57
	·50	47·59	47·33	46·88	46·60
	·75	47·52	47·21	46·82	46·58
1848	·00	47·46	47·16	46·84	46·68
	·25	47·42	47·09	46·66	46·40
	·50	47·38	46·97	46·42	46·02
	·75	47·31	46·83	46·39	46·47

Date.		t 1. 24 French feet deep Therm.	t 2. 12 French feet deep Therm.	t 3. 6 French feet deep Therm.	t 4. 3 French feet deep Therm.
		°F.	°F.	°F.	°F.
1849	·00	47·28	46·95	46·56	46·33
	·25	47·27	46·88	46·53	46·34
	·50	47·25	46·86	46·61	46·52
	·75	47·24	46·82	46·47	46·26
1850	·00	47·23	46·83	46·52	46·33
	·25	47·22	46·91	46·66	46·49
	·50	47·24	47·00	46·92	46·49
	·75	47·28	47·15	46·92	46·82
1851	·00	47·34	47·22	46·97	46·75
	·25	47·38	47·21	46·91	46·66
	·50	47·40	47·26	47·02	46·80
	·75	47·44	47·28	46·98	46·69
1852	·00	47·46	47·32	47·09	46·82
	·25	47·49	47·42	47·32	47·20
	·50	47·55	47·48	47·28	47·05
	·75	47·59	47·43	47·02	46·60
1853	·00	47·59	47·25	46·79	46·47
	·25	47·54	47·14	46·56	46·10
	·50	47·48	47·03	46·60	46·10
	·75	47·41	46·92	46·47	46·28
1854	·00	47·38	47·06	46·74	46·56
	·25	47·30	47·10	46·84	46·74
	·50	47·41	47·18	46·92	46·75
	·75	47·45	47·25	46·55	46·42
1855	·00	47·44	47·01	46·38	45·85
	·25	47·37	46·89	46·35	45·95
	·50	47·30	46·70	46·22	45·78
	·75	47·23	46·68	46·25	46·07
1856	·00	47·19	46·78	46·44	46·22
	·25	47·18	46·72	46·26	45·79
	·50	47·14	46·67	46·34	46·11
	·75	47·13	46·79	46·55	46·30
1857	·00	47·15	46·85	46·64	46·48
	·25	47·20	47·05	46·86	46·98
	·50	47·30	47·34	47·42	47·54
	·75	47·43	47·67	47·74	47·73
1858	·00	47·59	47·88	48·05	48·14
	·25	47·75	48·05	48·10	48·06
	·50	47·86	47·73	47·71	47·34
	·75	47·88	47·77	47·56	47·44
1859	·00	47·87	47·76	47·49	47·21
	·25	47·86	47·70	47·42	47·19
	·50	47·85	47·64	47·26	46·90
	·75	47·82	47·38	46·64	46·00
1860	·00	47·71	47·02	46·18	45·58
	·25	47·54	46·71	45·81	45·20
	·50	47·36	46·43	45·62	45·14
	·75	47·20	...	45·80	45·52

Date.		t 1. 24 French feet deep Therm.	t 2. 12 French feet deep Therm.	t 3. 6 French feet deep Therm.	t 4. 3 French feet deep Therm.
		°F.	°F.	°F.	°F.
1861	·00	47·10	...	46·05	45·85
	·25	47·09	...	46·23	46·03
	·50	47·12	...	46·50	46·34
	·75	47·17	...	46·68	46·48
1862	·00	47·22	...	46·68	46·41
	·25	47·23	...	46·43	46·10
	·50	47·20	...	46·30	45·96
	·75	47·16	...	46·38	46·17
1863	·00	47·14	...	46·60	46·26
	·25	47·17	...	46·79	46·45
	·50	47·20	...	46·85	46·67
	·75	47·23	...	46·69	46·17
1864	·00	47·22	...	46·44	46·12
	·25	47·19	...	46·31	46·00
	·50	47·16	...	46·25	45·84
	·75	47·13	...	46·06	45·69
1865	·00	47·09	...	45·96	45·67
	·25	47·06	...	46·27	46·19
	·50	47·08	...	46·50	46·41
	·75	47·15	...	46·89	46·82
1866	·00	47·23	...	46·93	46·70
	·25	47·30	...	46·76	46·33
	·50	47·30	...	46·65	46·22
	·75	47·28	...	46·44	46·01
1867	·00	47·24	...	46·33	45·88
	·25	47·13	...	46·24	45·87
	·50	47·14	...	46·18	45·82
	·75	47·10	...	46·34	46·30
1868	·00	47·11	...	46·81	46·99
	·25	47·21	...	47·25	47·40
	·50	47·34	...	47·31	47·37
	·75	47·45	...	47·48	47·39
1869	·00	47·54	...	47·26	47·06
	·25	47·56	...	47·03	46·88
	·50	47·55	...	47·11	46·92
	·75	47·53	...	46·66	46·28
1870	·00	47·46	...	46·63	46·34
	·25	47·46	...	46·60	46·29
	·50	47·37	...	46·54	46·16
	·75	47·34	...	46·59	46·40
1871	·00	47·33	...	46·62	46·35
	·25	...	...	...	...
	·50	...	...	...	...

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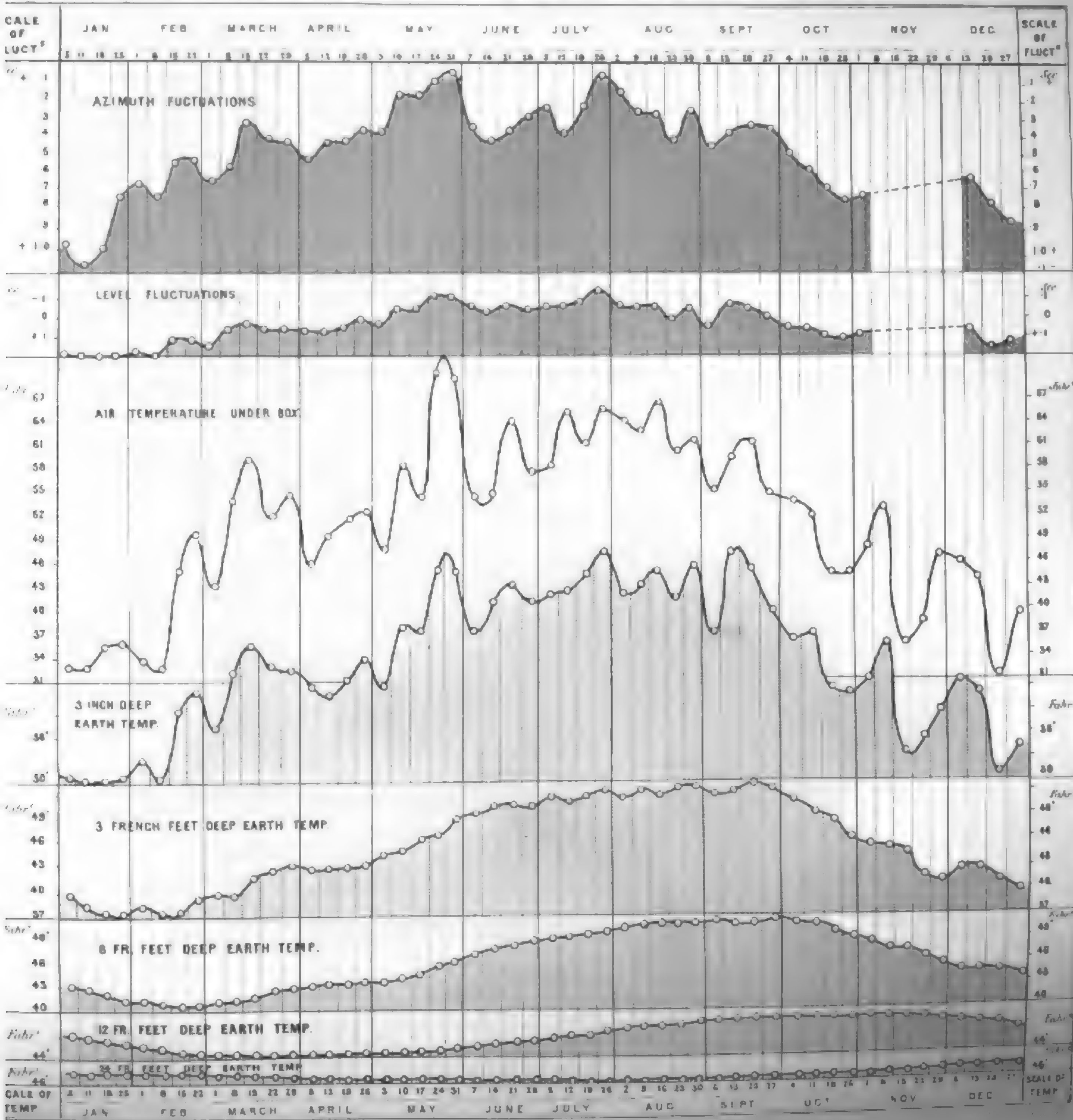
HISTORY OF A YEAR (1841) BOTH OF TEMPERATURE AND TRANSIT AXIS POSITION, FLUCTUATIONS, WITH THE ORIGINAL ADJUSTABLE BEARINGS.



R. OBSERVATORY, EDINBURGH.

HISTORY OF A YEAR (1850) BOTH IN TEMPERATURE, AND TRANSIT AXIS POSITION, FLUCTUATIONS, WITH THE PRESENT UNADJUSTABLE BEARINGS.

Plate II

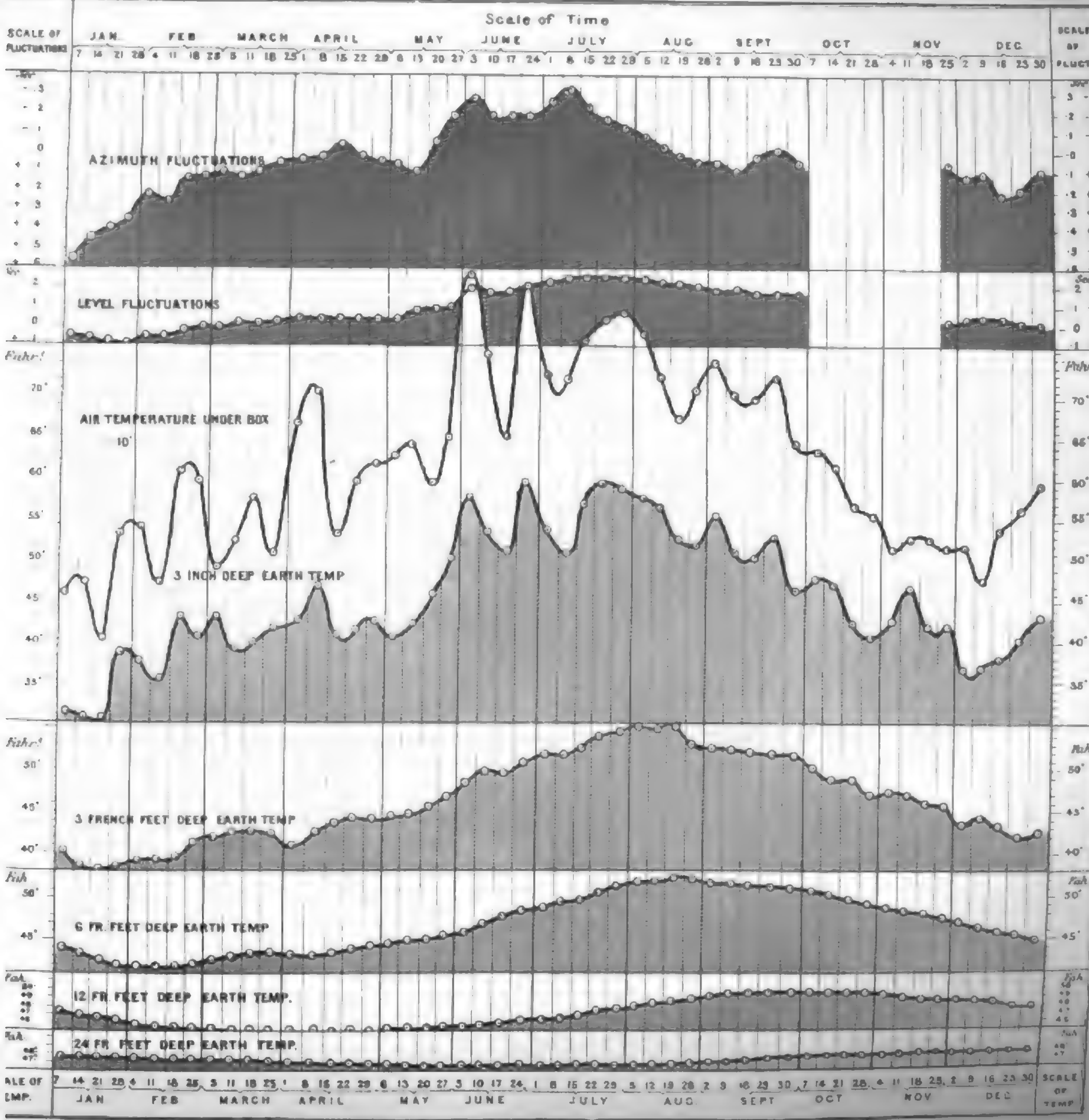


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Plate 3
See p. 856 Vol. XIII

CLE OF A MEAN YEAR BOTH OF TEMPERATURE, AND TRANSIT AXIS FLUCTUATIONS OF POSITION, ON A MEAN OF THE YEARS 1849 TO 1859.

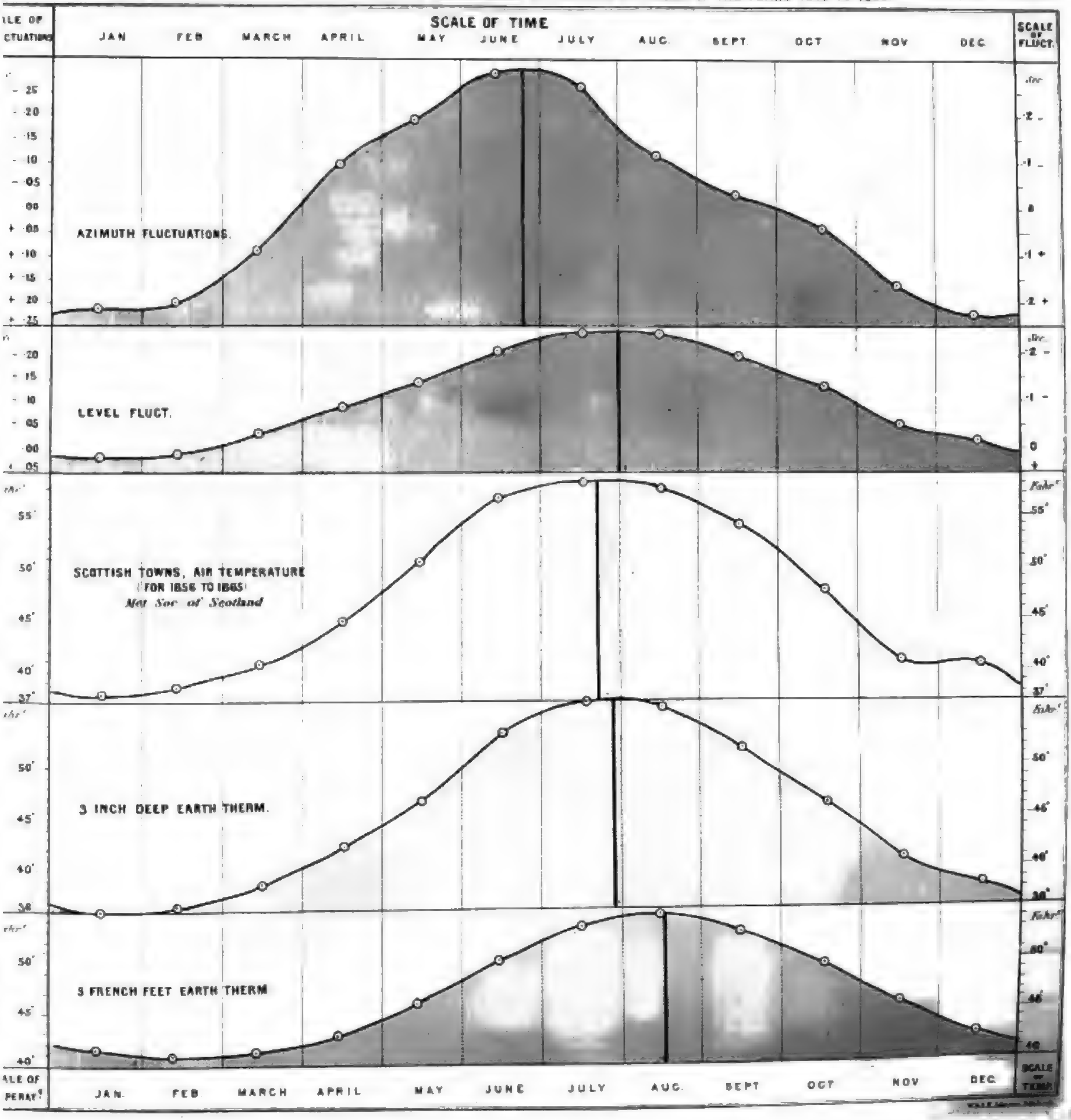

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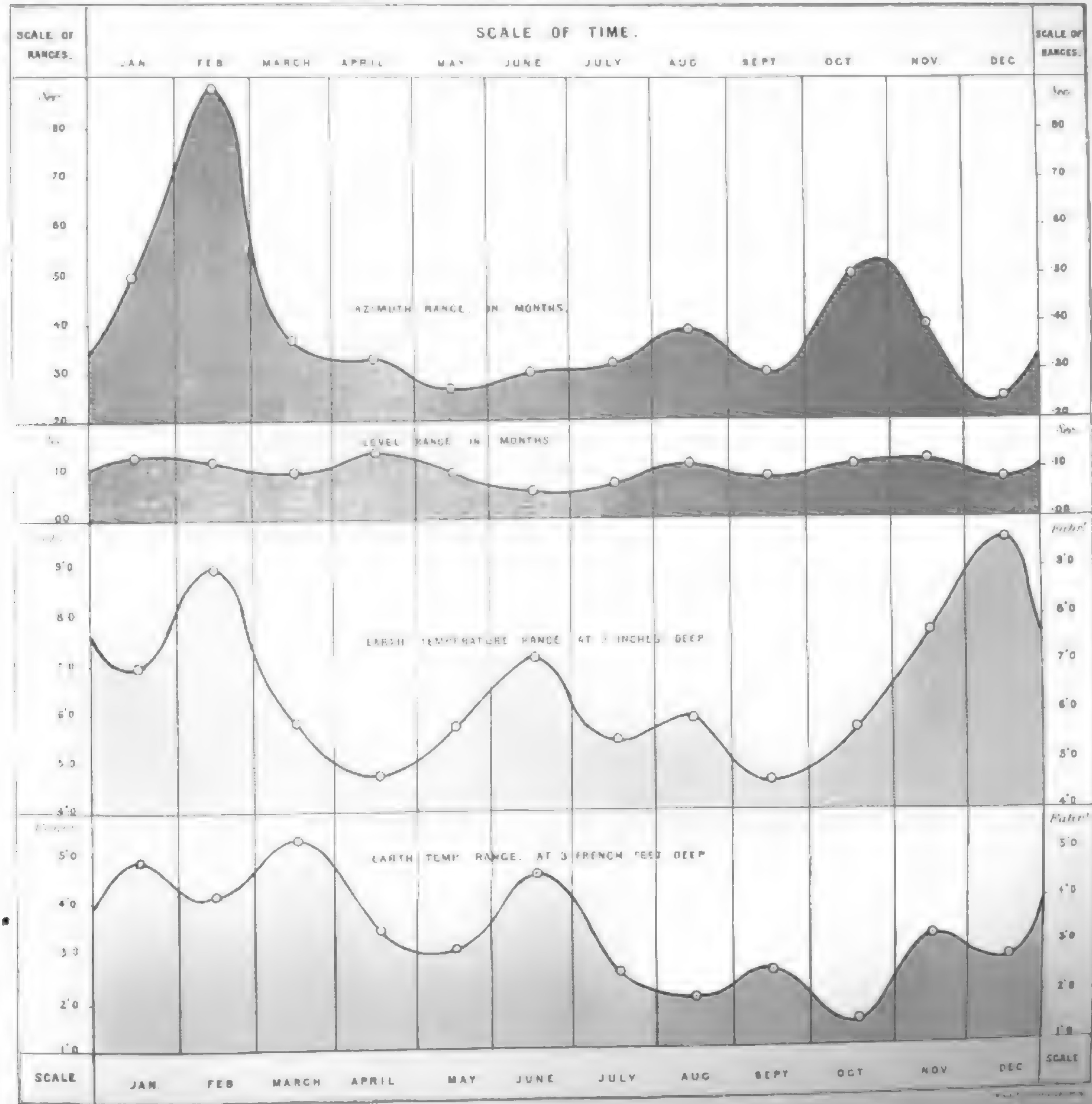
Plate 4

RANGES IN EACH MONTH, ON A MEAN OF YEARS 1849 TO 1859 OF TRANSIT AXIS FLUCTUATIONS, & TEMPERATURE.

See p. 354 Vol. XIII



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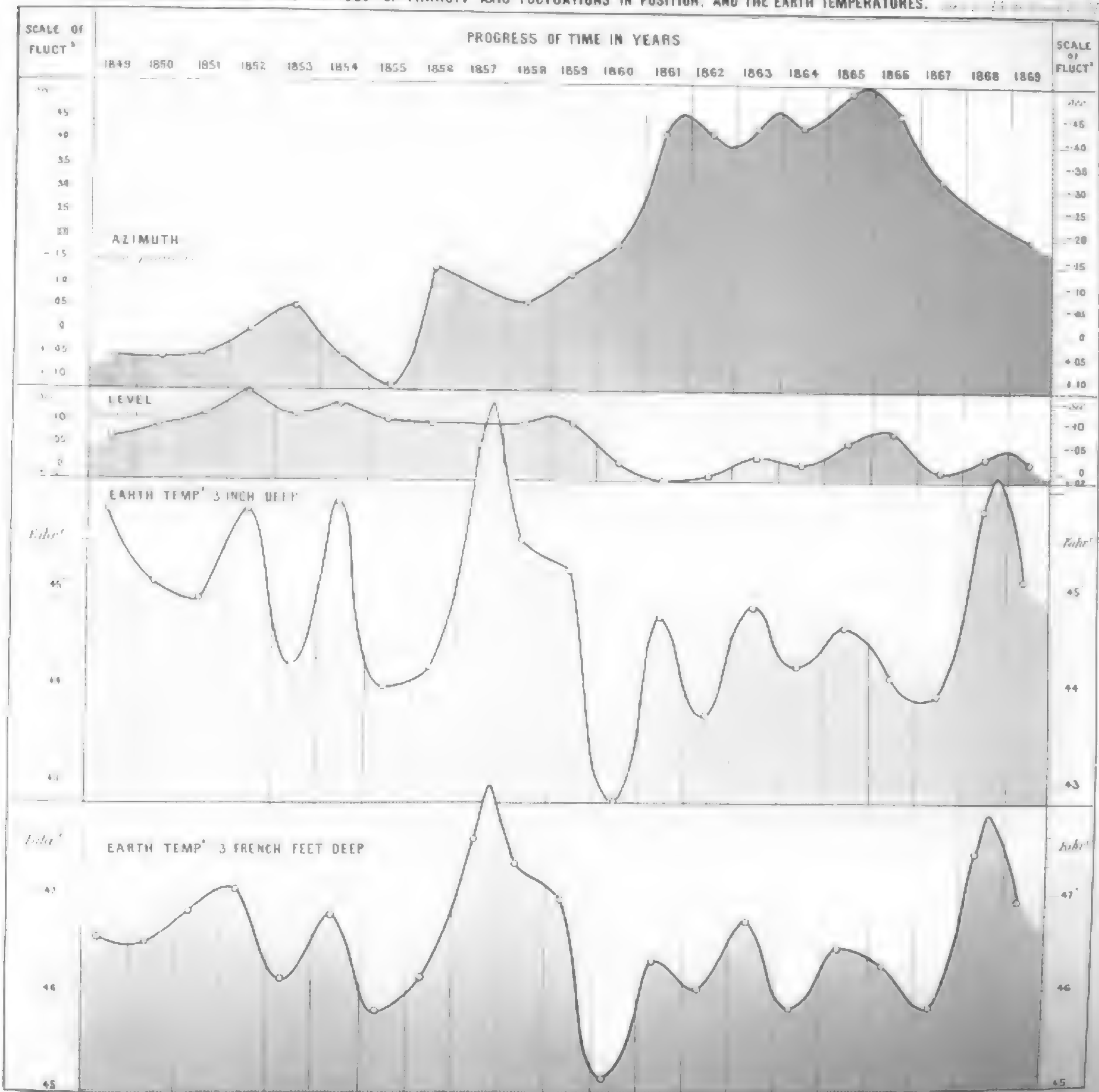
ANNUAL MEANS FROM 1849 TO 1869 OF TRANSIT AXIS FUCTUATIONS IN POSITION, AND THE EARTH TEMPERATURES.



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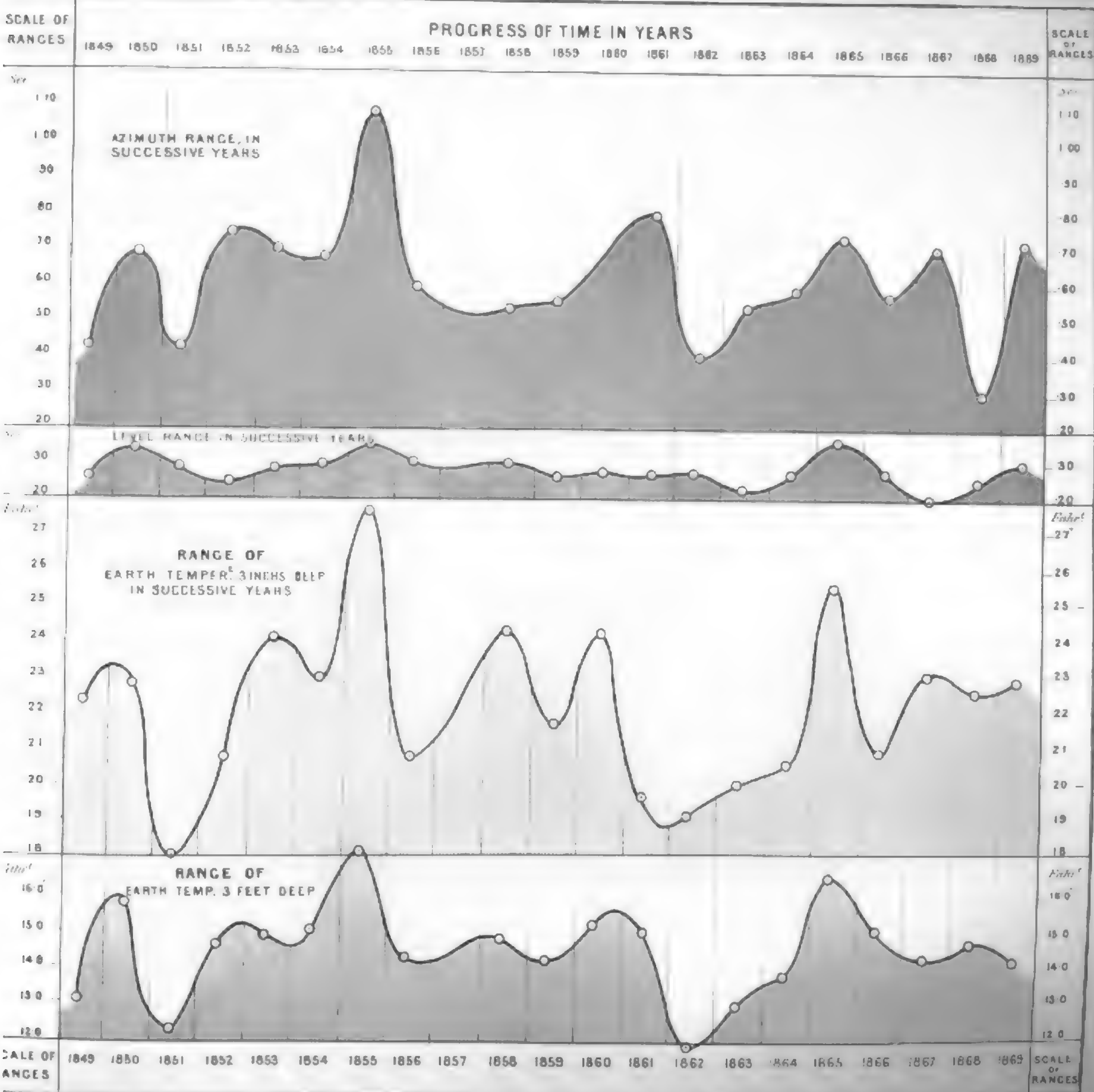
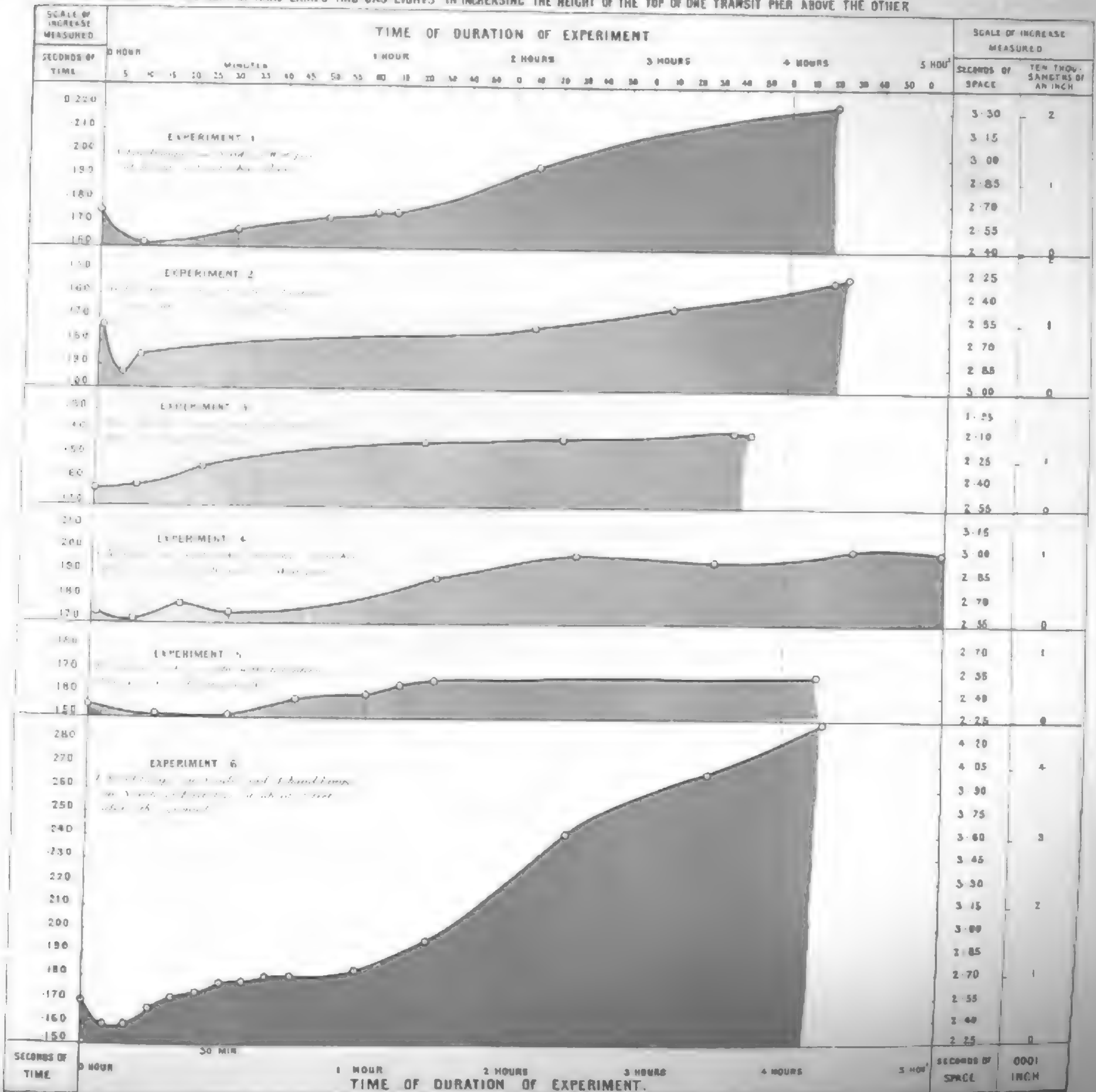
ANNUAL RANGES, FROM 1849 TO 1869, OF TRANSIT AXIS FLUCTUATIONS IN POSITION, AND EARTH TEMPERATURES



R. OBSERVATORY, EDINBURGH.

EXPERIMENTS ON THE HEAT OF HAND LAMPS AND GAS-LIGHTS IN INCREASING THE HEIGHT OF THE TOP OF ONE TRANSIT PIER ABOVE THE OTHER



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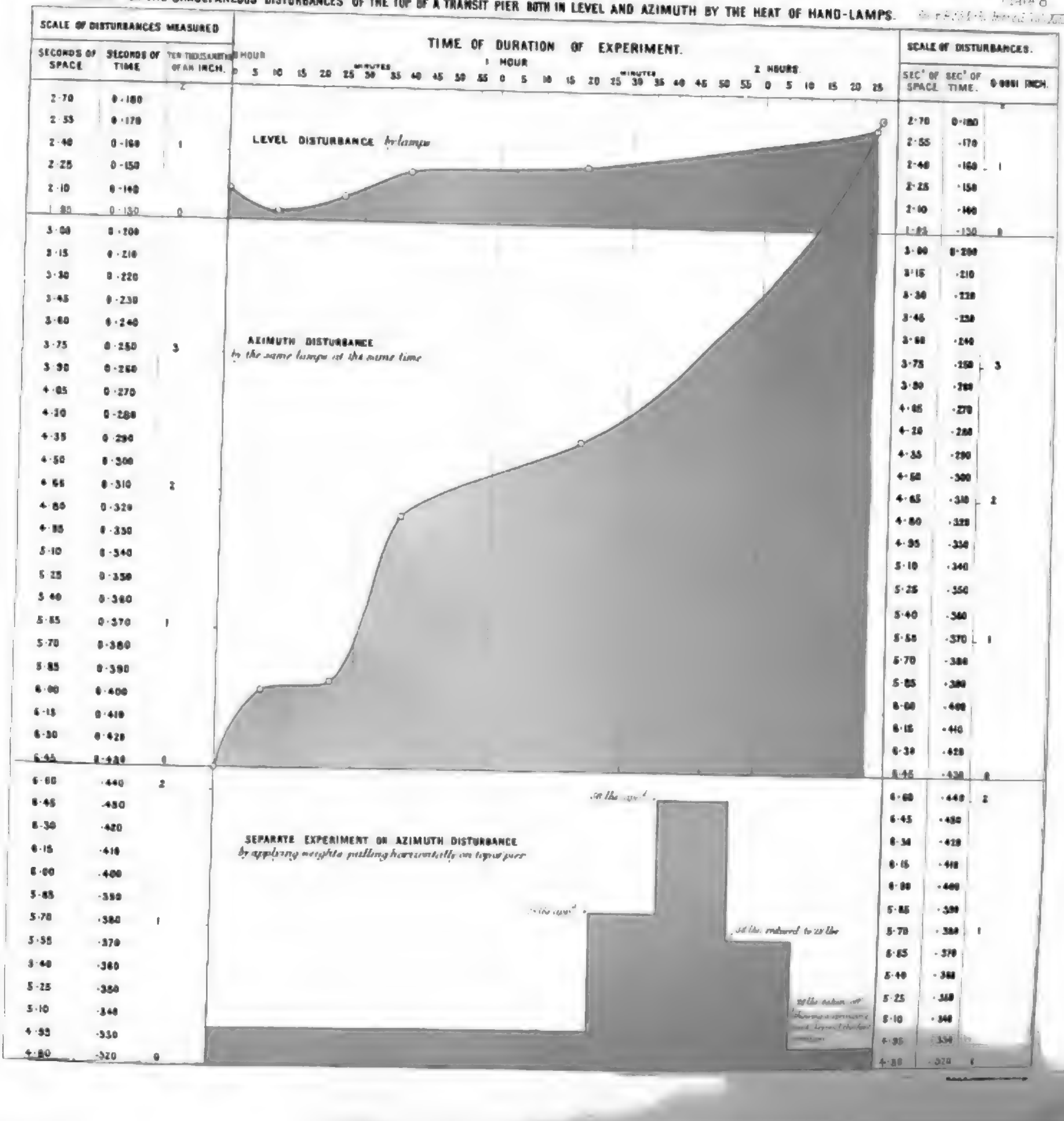
EXPERIMENT ON THE SIMULTANEOUS DISTURBANCES OF THE TOP OF A TRANSIT PIER BOTH IN LEVEL AND AZIMUTH BY THE HEAT OF HAND-LAMPS.

Plate 8



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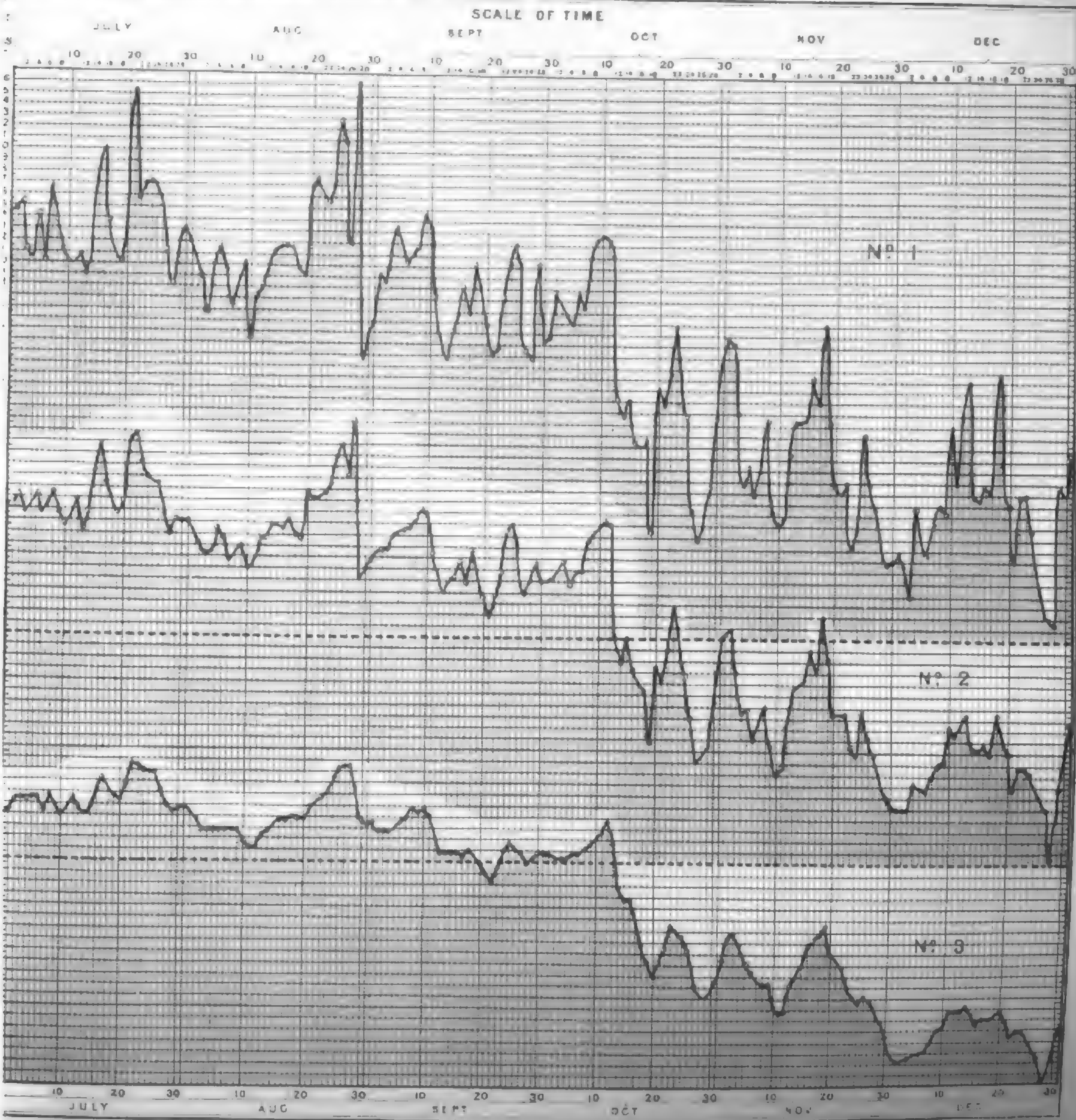
DAILY TEMPERATURES FOR 6 MONTHS TO SHEW THE RATE OF VARIATION IN
1. THE AIR IN THE SHADE OUTSIDE THE OBSERVATORY,
2. THE AIR INSIDE THE OBSERVATORY, AND
3. THE INTERIOR OF THE SIDEREAL GOVERNOR-CLOCK CLOSET — IN THE YEAR 1869.



ROYAL OBSERVATORY. EDINBURGH.

MAP ON THE SCALE OF $\frac{1}{2500}$. SHOWING THE POSITIONS OF,

1st The R. Observatory on the summit of the Calton Hill 2nd the Earth Thermometers thereat, and

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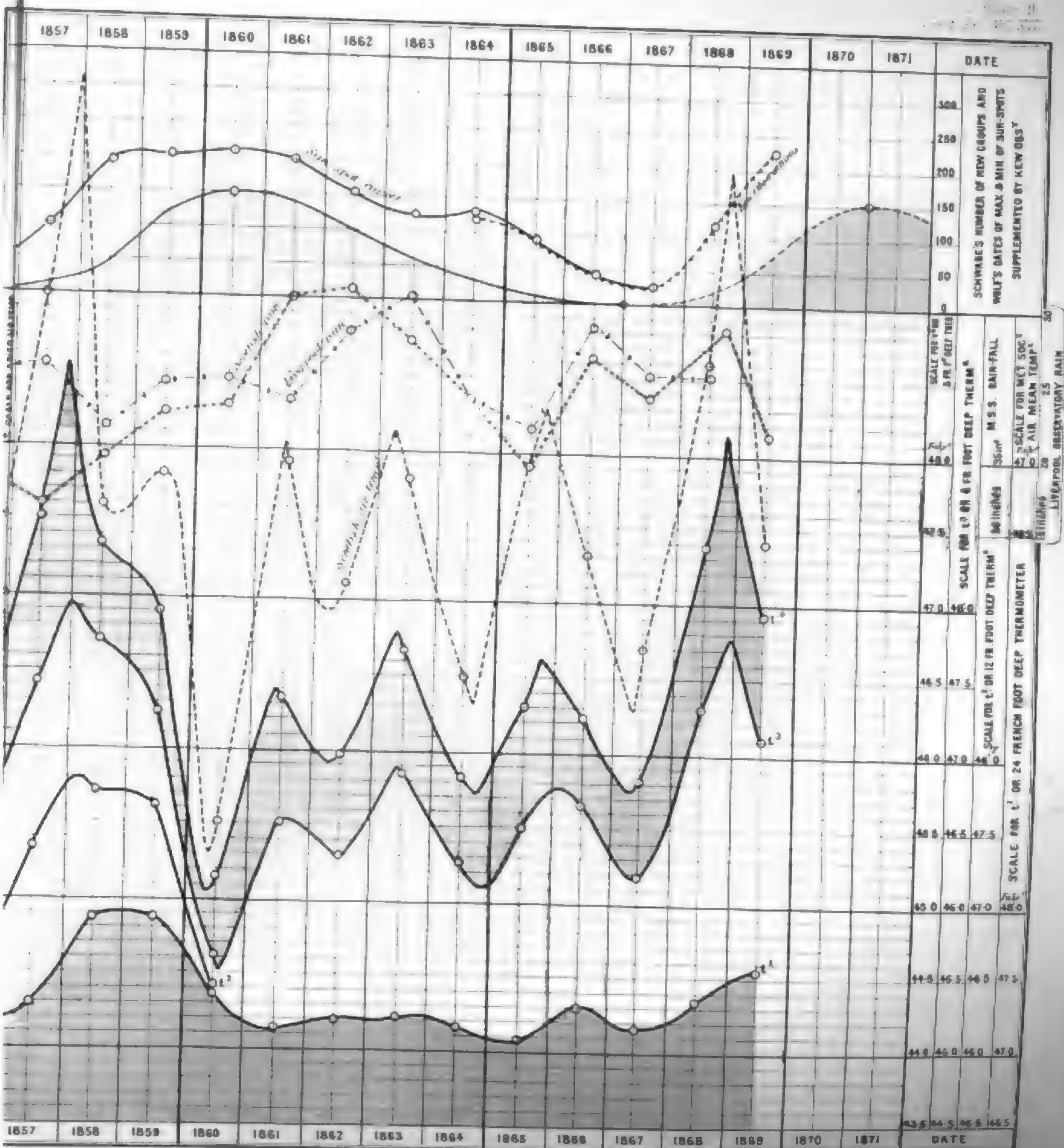
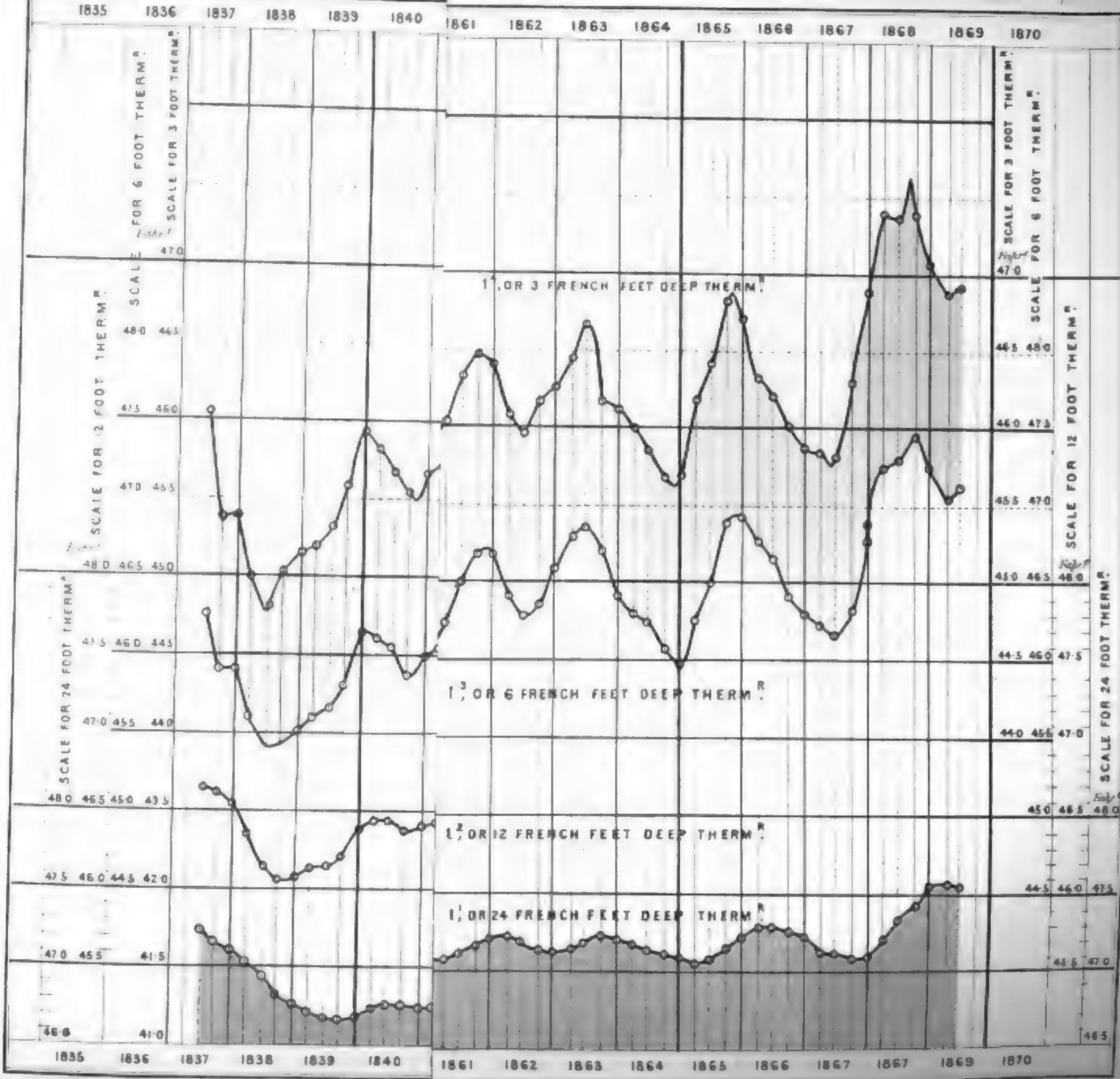


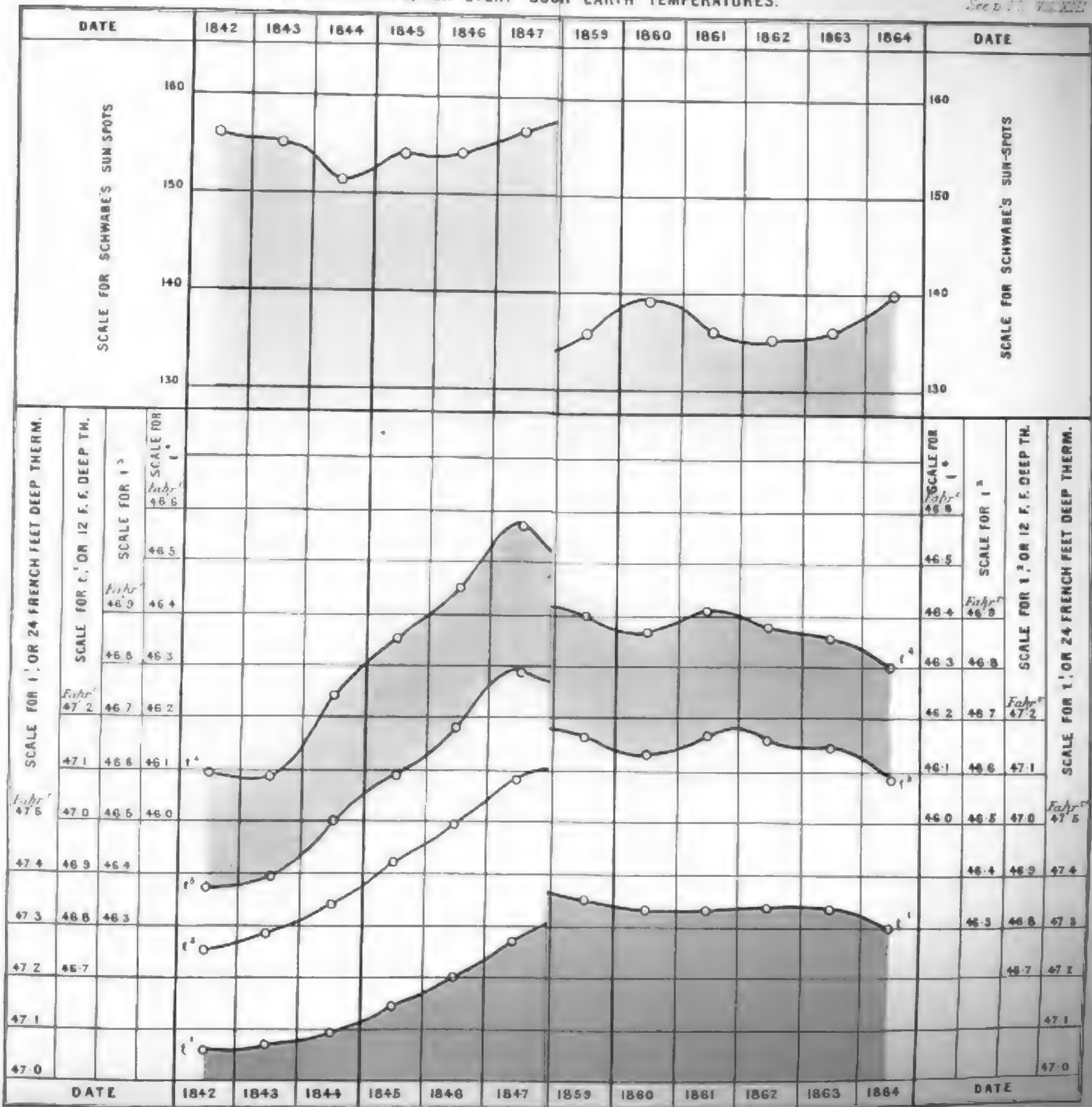
1857
1858
1859
1860
1861
1862
1863
1864
1865
1866
1867
1868
1869
1870
1871
DATE
SCHWABE'S NUMBER OF NEW GROUPS AND WOLF'S DATES OF MAX & MIN OF SUN-SPOTS SUPPLEMENTED BY KEW OBS^Y
SCALE FOR ℓ^3 OR 6 FT. FOOT DEEP THERM^R
M.S.S. RAIN-FALL
SCALE FOR MET. SOC^Y AIR MEAN TEMP^E
LIVERPOOL OBSERVATORY RAIN
SCALE FOR ℓ^2 OR 12 FT. FOOT DEEP THERM^R
SCALE FOR ℓ^1 OR 24 FRENCH FOOT DEEP THERMOMETER
300
250
200
150
100
50
0

N THE YEARS 1837 - 69.

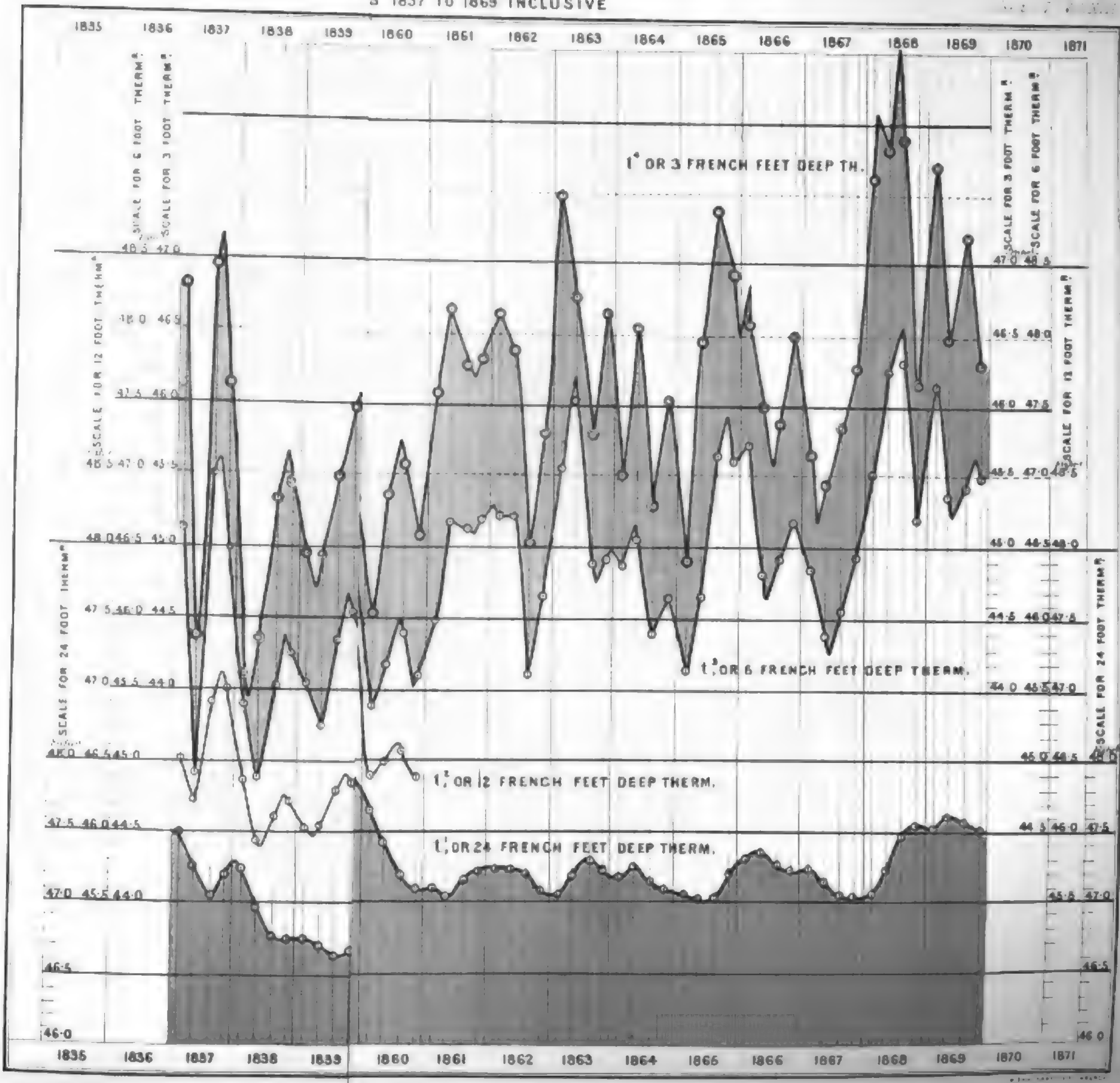


gle

ELEVEN-YEAR MEANS, FOR EVERY SUCH EARTH TEMPERATURES.

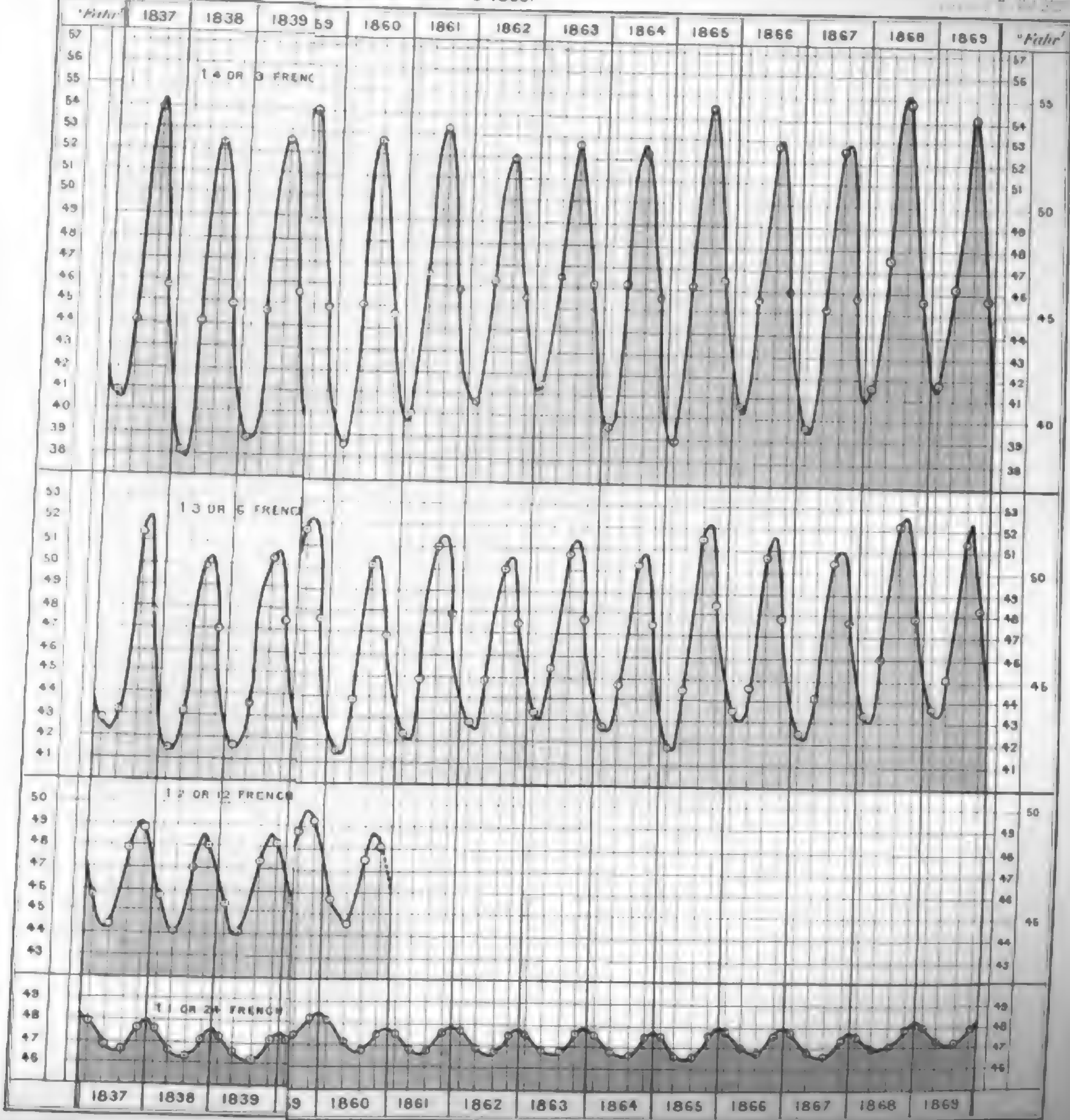


S 1837 TO 1869 INCLUSIVE



Digitized by

S. FROM 1837 TO 1869.



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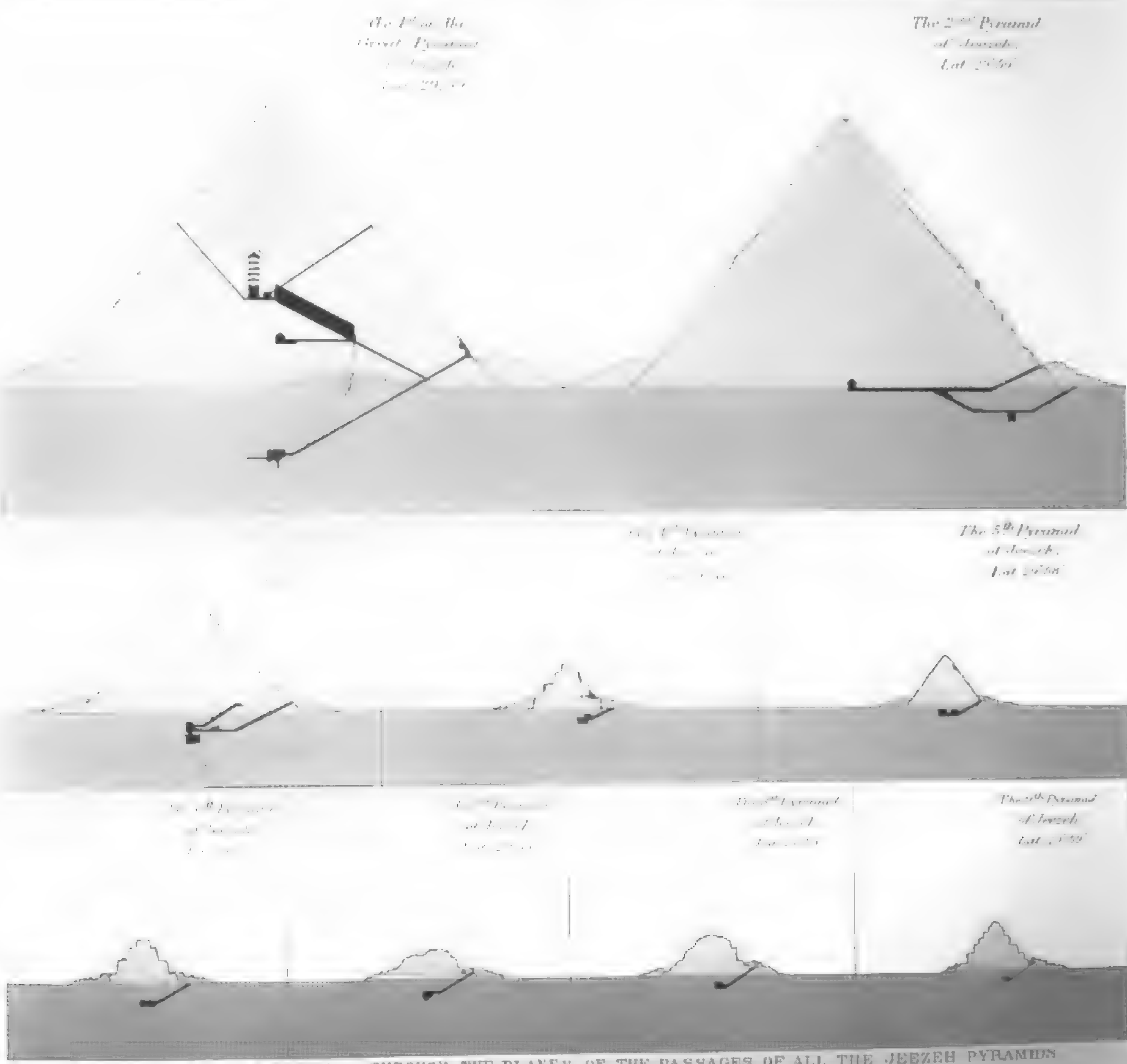
GREAT PYRAMID PLATES.

Plate II



VERTICAL MERIDIAN SECTIONS, THROUGH THE PLANES OF THE PASSAGES, OF ALL THE JEEZEH PYRAMIDS

(THE DOTTED TRIANGLES SHOW THE CONCLUDED ANCIENT SIZE & SHAPE)

OF BRITISH INCHES

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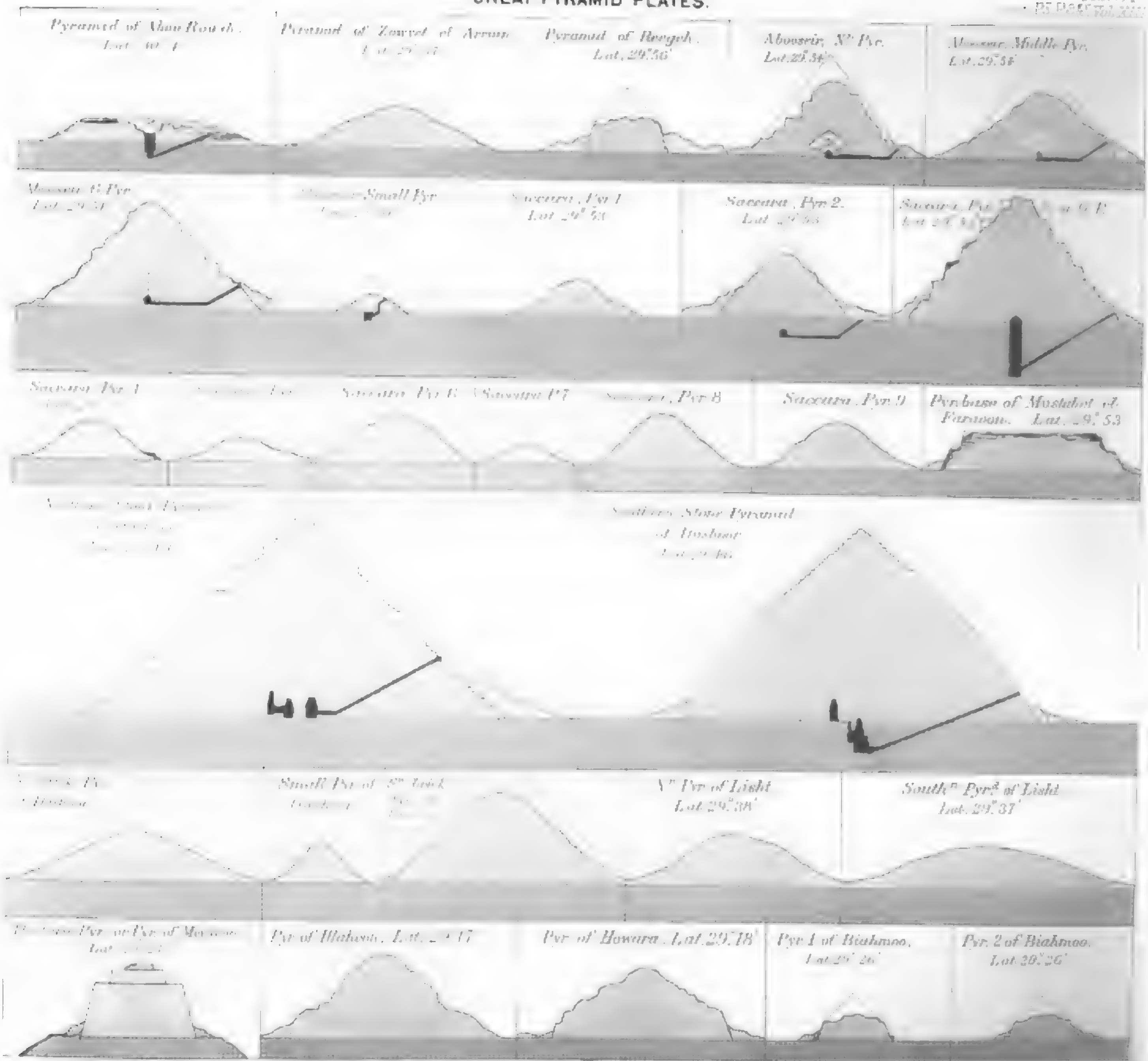
GREAT PYRAMID PLATES.

Plate 17



VERTICAL MERIDIAN SECTIONS, OF ALL THE EGYPTIAN PYRAMIDS, OTHER THAN THOSE OF JEEZEH

THE DOTTED LINES SHOW THE ANCIENT SIZE & SHAPE.

SCALE OF BRITISH INCHES.

1000 500 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10,000

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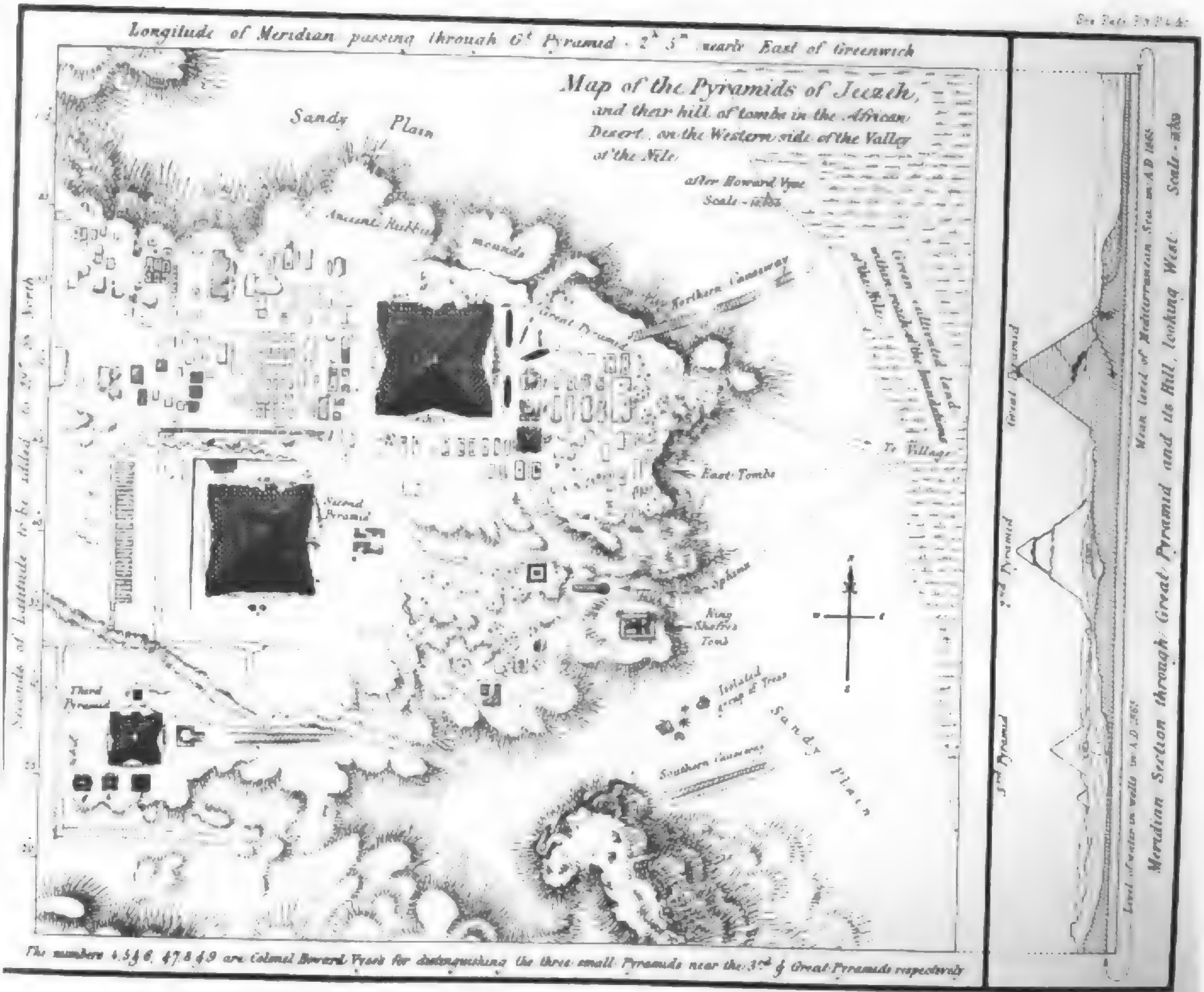
GREAT PYRAMID PLATES.

Plate 18



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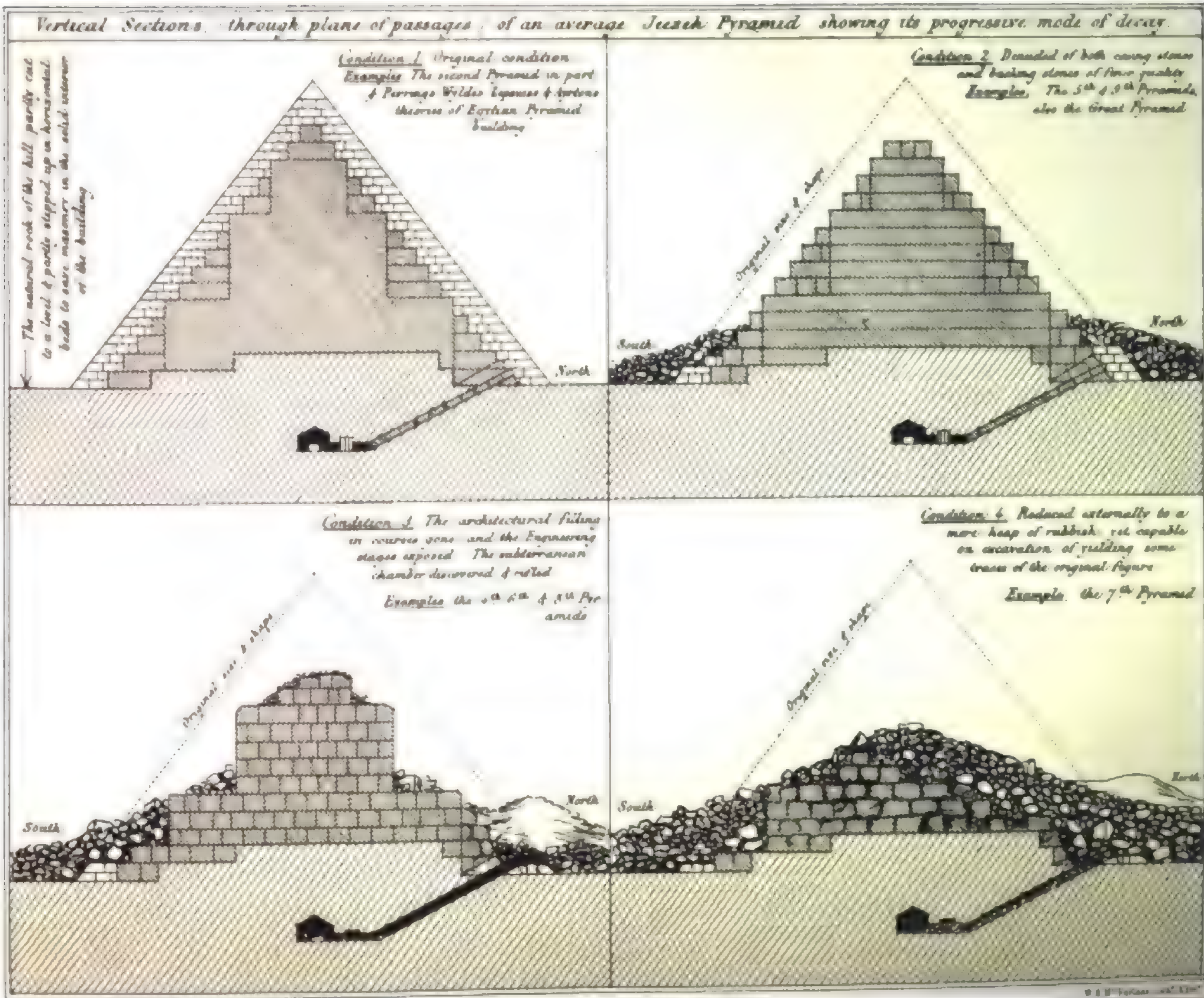
GREAT PYRAMID PLATES.

Plate 19
Vol XIII

See Page P.8, P.4, &c



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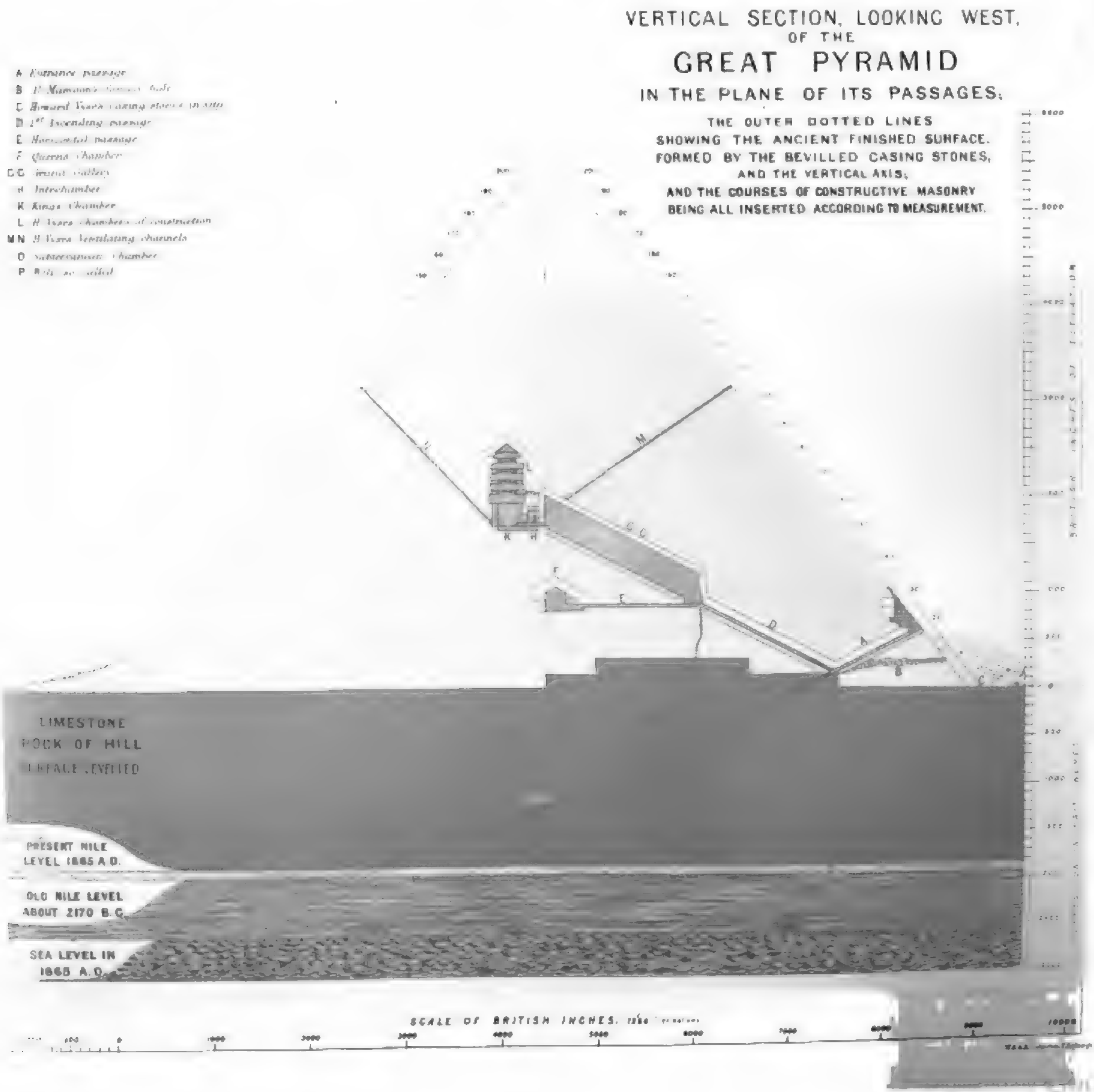
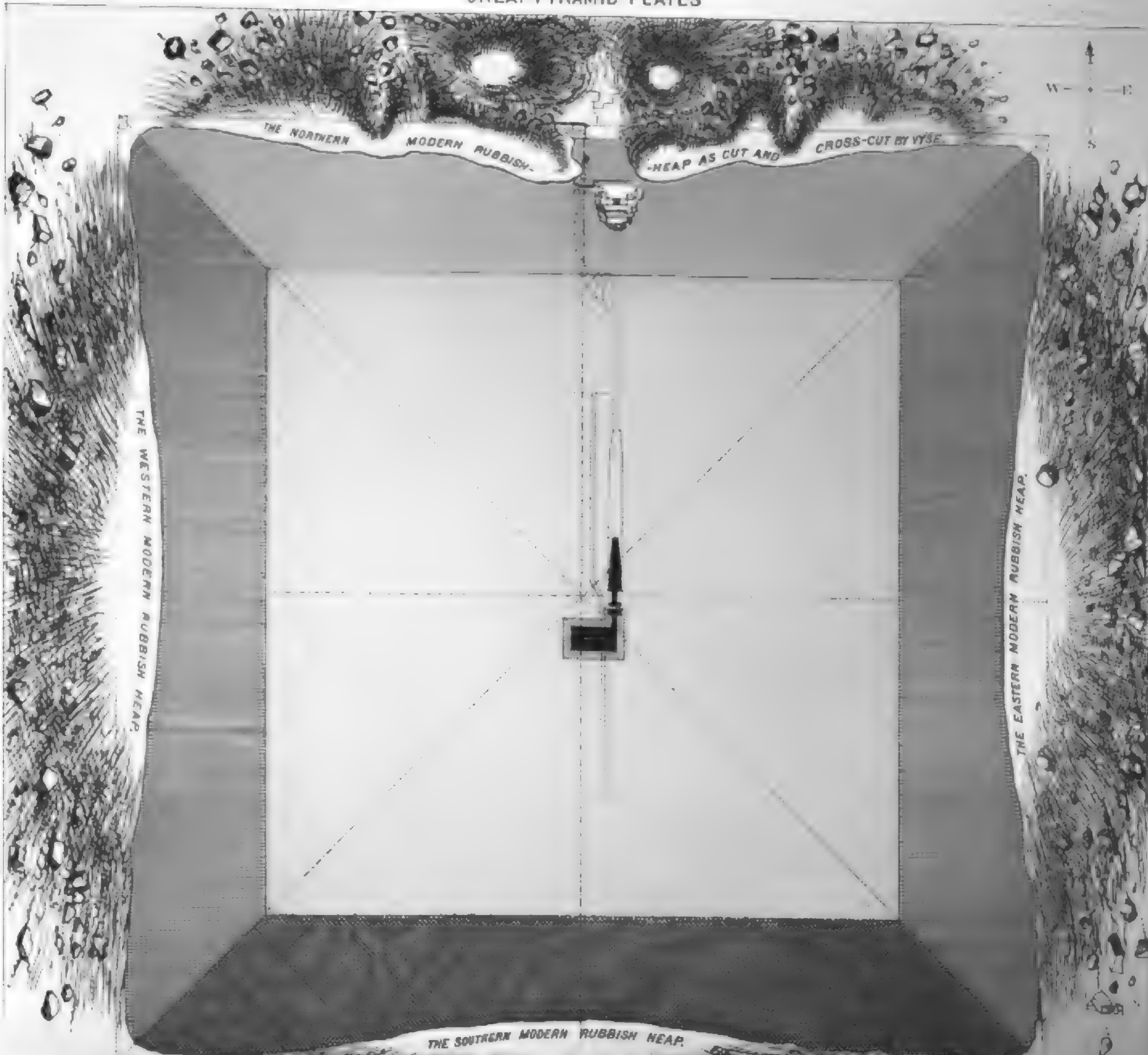


VERTICAL SECTION, LOOKING WEST,
OF THE
GREAT PYRAMID
IN THE PLANE OF ITS PASSAGES;
THE OUTER DOTTED LINES
SHOWING THE ANCIENT FINISHED SURFACE,
FORMED BY THE BEVILLED CASING STONES,
AND THE VERTICAL AXIS;
AND THE COURSES OF CONSTRUCTIVE MASONRY
BEING ALL INSERTED ACCORDING TO MEASUREMENT.
LIMESTONE
ROCK OF HILL
PRESENT NILE
LEVEL 1865 A.D.
OLD NILE LEVEL
ABOUT 2170 B.C.
SEA LEVEL IN
1865 A.D.
SCALE OF BRITISH INCHES.
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000

R. OBSERVATORY, EDINBURGH.

GREAT PYRAMID PLATES



PLAN AND HORIZONTAL SECTION, OF THE GREAT PYRAMID, ON THE LEVEL OF THE KING'S CHAMBER
SHOWING ALSO THE DIAGONALS AND DIAMETERS IN DOTTED LINES.

SCALE OF BRITISH INCHES, =

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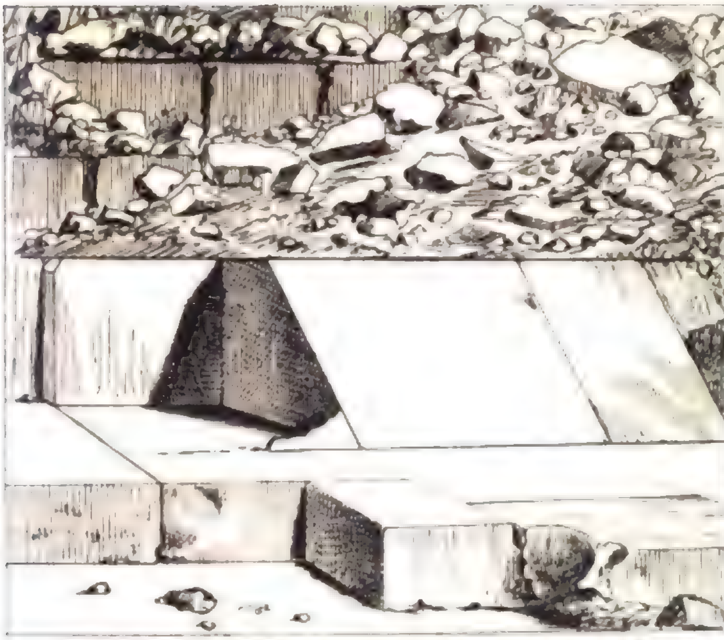
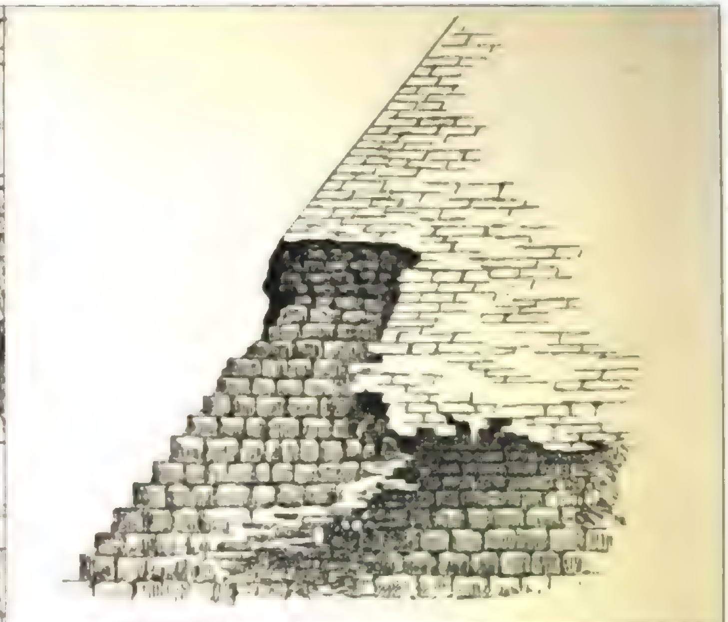
GREAT PYRAMID PLATES.

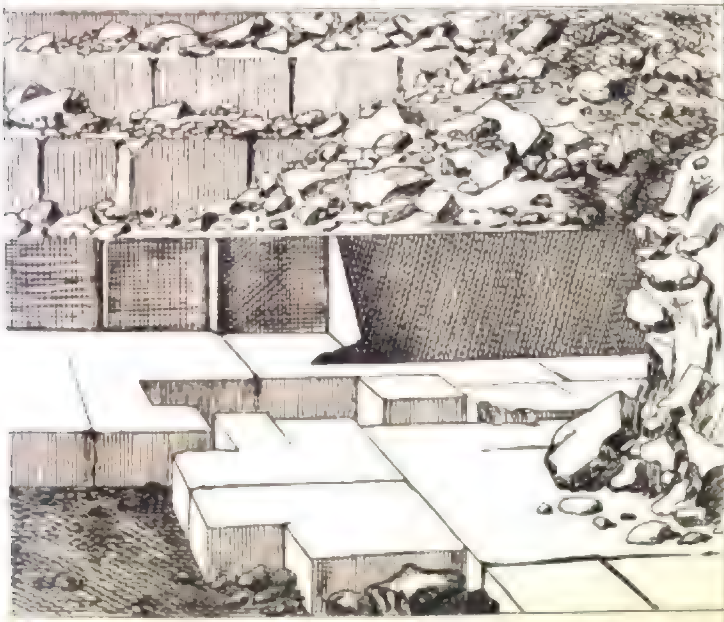
See p. P8, P44 &c. Vol. XIII



HOWARD VYSE'S CASING STONES IN SITU.
AT THE NORTH FOOT OF THE
GREAT PYRAMID, FROM HIS & PERRING'S LARGE PLATE XV.

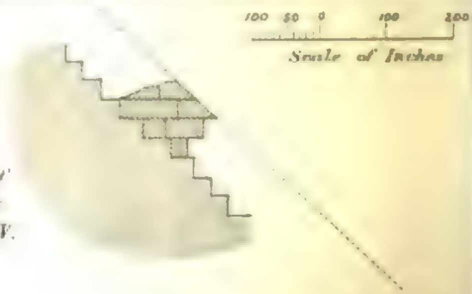


MASONRY COURSES, BACKING STONES & CASING STONES OF 2ND PYRAMID, NEAR THE UPPER PART OF S. EAST ANGLE.
FROM PHOTOGRAPH BY C. PIAZZI SMYTH, 1865.

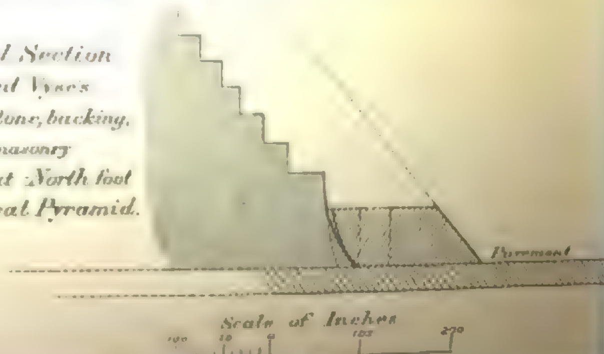


HOWARD VYSE'S CASING STONES AND PAVEMENT REMAINS IN SITU, OF THE GREAT PYRAMID
FROM HIS AND PERRING'S LARGE PLATE XIII. 1838.

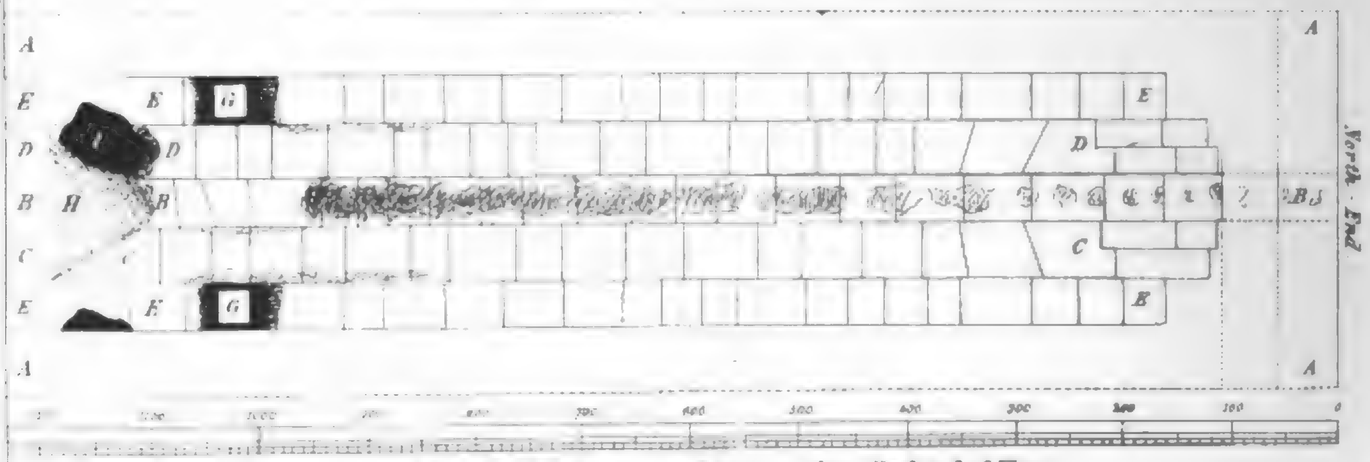
Vertical Section of masonry courses backing stones and casing stones on the North Stone Pyramid of Dashour. Howard Vyse & Perring Large Plate XIV.



Vertical Section of Howard Vyse's casing stone, backing, and the masonry courses, at North foot of the Great Pyramid.



Joints of Floor walls, and roof (repeated twice) of Entrance Passage
of GREAT PYRAMID
opened out on plane of the Floor or basement sheet.



Scale of British Inches for Size, and Distance from North end, of Floor.

A. A. A. A. the Basement sheet.
B. B. B. Line of Floor, of passage.
C. C. C. East wall.
D. D. D. West-wall of passage.
E. E. & E. E. Roof of passage, repeated twice.
G. G. Granite portcullis lower butt-end of, closing entrance to first ascending passage.
H. Heap of adventitious dust & rubbish brought in by Arabs.
I. Caliph Al Mamoon's hole, where it broke into West-wall of Entrance passage, and still serves travellers as a means of getting round the Portcullis blocks, & into the First ascending Passage.

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GREAT PYRAMID PLATES

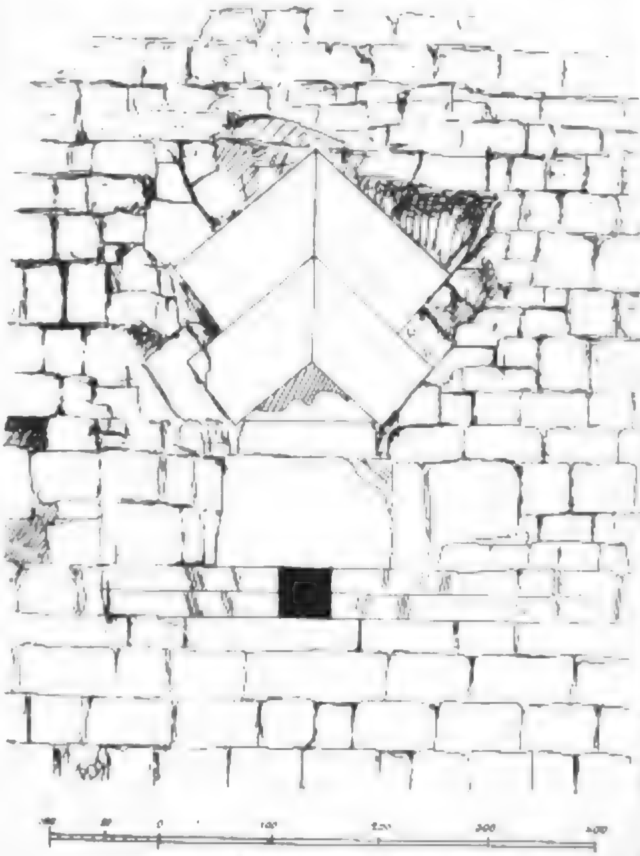
Plate 24.

See Page P3.P4.&c

Elevation, looking South,

of North-end of Entrance passage of Great Pyramid,

slightly modified in perspective of lower parts.

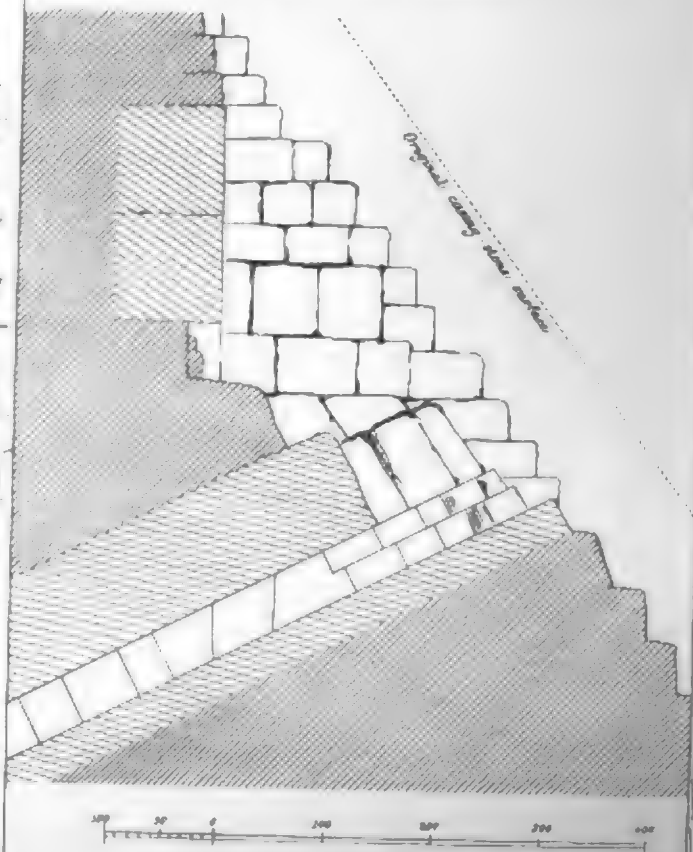


Scale of British Inches.

Vertical Section, looking West,

of North end of Entrance passage of Great Pyramid,

chiefly to show joints of West wall.



Scale of British Inches.

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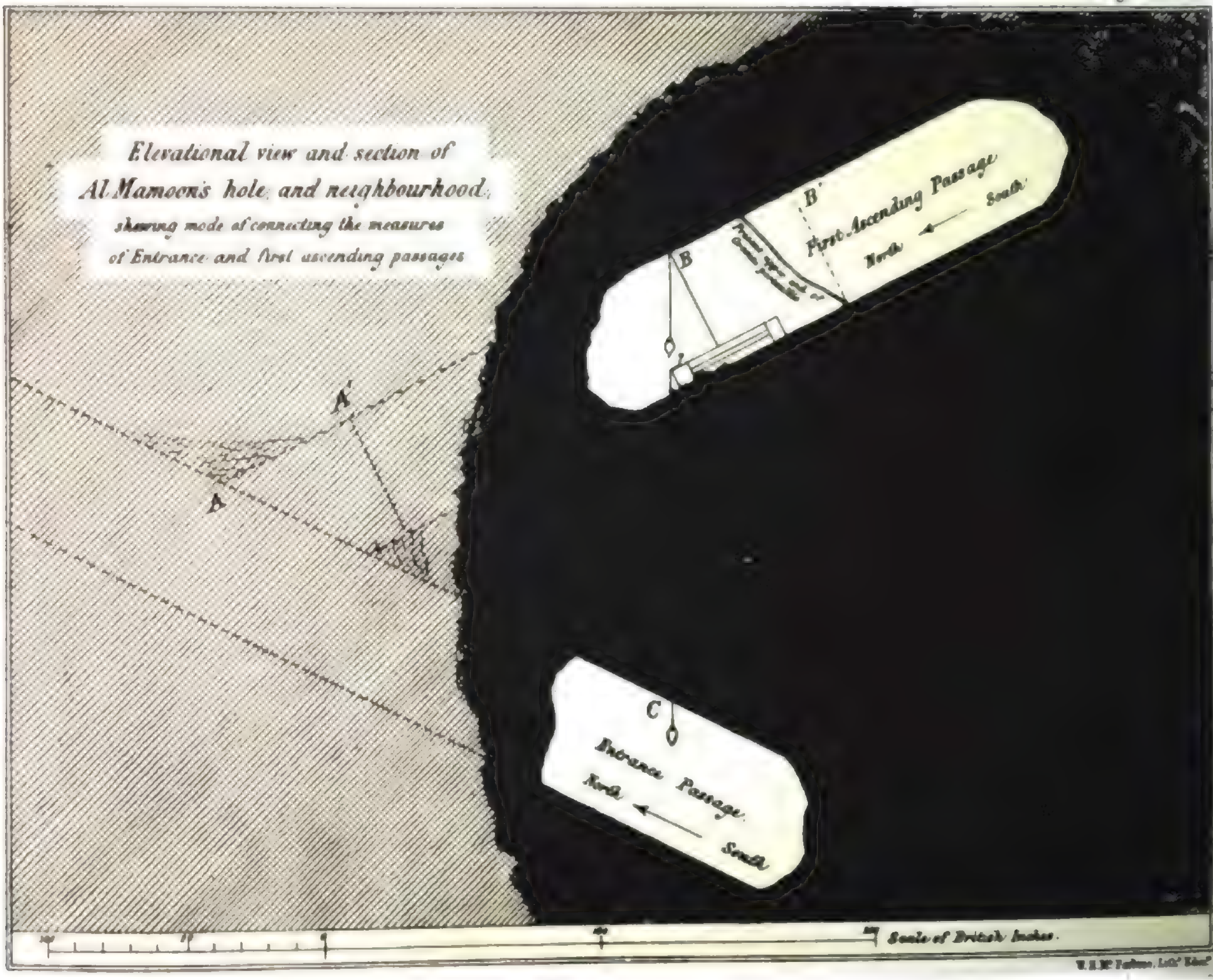
GREAT PYRAMID PLATES.

Plate 25
Vol. XIII

See Page P3, P6 &c



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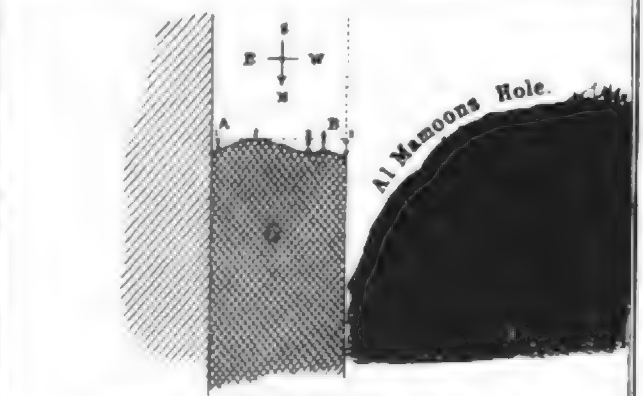
GREAT PYRAMID PLATES

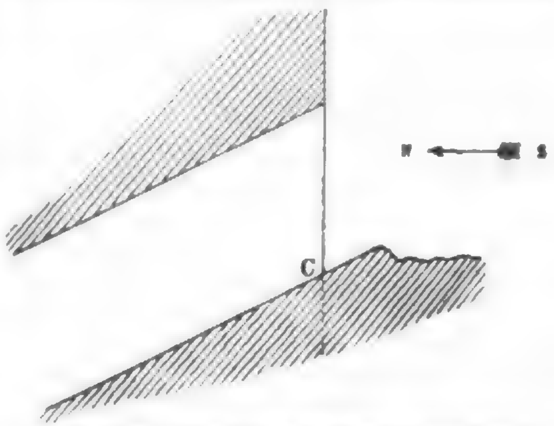
Plate 26.
Vol XIII

See Page 72 P& &c



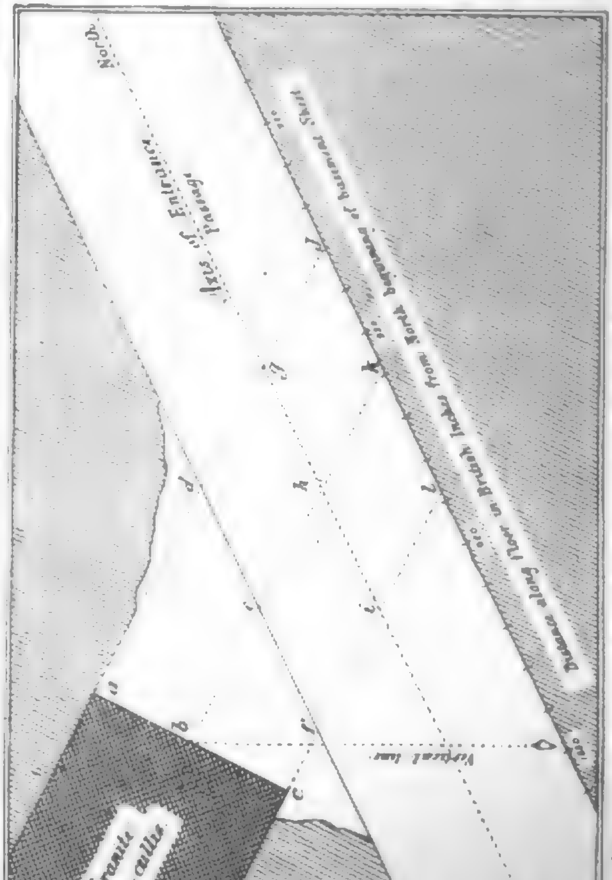
Plan on Floor plane of lower or North end of 1st. Ascending Passage.
G Granite portcullis

Scale of British Inches



Vertical longitudinal section of upper or South end of 1st. Ascending Passage, looking East.

Scale of British Inches



Vertical section (from North to South) shewing Junction of Entrance Passage and First Ascending Passage, looking West.

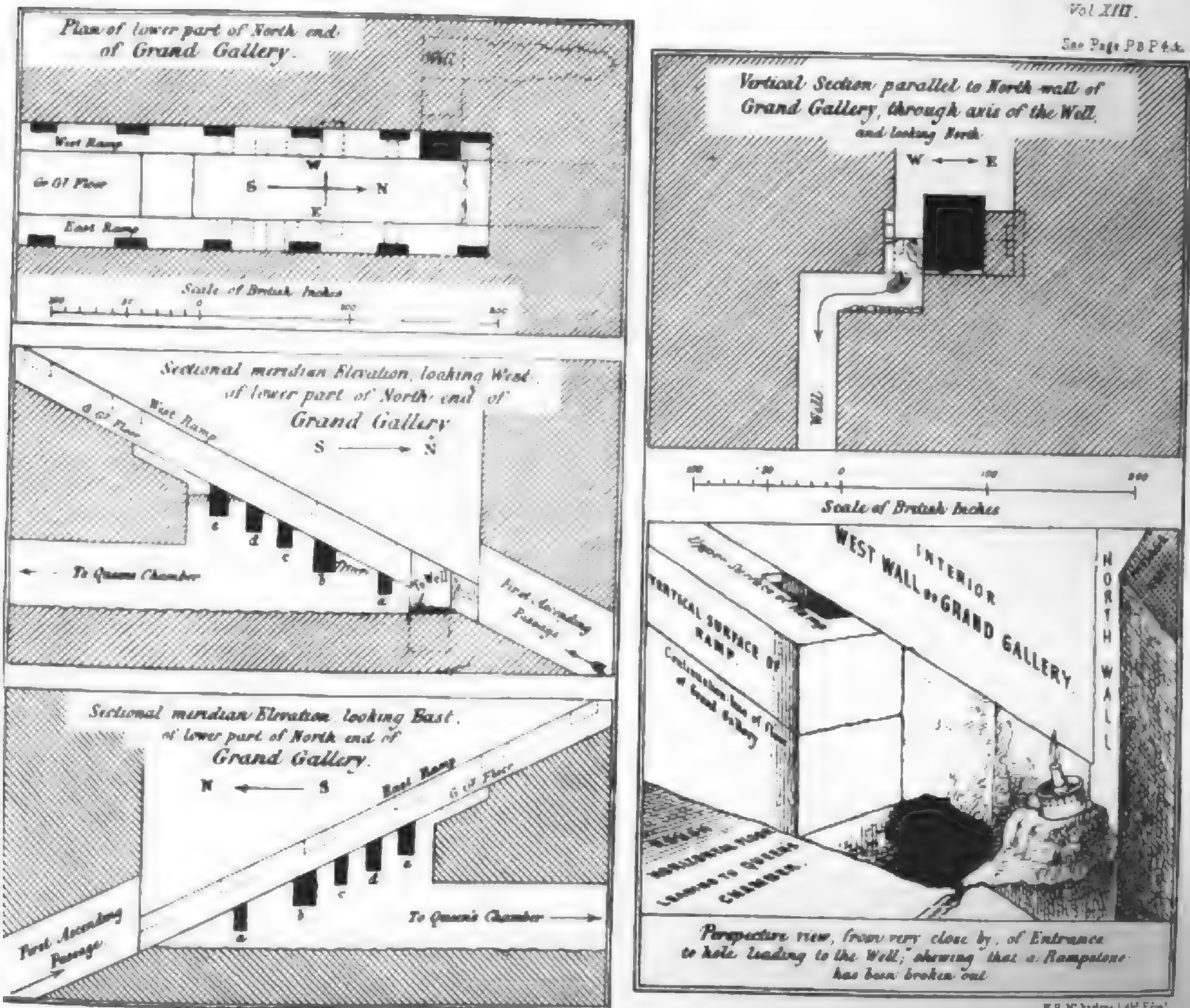
W H M^c Farlane Lith^r Edin^r

R. OBSERVATORY, EDINBURGH.

GREAT PYRAMID PLATES.

Plate 27
Vol XIII.

See Page P3 P4

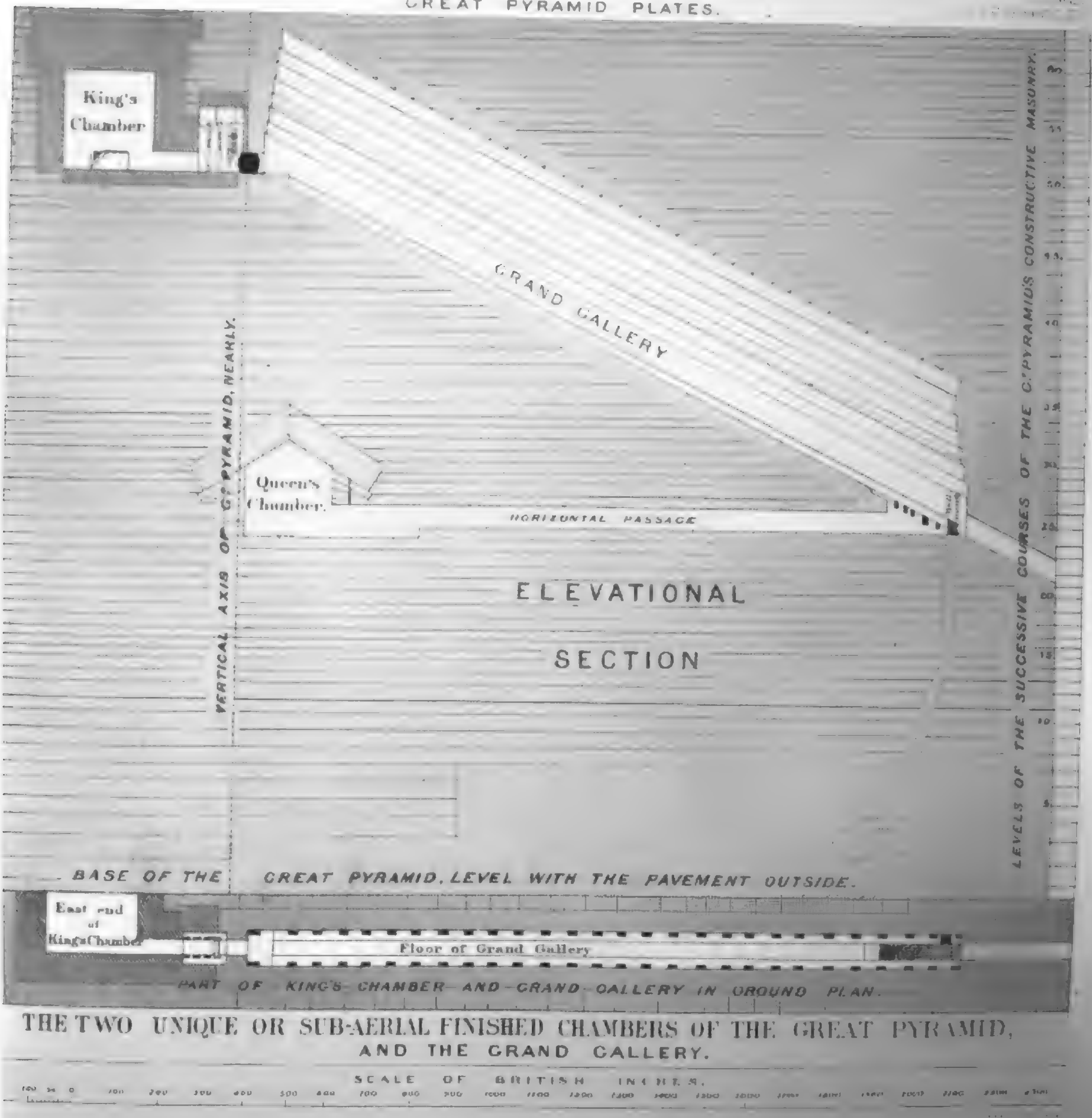


Perspective view, from very close by, of Entrance to hole leading to the Well; shewing that a Rampstone has been broken out

W. H. McFarlane Lith. Edin.

R. OBSERVATORY, EDINBURGH.

GREAT PYRAMID PLATES.



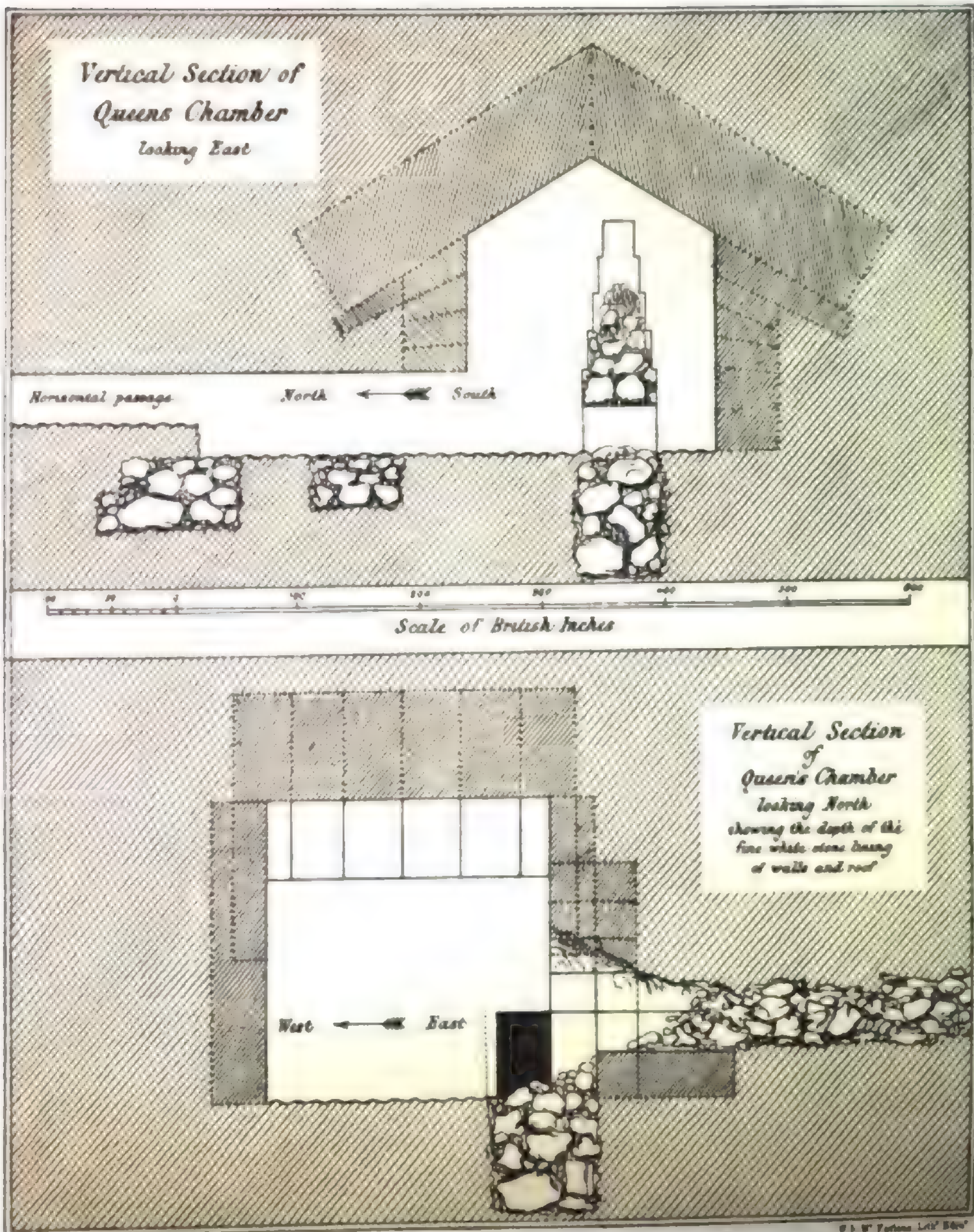
THE TWO UNIQUE OR SUB-AERIAL FINISHED CHAMBERS OF THE GREAT PYRAMID, AND THE GRAND GALLERY.

R. OBSERVATORY, EDINBURGH.

GREAT PYRAMID PLATES

Plate 29.
Vol XIII

See Page



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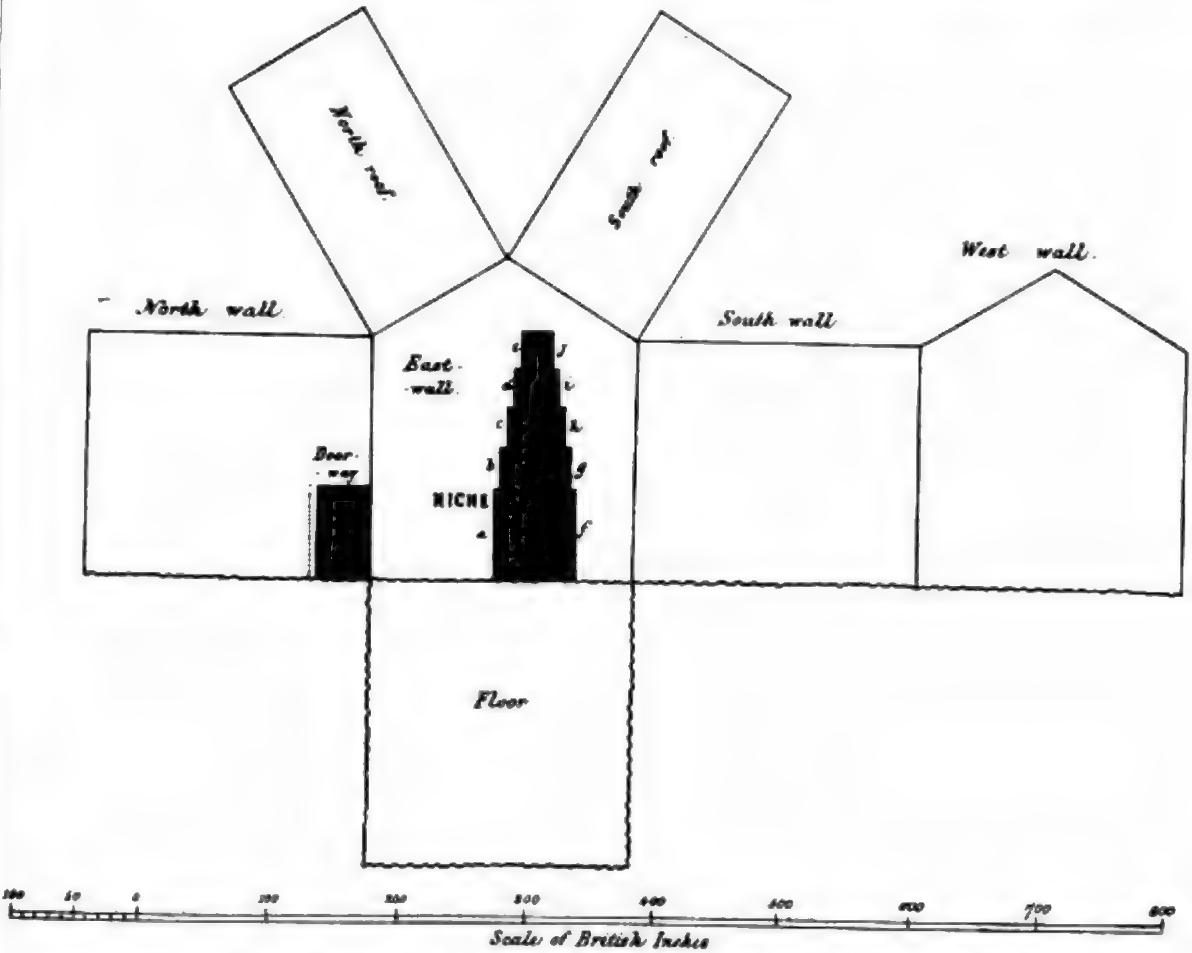
GREAT PYRAMID PLATES.

Plate 30.
Vol. XIII

See Page P.3 P.4. &c.



Sides of Queen's Chamber, laid open on plane of East-wall

W. H. M'Farlane, Lith. Edin.

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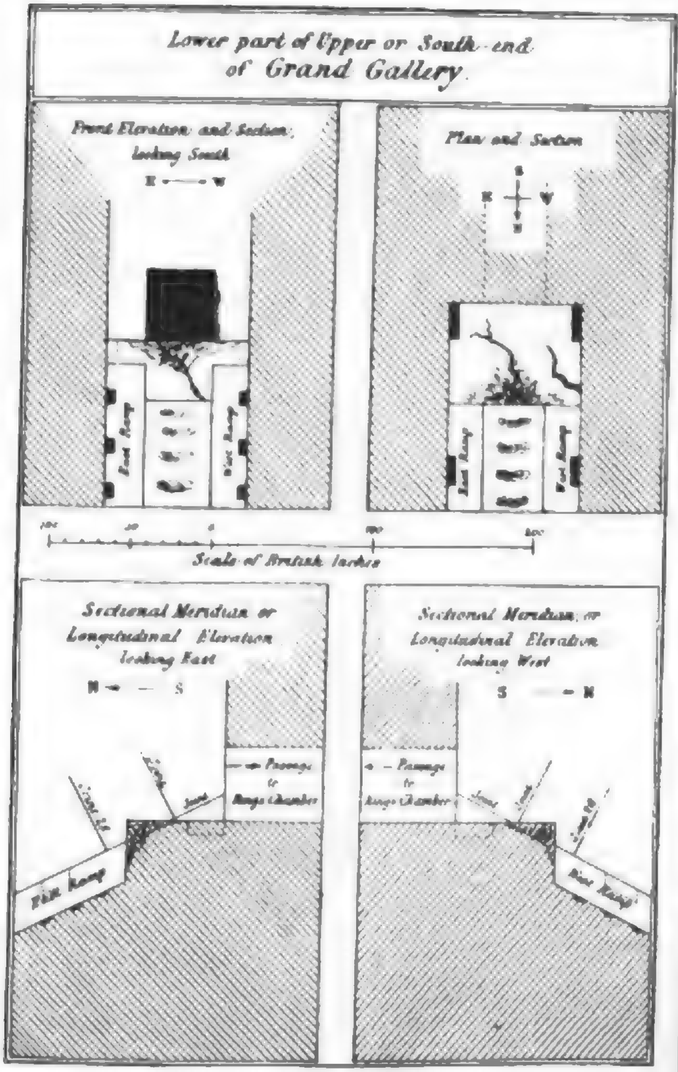
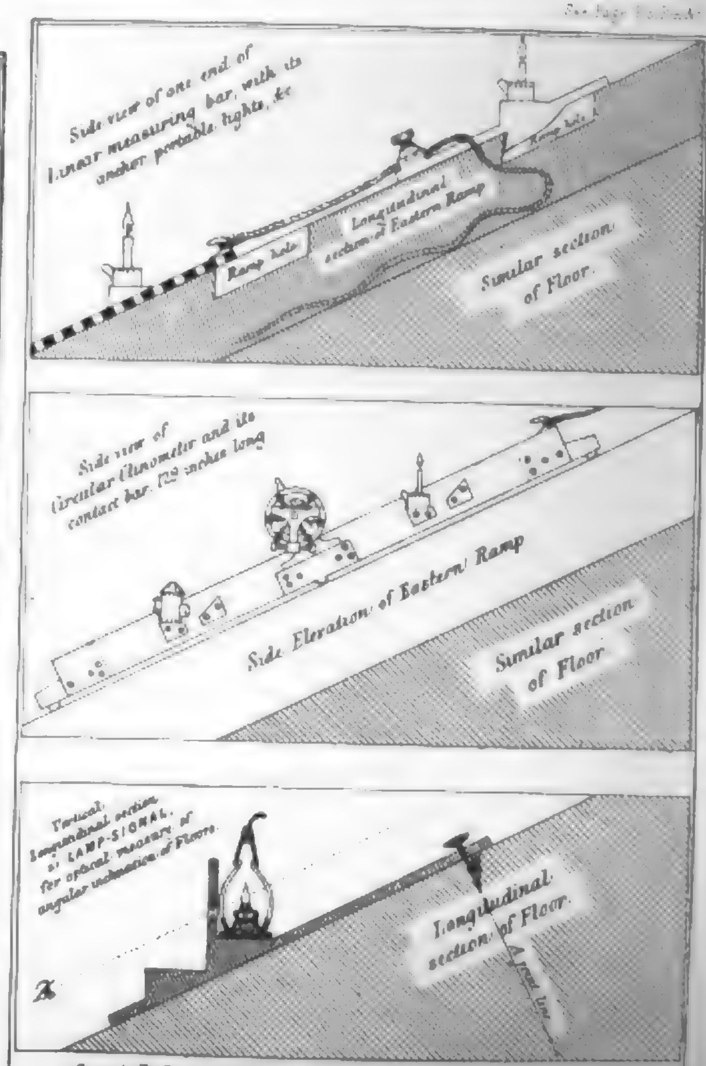
GREAT PYRAMID PLATES.

Plate 31.
Vol XIII



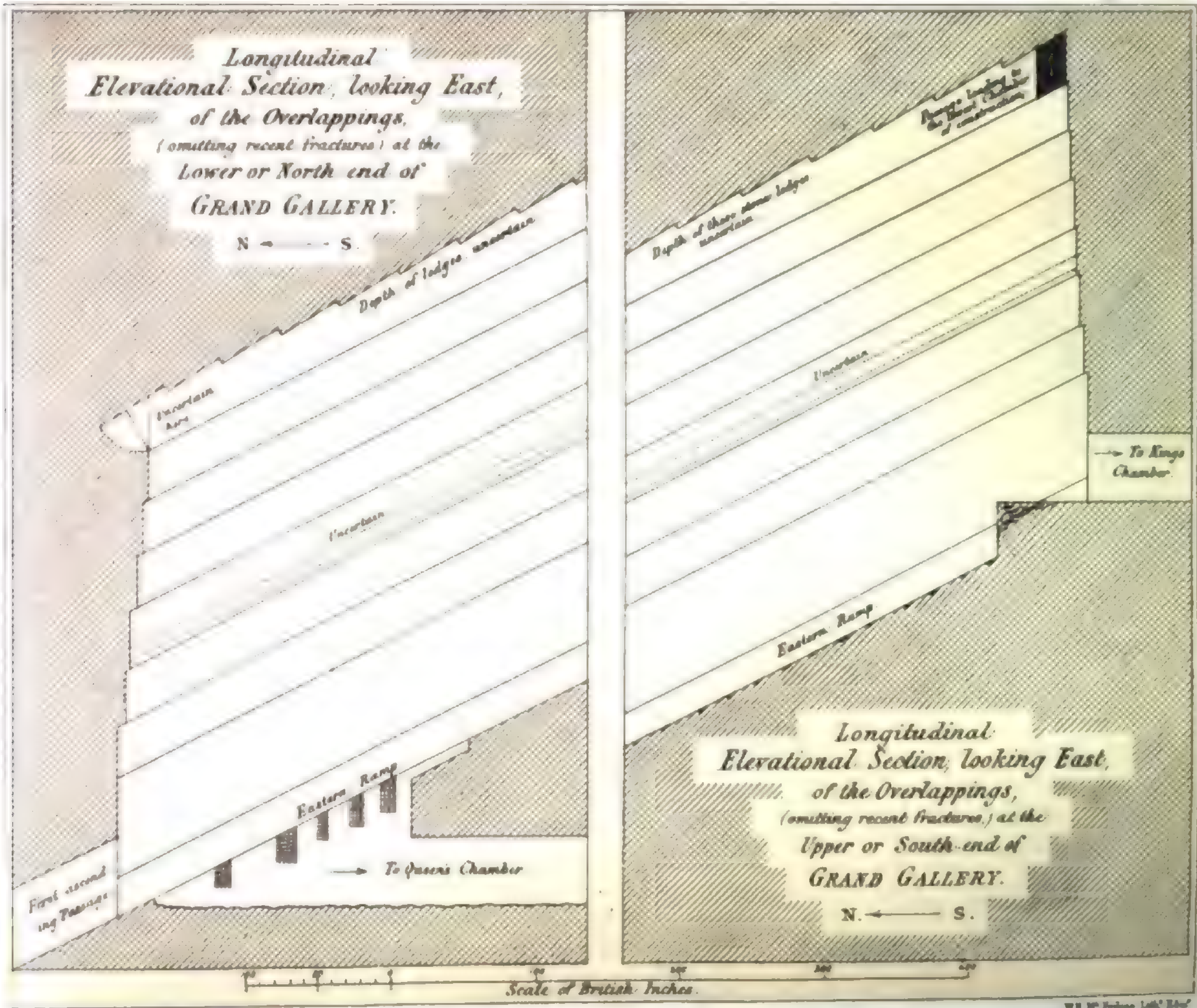


Special forms of apparatus, employed in measuring in the Grand Gallery.

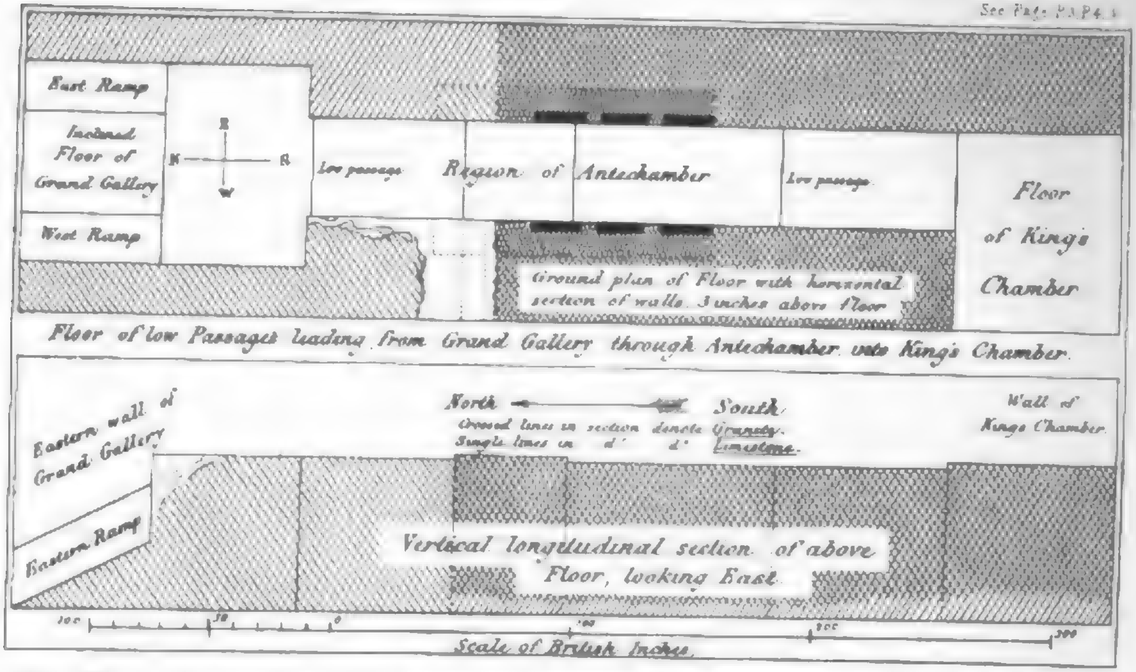
R. OBSERVATORY, EDINBURGH.

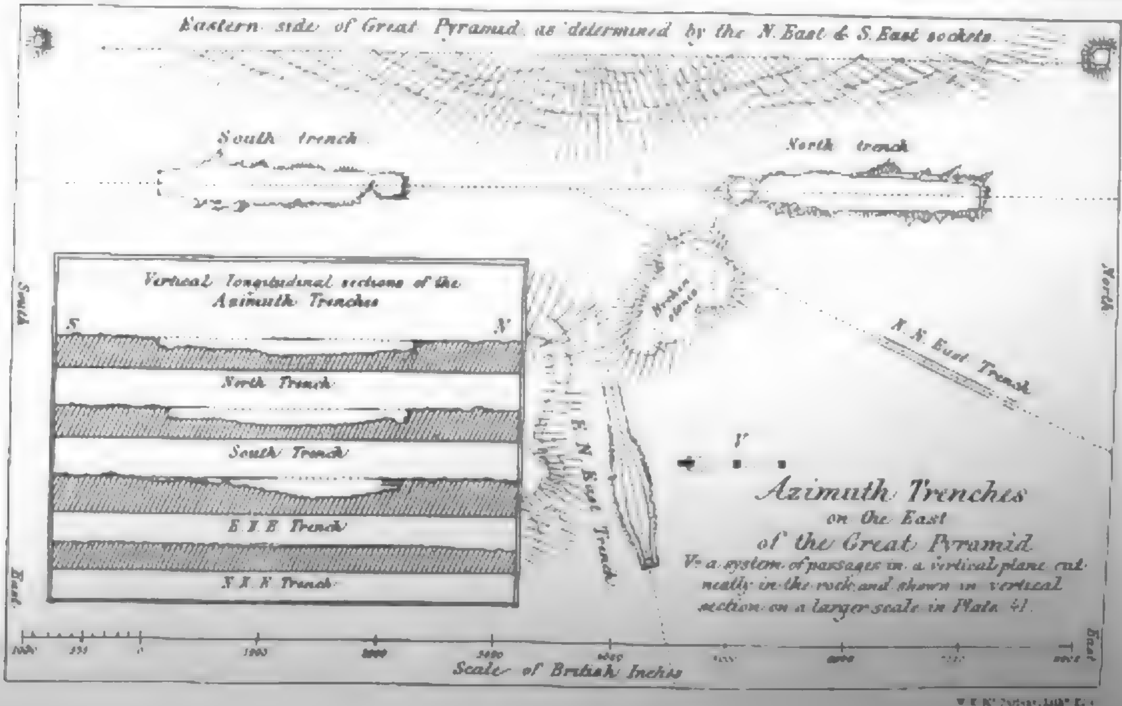
GREAT PYRAMID PLATES.

Plate 32.
Vol XIII



See Page


East Ramp
Inclined Floor of Grand Gallery
West Ramp
Low passage
Region of Antechamber
Low passage
Floor of King's Chamber
Ground plan of Floor with horizontal section of walls 3 inches above floor
Floor of low Passages leading from Grand Gallery through Antechamber into King's Chamber.
North
South
Crossed lines in section denote Granite.
Single lines in d° d° Limestone.
Wall of Kings Chamber.
Eastern wall of Grand Gallery
Eastern Ramp
Vertical longitudinal section of above Floor, looking East.
Scale of British Inches.

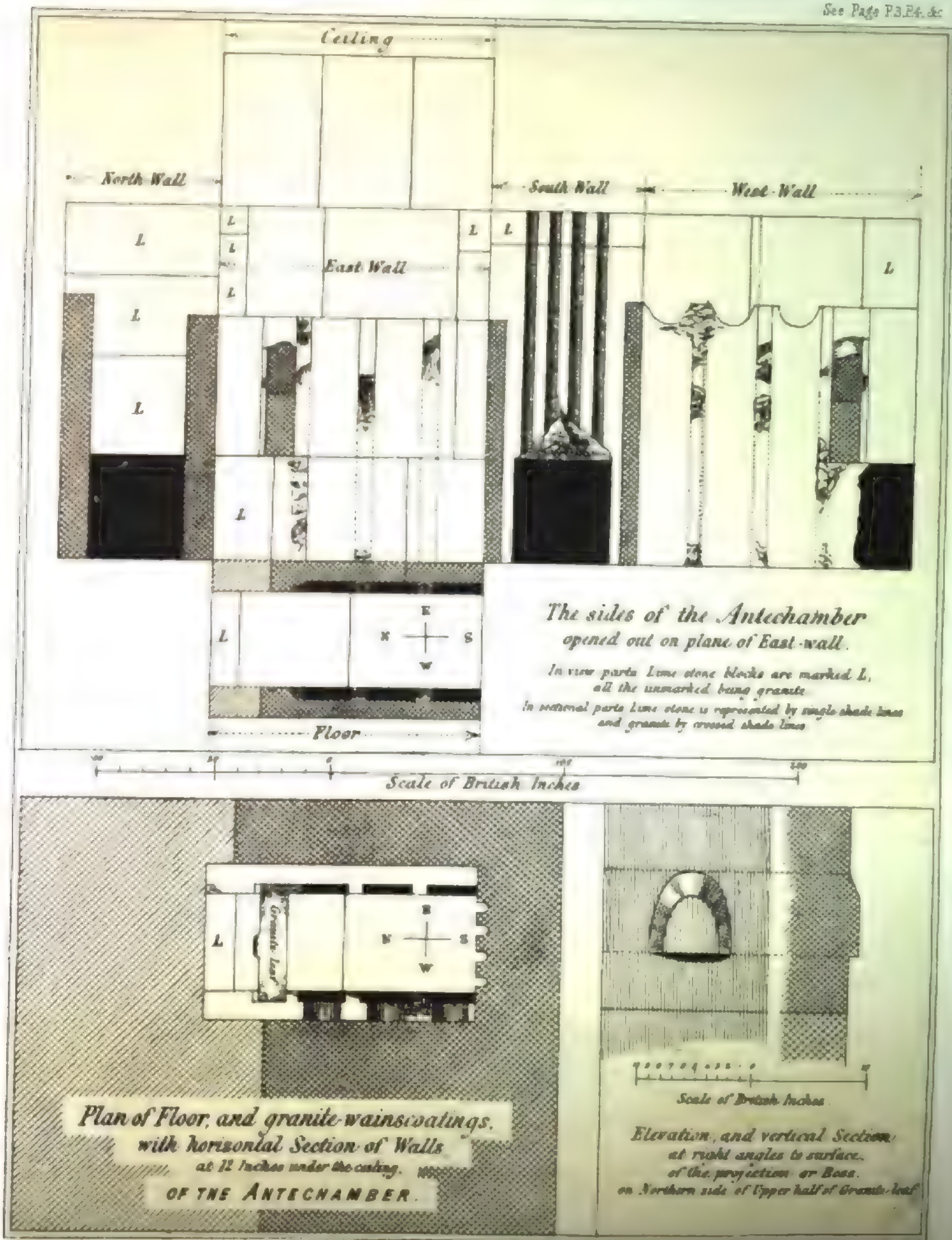

Eastern side of Great Pyramid as determined by the N. East & S. East sockets.
South trench
North trench
Vertical longitudinal sections of the Azimuth Trenches
S
N
North Trench
South Trench
E.N.E. Trench
N.N.E. Trench
N.N. East Trench
E.N. East Trench
South
North
East
Azimuth Trenches on the East of the Great Pyramid
Viz a system of passages in a vertical plane cut neatly in the rock and shown in vertical section on a larger scale in Plate 41.
Scale of British Inches

R. OBSERVATORY, EDINBURGH.

GREAT PYRAMID PLATES.

Plate 34.
Vol. XIII

See Page P3, P4, &c



The sides of the Antechamber opened out on plane of East-wall.

In view parts Lime stone blocks are marked L, all the unmarked being granite.
In sectional parts Lime stone is represented by single shade lines and granite by crossed shade lines.

Plan of Floor, and granite-wainscotings, with horizontal Section of Walls at 12 Inches under the ceiling. OF THE ANTECHAMBER.

Elevation, and vertical Section at right angles to surface, of the projection or Boss, on Northern side of Upper half of Granite-leaf.

W. H. McFarlane Lith. Edin.

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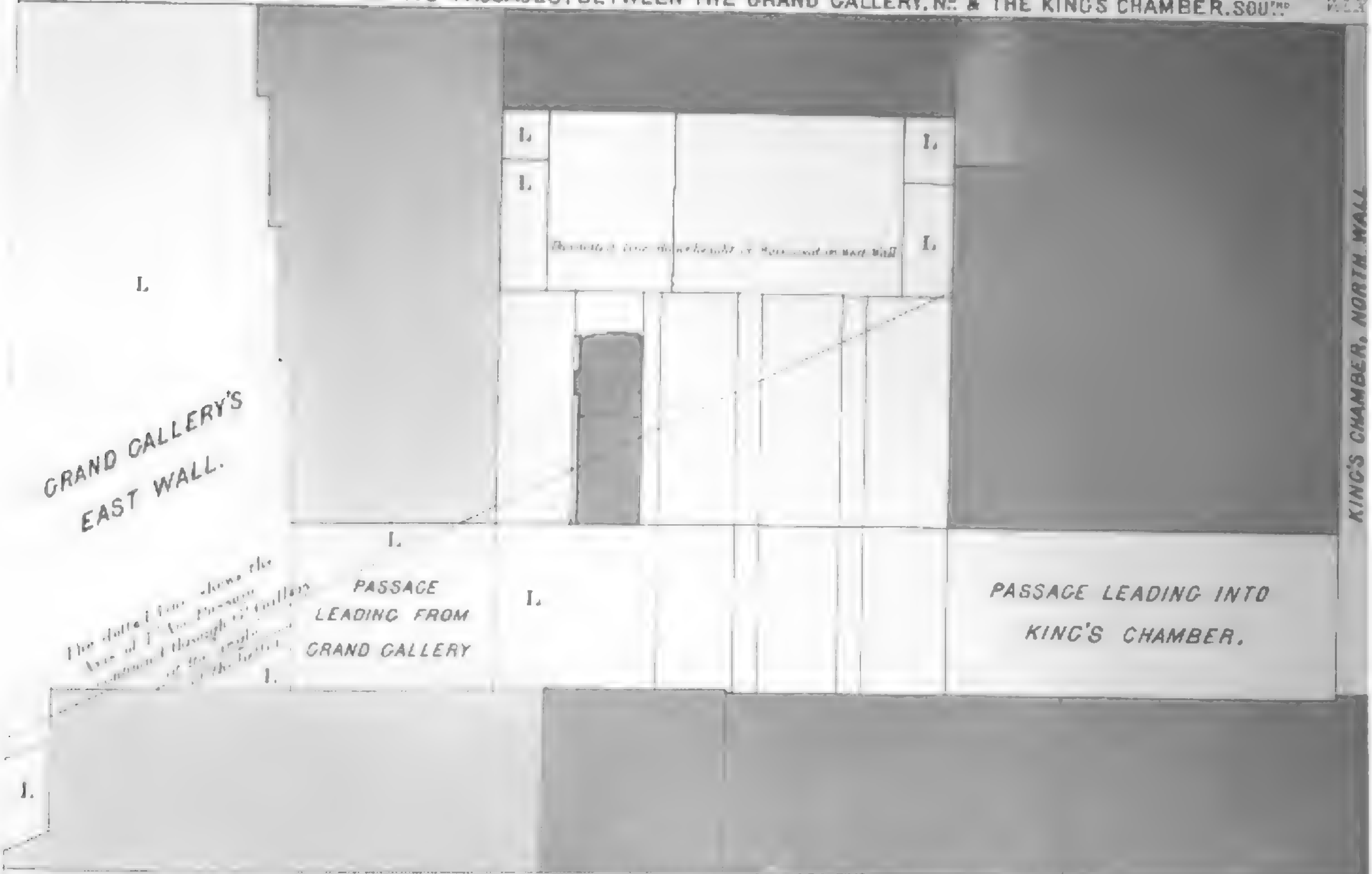
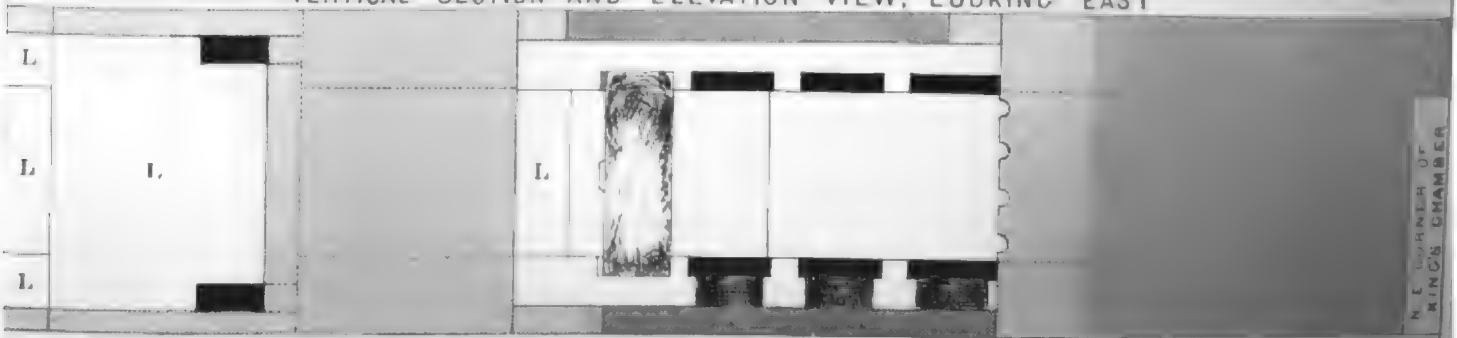
GREAT PYRAMID PLATES.

OF THE ANTECHAMBER AND ITS PASSAGES, BETWEEN THE GRAND GALLERY, No. & THE KING'S CHAMBER, SOUTH



VERTICAL SECTION AND ELEVATION VIEW, LOOKING EAST



HORIZONTAL SECTION AT LEVEL OF TOP OF ANTECHAMBER, OF THE PARTS REPRESENTED ABOVE IN VERTICAL SECTION.

In view parts, Limestone blocks marked L. all unmarked being Granite. In sectional parts, Single shade lines Limestone, Crossed lines Granite.

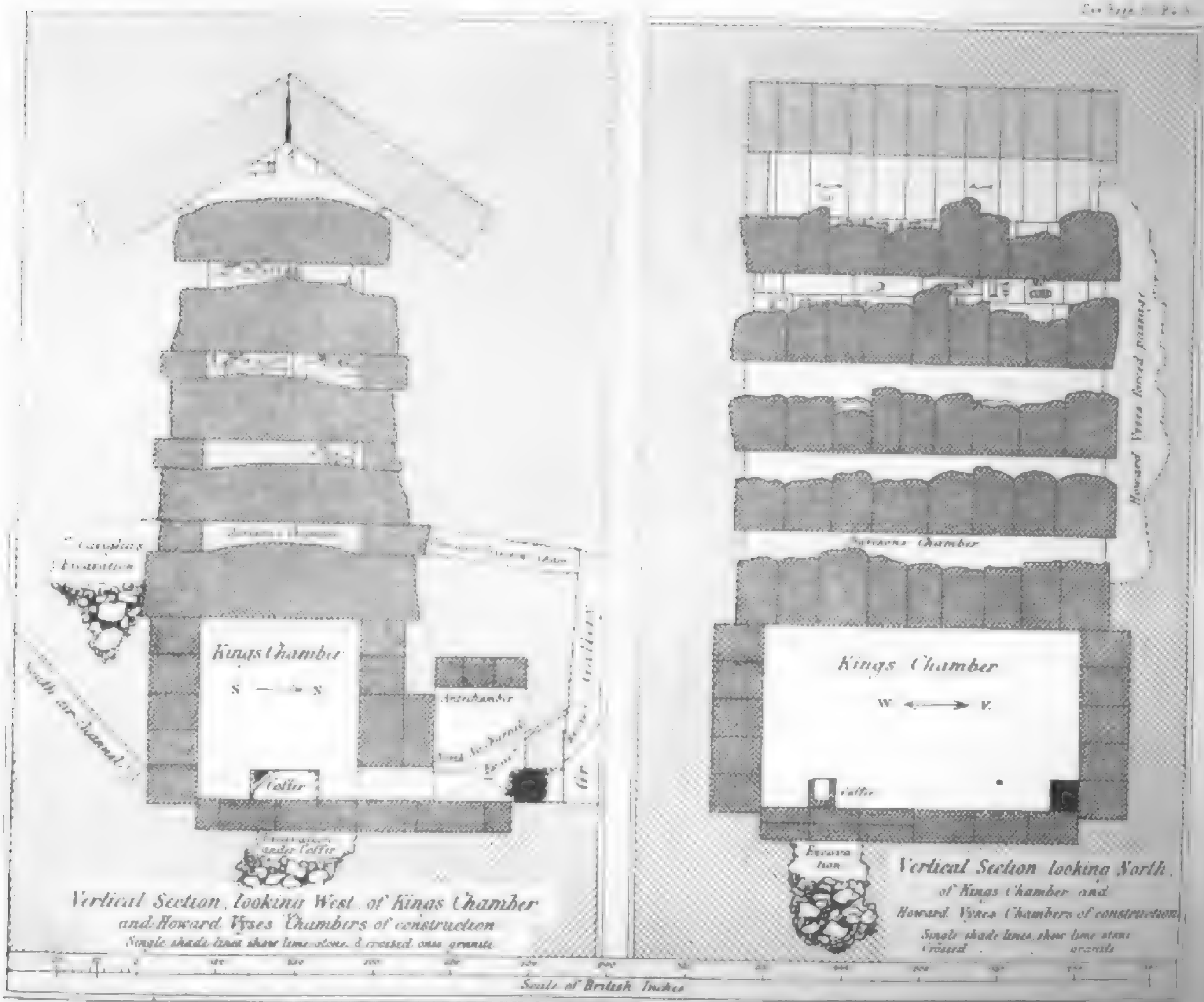
100 50 0

Scale of British Inches

R. OBSERVATORY, EDINBURGH.

GREAT PYRAMID PLATES

Plate 36
Vol XIII

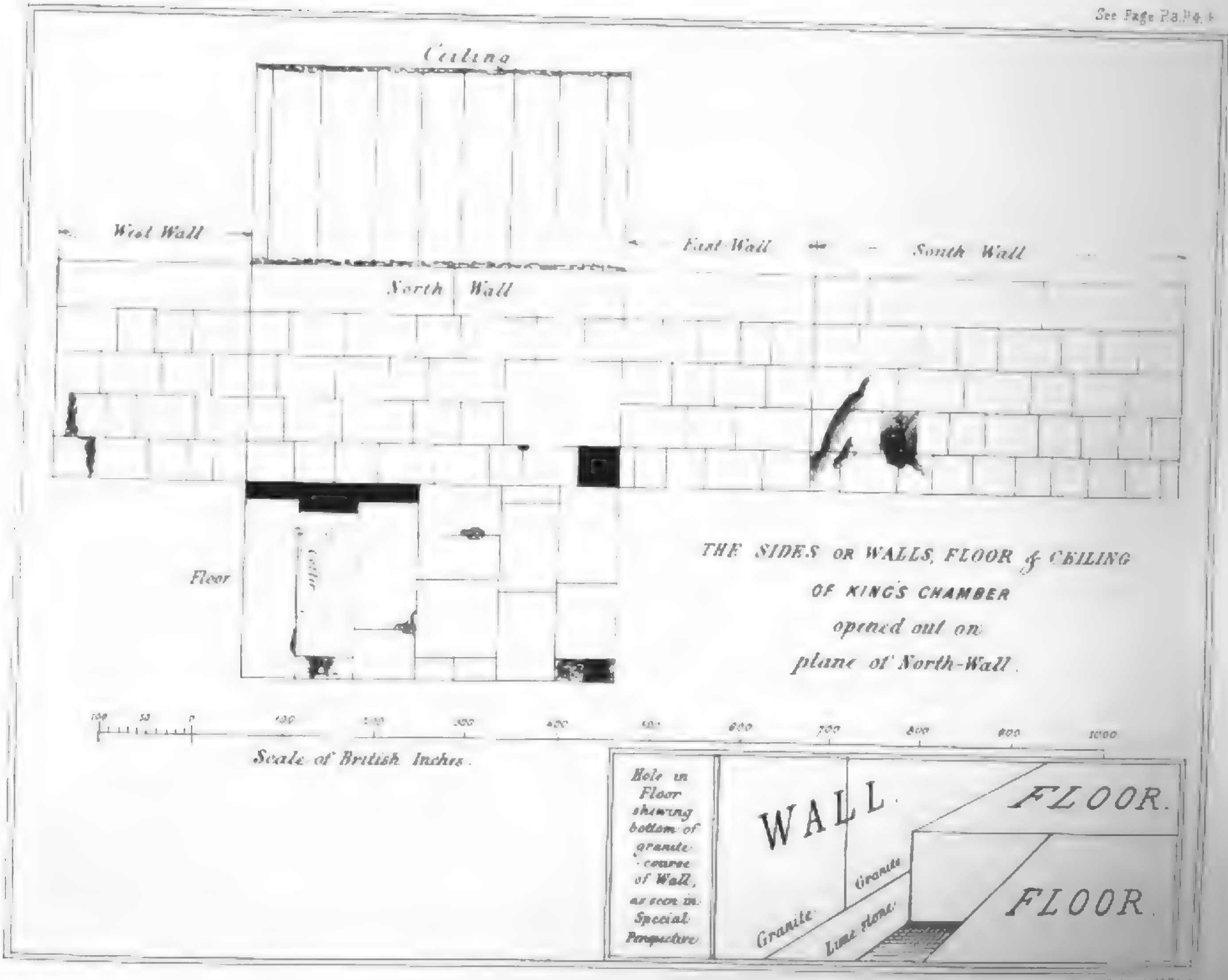


R. OBSERVATORY, EDINBURGH.

GREAT PYRAMID PLATES

Plate 37
Vol XIII

See Page Pa.P4.



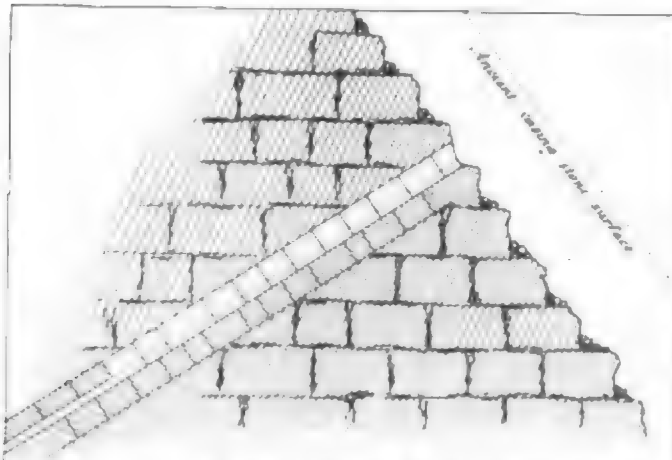
W & A.K. Johnston Lith. Edin.

R. OBSERVATORY, EDINBURGH.

GREAT PYRAMID PLATES.

Plate 38
Vol XIII

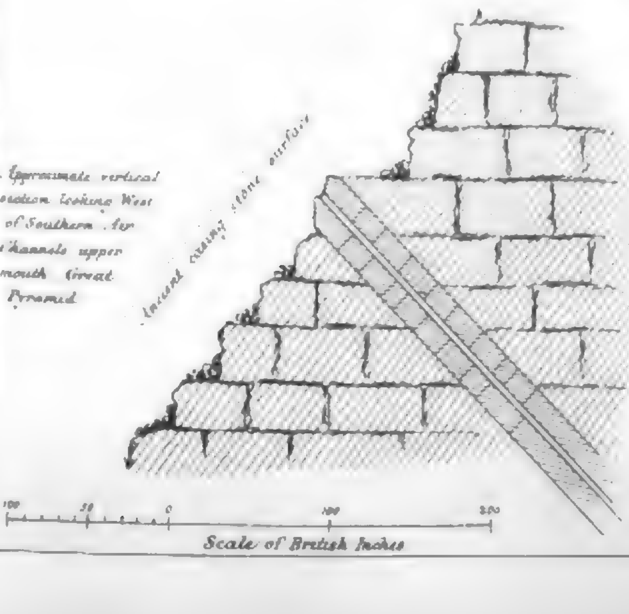
See Page Pa. P & t.



Approximate vertical section looking West of Northern air channels upper mouth of Great Pyramid

The joints not put in from any measures

Approximate vertical section looking West of Southern Air Channels upper mouth Great Pyramid



Scale of British Inches

The Coffer, in the Kings Chamber, A.D. 1865.

Elevation, looking West.

Plan looking from above, the shading in proportion to the deviation from a horizontal plane.

Scale of British Inches

W. H. McFarlane, Lith. Edin.

R. OBSERVATORY, EDINBURGH.

GREAT PYRAMID PLATES

Plate 39.

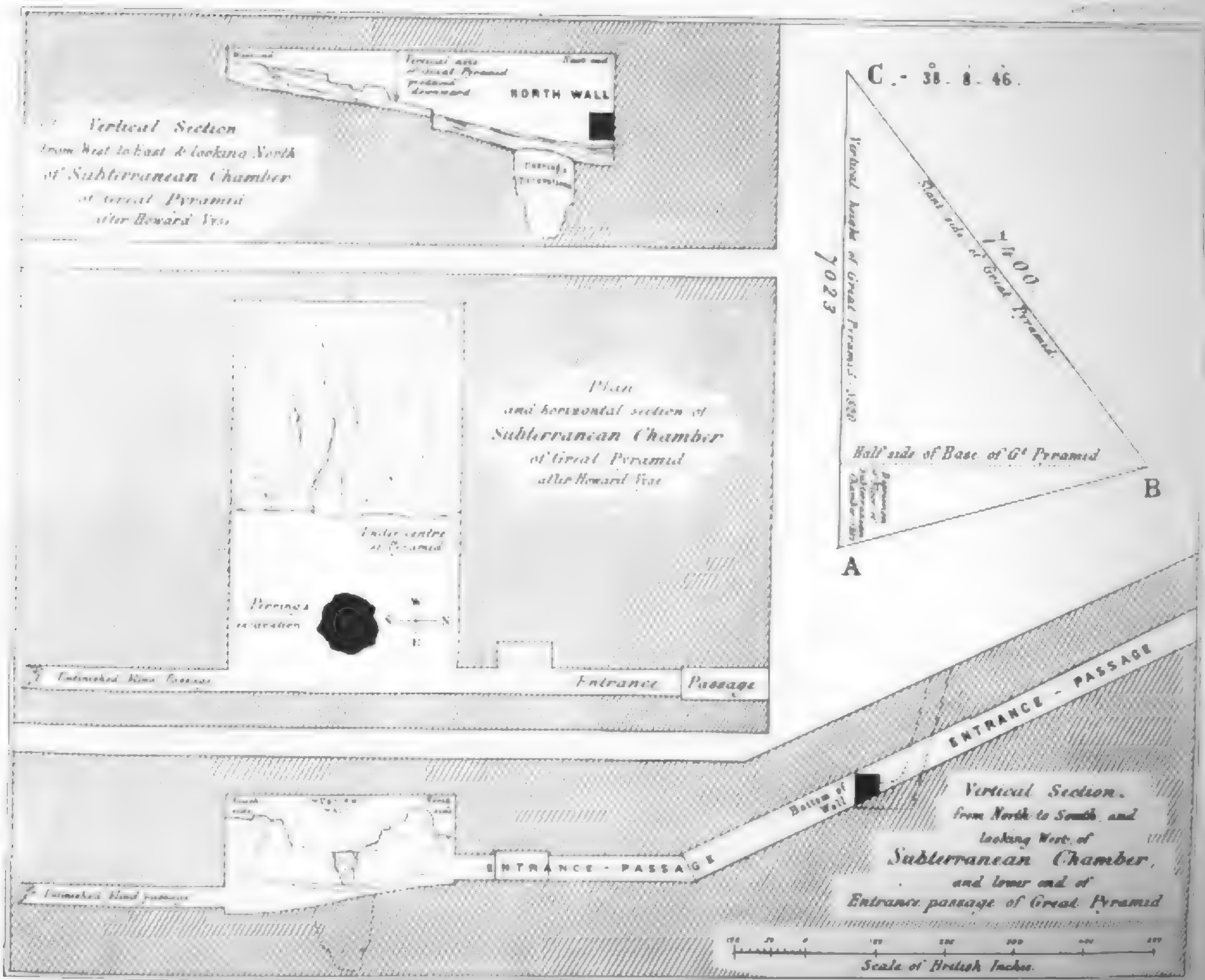
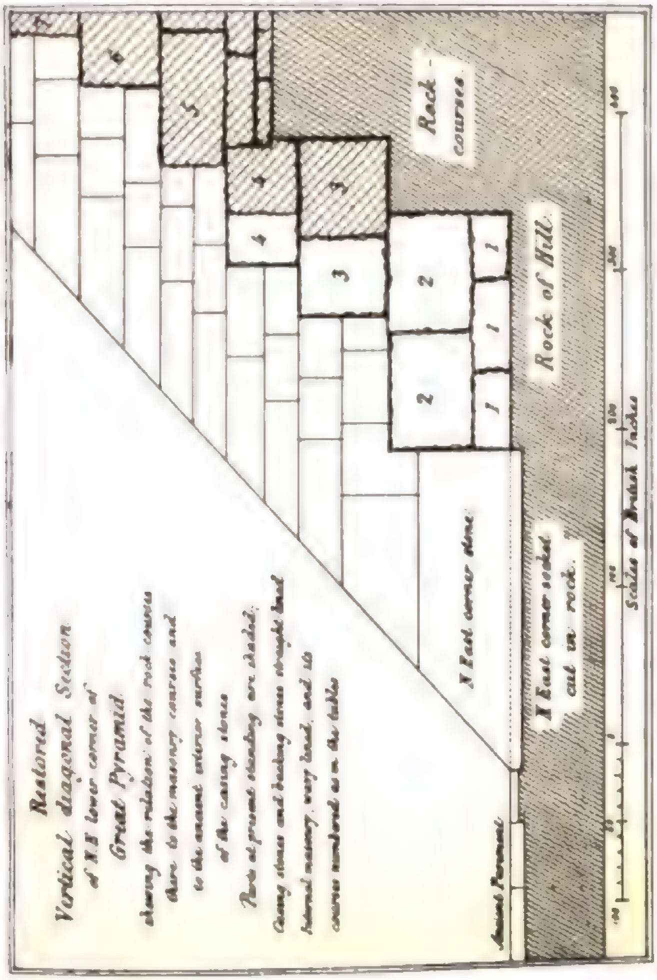
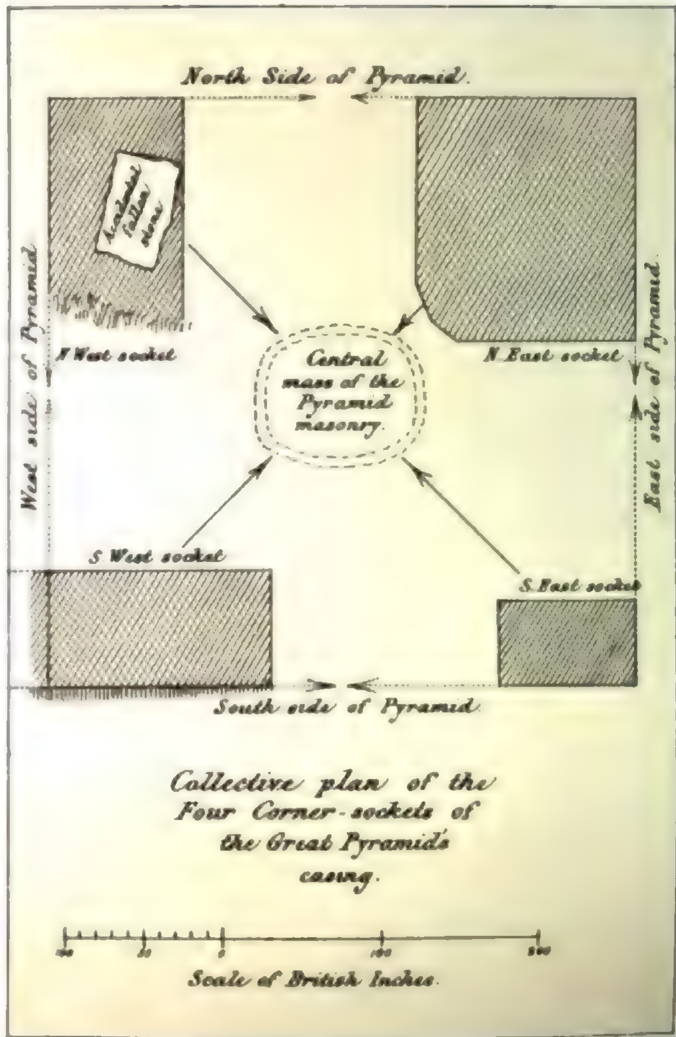


Plate 40
Vol XIII

See Page P.9 P.4. &c





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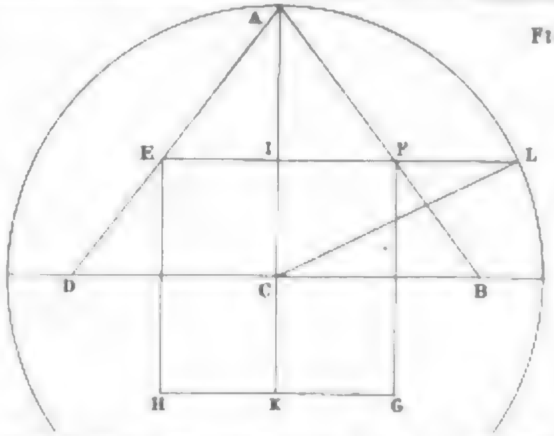
GREAT PYRAMID PLATES

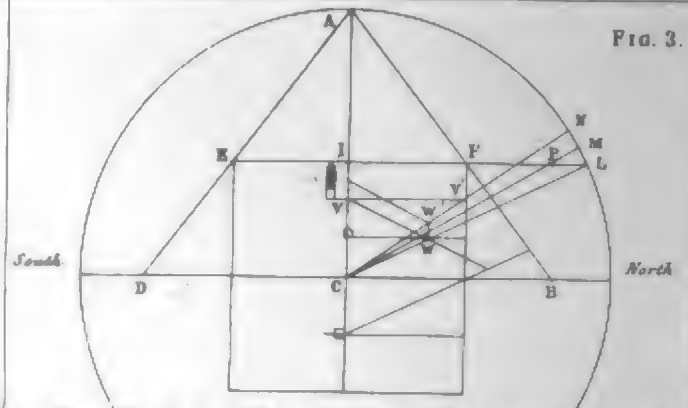
Plate 41
Vol. XIII

Fig 1.



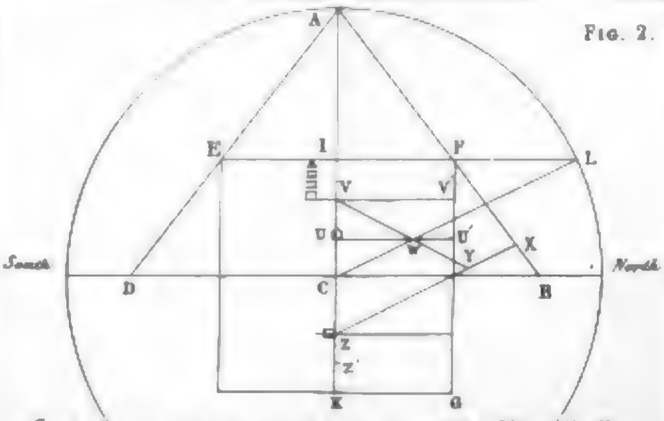
Given ABD = Section of Great Pyramid according to John Taylor.
i.e. AC : ½DB :: radius : circumference of circle
& EF² = AC × BC.
then angle BCL = angle CLI = 26°. 18′. 10″

Fig. 3.



Given Fig 2, also CN drawn through V′ & CM through P, where CP = EF.
then angle BCL = 26°. 18′. 10″ = Lower culmination of α Pole star
— BCM = 30°. 0′. 0″ = Latitude of Pyramid
— BCN = 33°. 41′. 26″ = Upper culmination of same Pole-star nearly
and WW′ = height of Grand Gallery, nearly

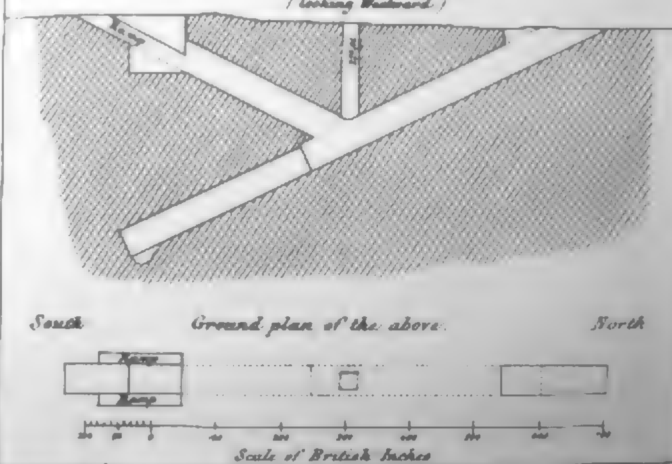
Fig. 2.



Given Fig 1, also IC trisected by lines parallel to IF, in V & U,
& CK similarly bisected, in Z.
then XYZ, parallel to CL = entrance Passage, with angle of incl. = −26. 18
YW = 1st Ascending Passage with angle of incl. = + 26°. 18
& WV = Grand Gallery, with angle incl. = + 26°. 18.

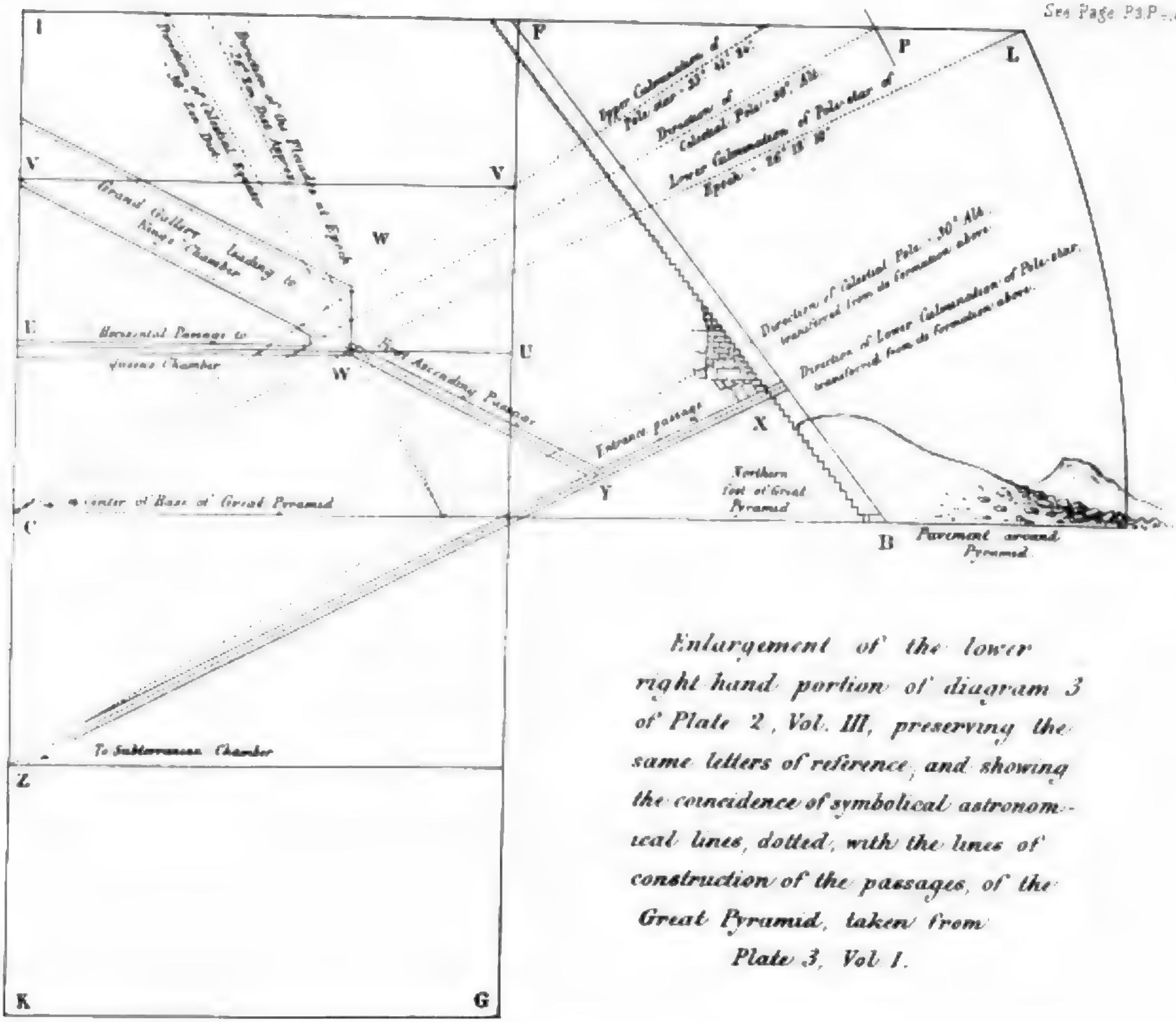
Vertical section of the ancient trial passages, Eastward of the Great Pyramid, after Colonel Howard Vyse (looking Westward.)

Fig 4.



W. H. M'Farlane Lith. Edin.

See Page



Enlargement of the lower right hand portion of diagram 3 of Plate 2, Vol. III, preserving the same letters of reference, and showing the coincidence of symbolical astronomical lines, dotted, with the lines of construction of the passages, of the Great Pyramid, taken from Plate 3, Vol. I.

Scale of British Inches.

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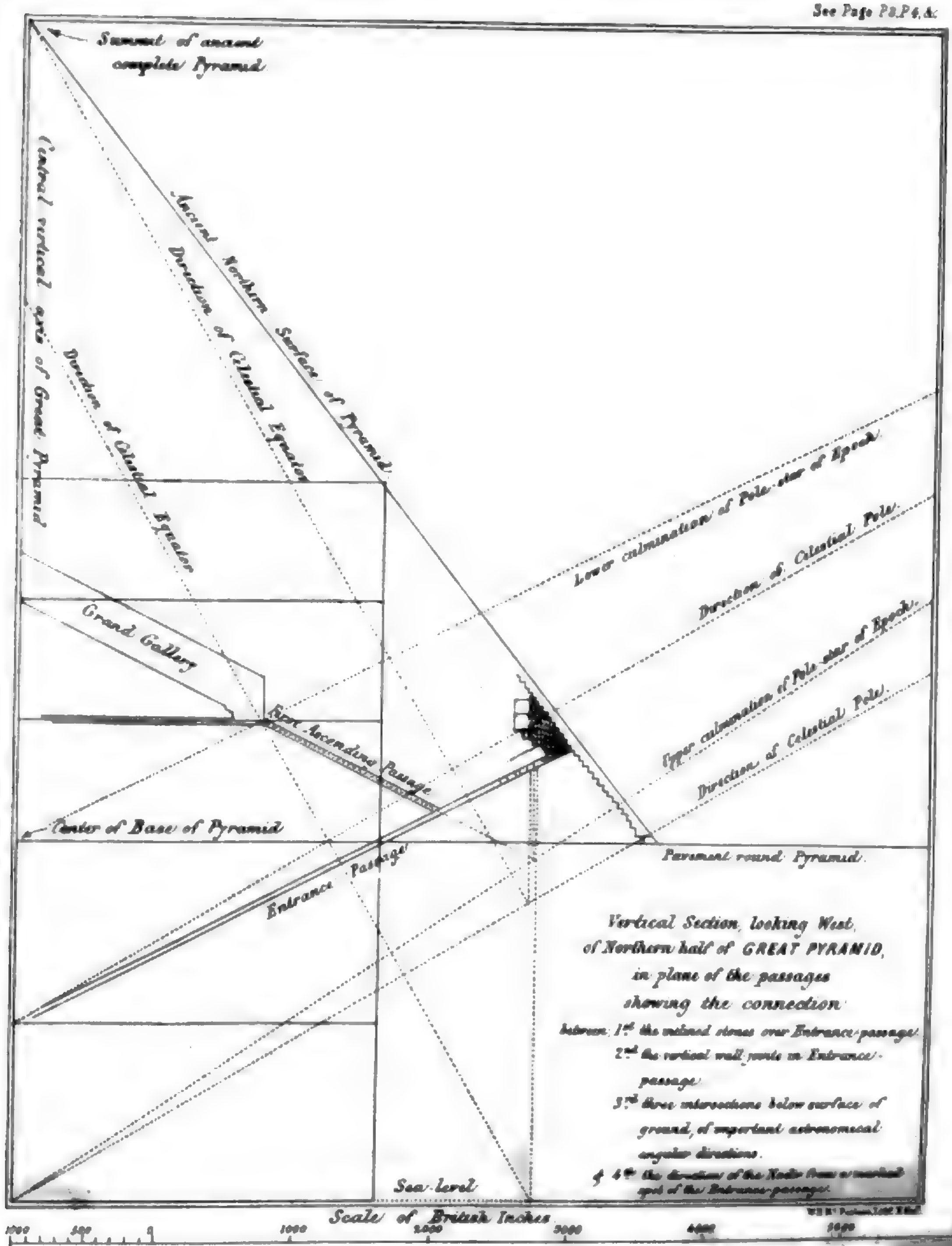
See Page P3, P4, &c.

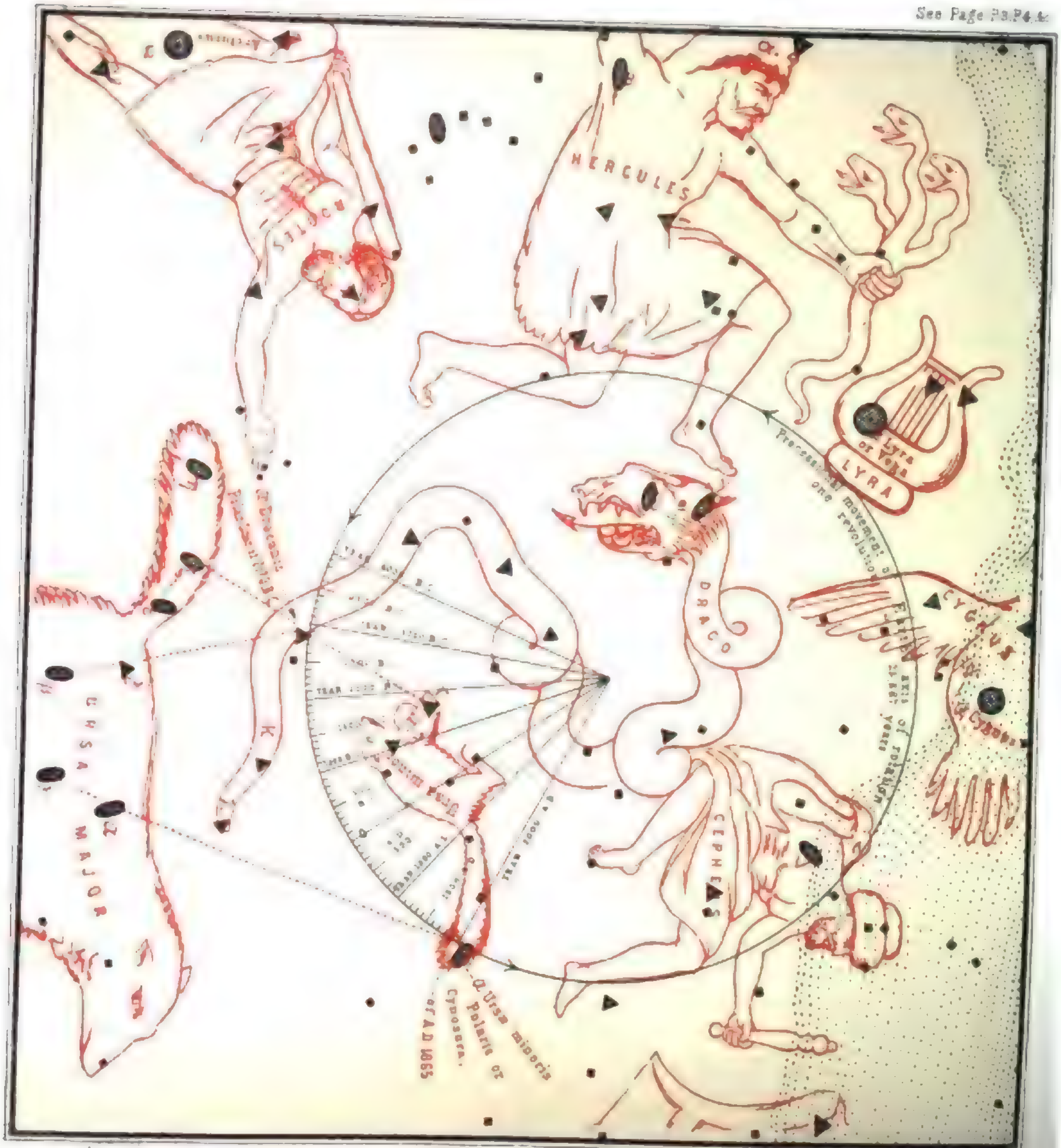


R. OBSERVATORY, EDINBURGH.

GREAT PYRAMID PLATES.

Plate 44.
Vol XIII

See Page P3.P4.&c



Star-map, representing the precessional movement of the Celestial Pole of rotation and especially marking it from the year 4000 B.C. to the year 2000 A.D.

Symbols adopted to represent the magnitudes or brightnesses of the stars: 1st ●, 2nd ⬬, 3rd ▲, 4th ▪.

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GREAT PYRAMID PLATES

Plate 45.
Vol. XIII

See Page P3, P4, &c.

Approximate star map representing for the year 2170 B.C. and the Latitude of the Great Pyramid, the meridional appearance of the stars, at the instant when α Draconis (at 3° 42′ N. P. Dist.) is crossing the Meridian below the Pole and the Pleiades (near the Equator) are crossing above the Pole at midnight, and have the same Right Ascension as the Equinoctial point.

Symbols adopted to express the magnitudes or brightness of the stars, 1st ●, 2nd ●, 3rd ▲, 4th ••

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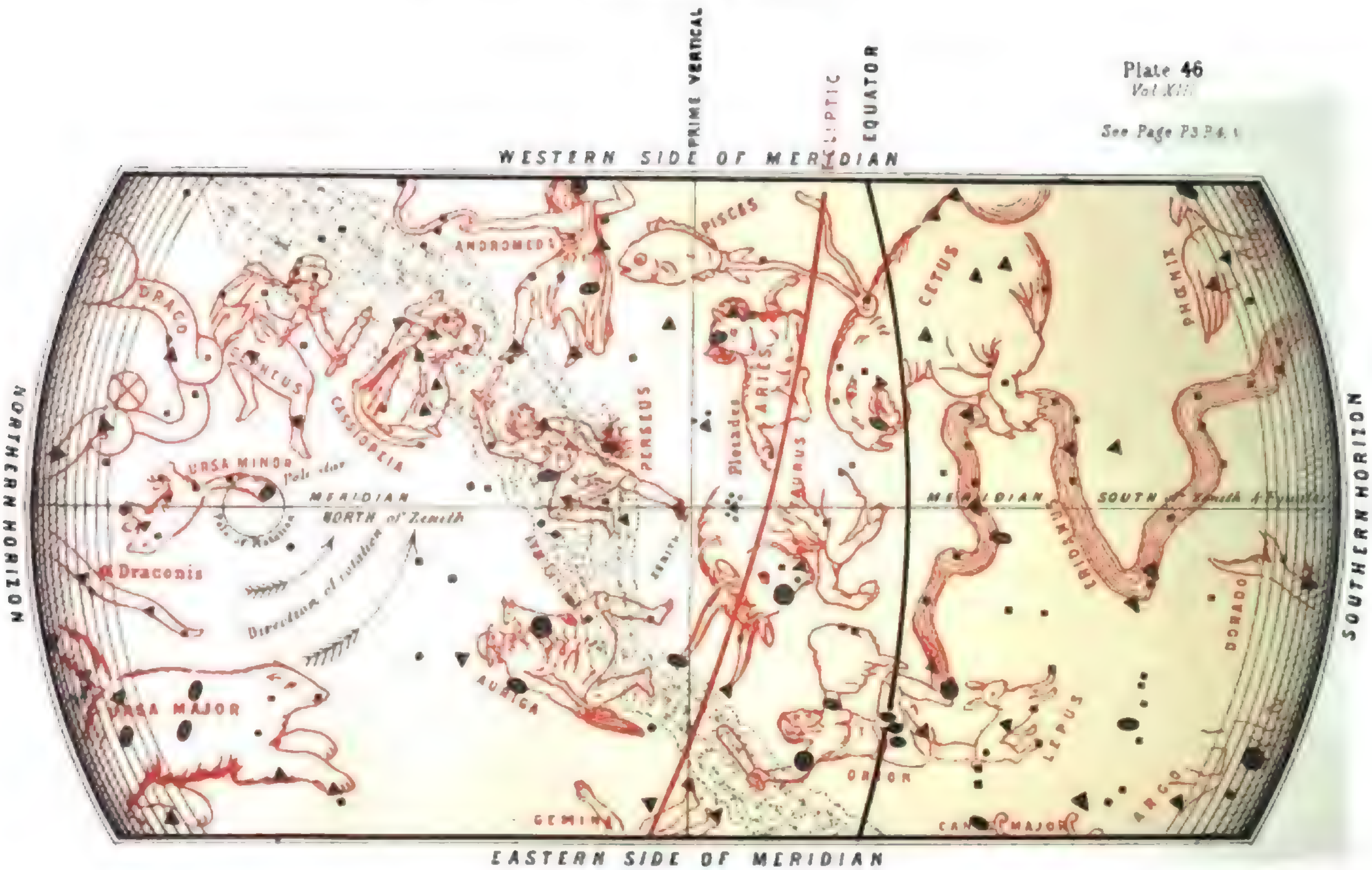
GREAT PYRAMID PLATES

Plate 46
Vol XIII

See Page P3 P4



Approximate star-map representing, (for the year 1883 A.D. and the Latitude of the Great Pyramid,) the meridional appearance of the stars, at the instant when the Pleiades, (now near the Zenith), are crossing the Meridian at midnight, but when neither α Draconis, nor any other circumpolar star is on the Meridian, either above or below the Pole.

Symbols adopted to express the magnitudes or brightness of the stars: 1st ●, 2nd ●, 3rd ▲, 4th ▪

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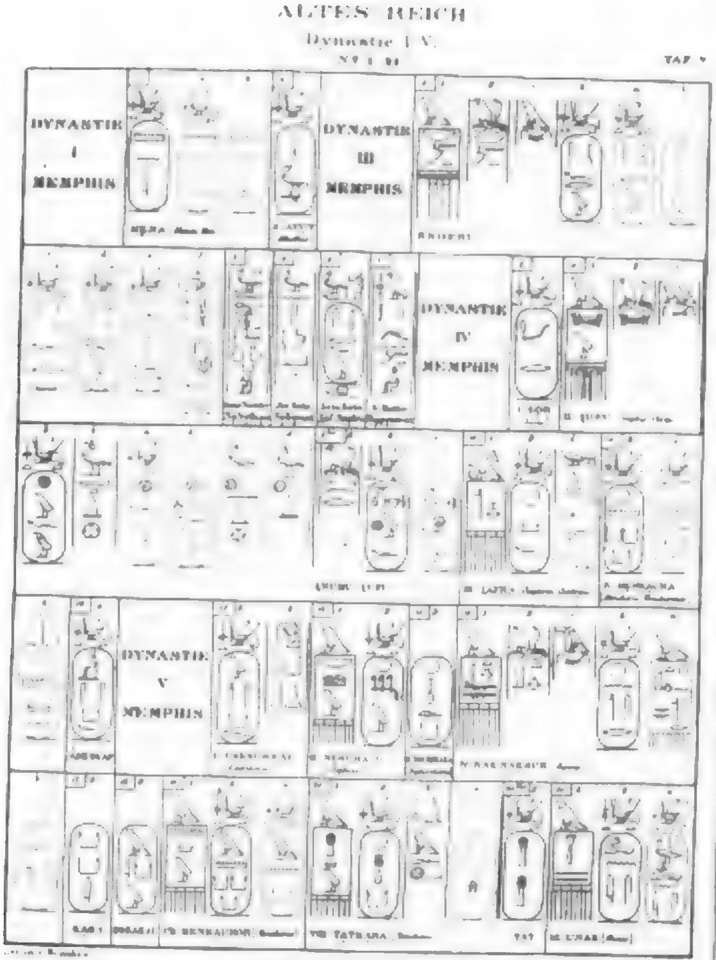
GREAT PYRAMID PLATES

Plate 47
Vol XIII

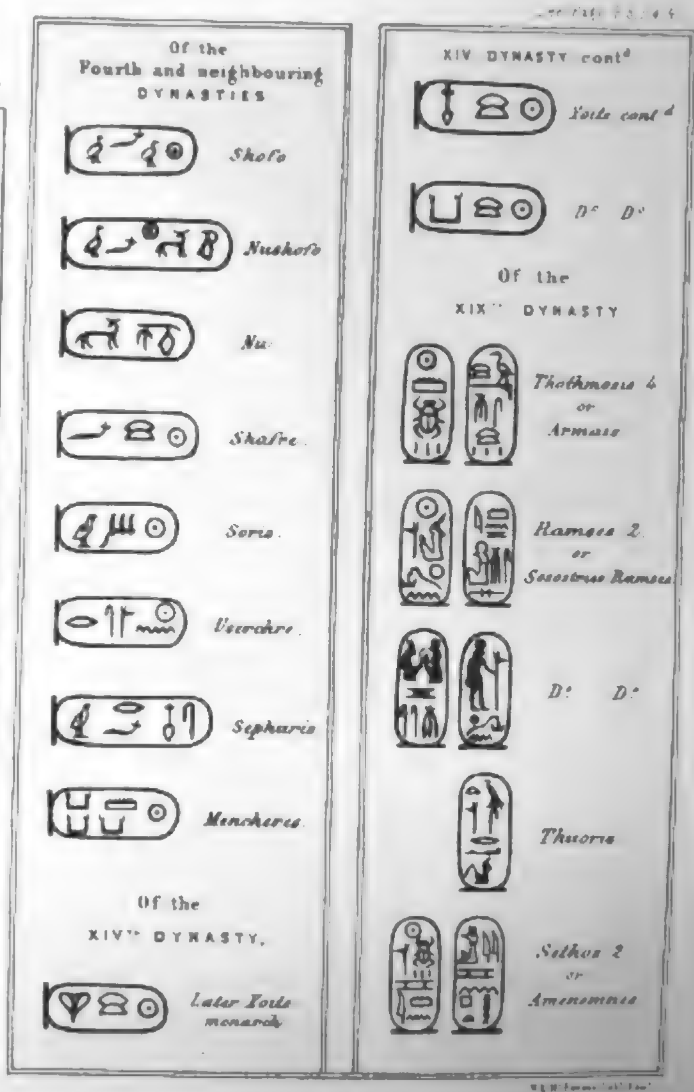


ROYAL OVALS.

Photolithographed from Plate V of

Dr Lepsius's "Königsbuch der alten Ägypter."

BERLIN, 1858

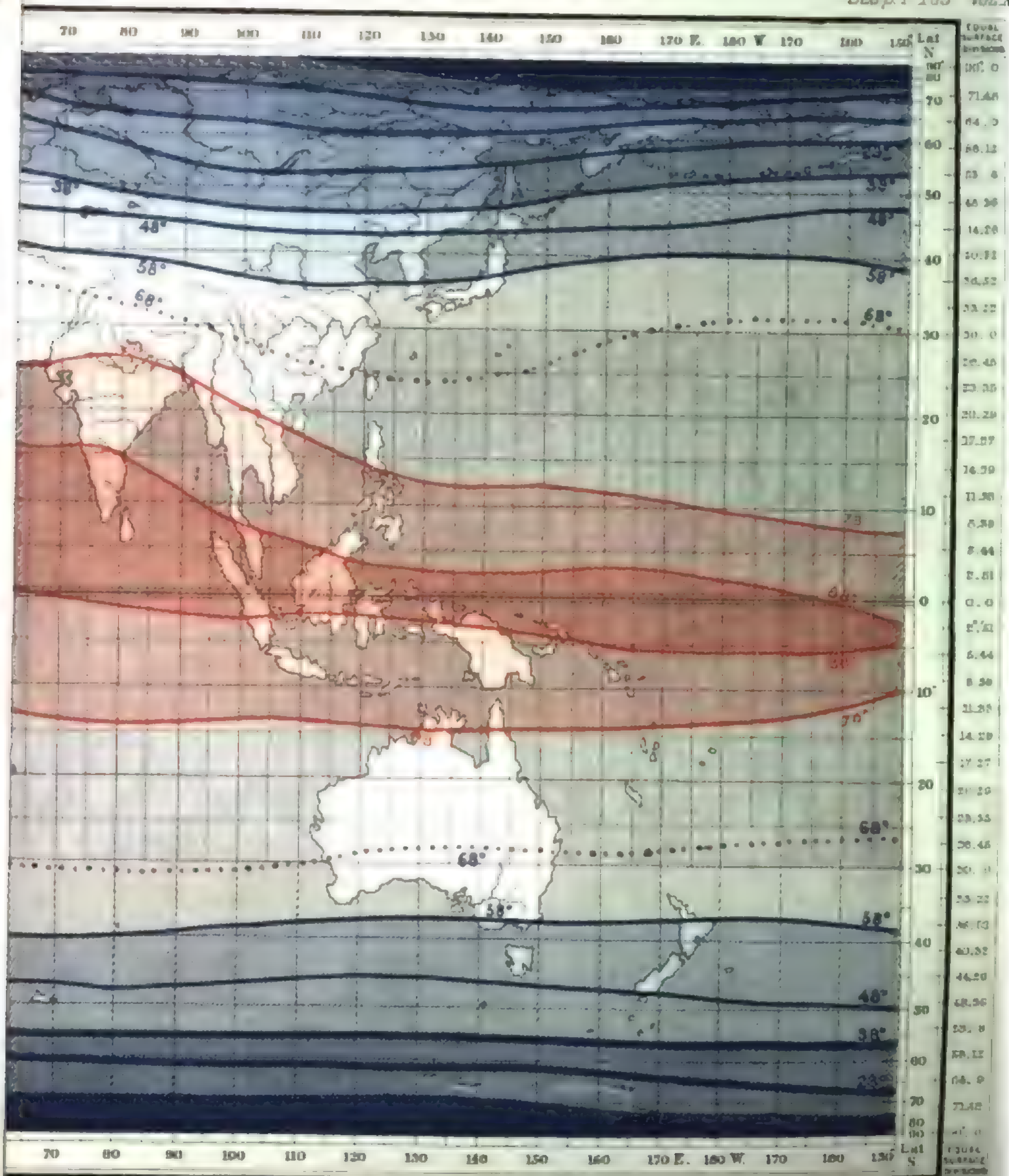


ROYAL QUARRY MARKS AND OVALS REFERRED TO IN THE HISTORICAL SECTIONS

URGH.

Y FROM M. DOVES COLLECTIONS FOR THIS EQUAL SURFACE PROJECTION.

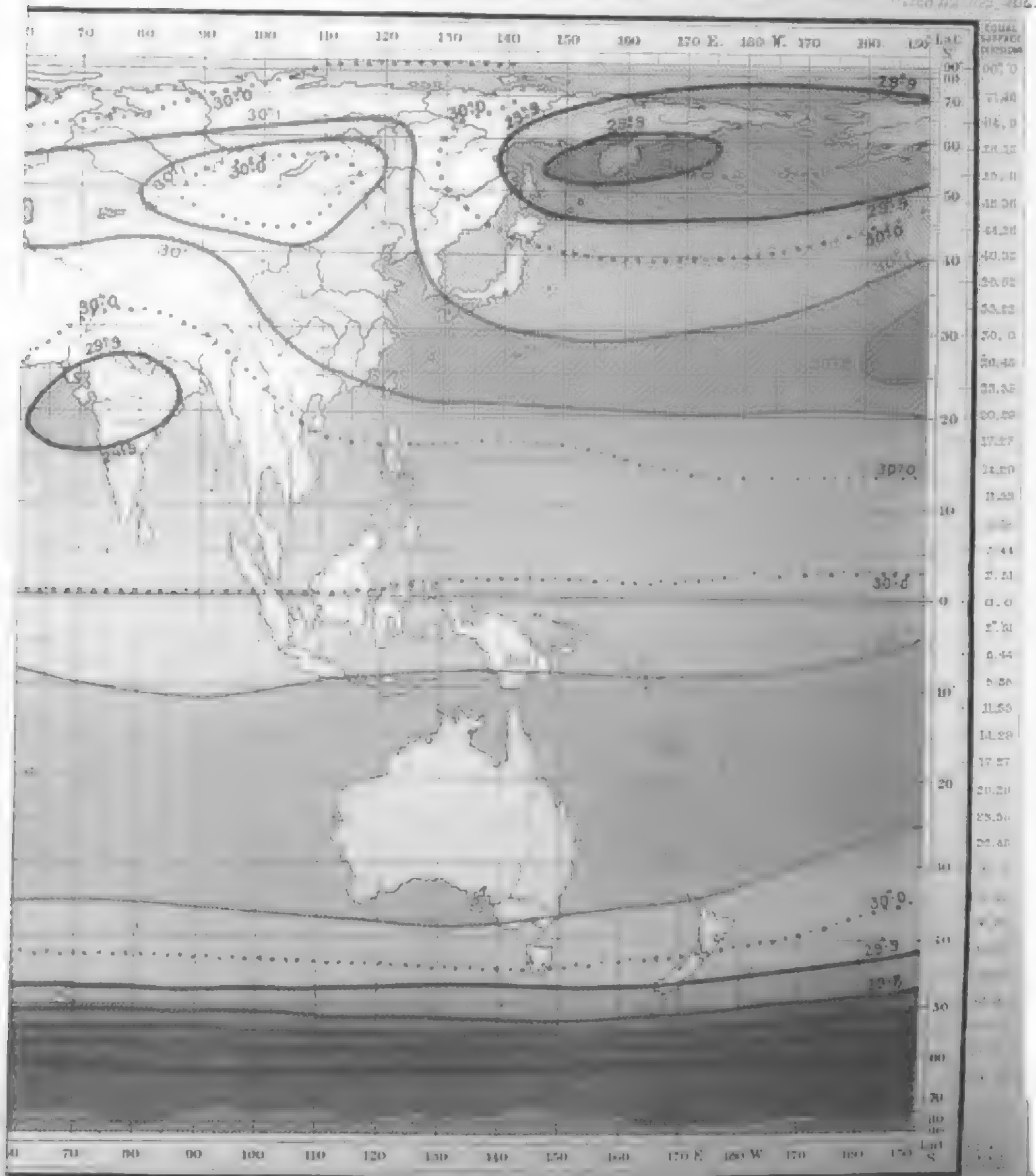
Plate 48
Seap. P 109 Vol. XIII



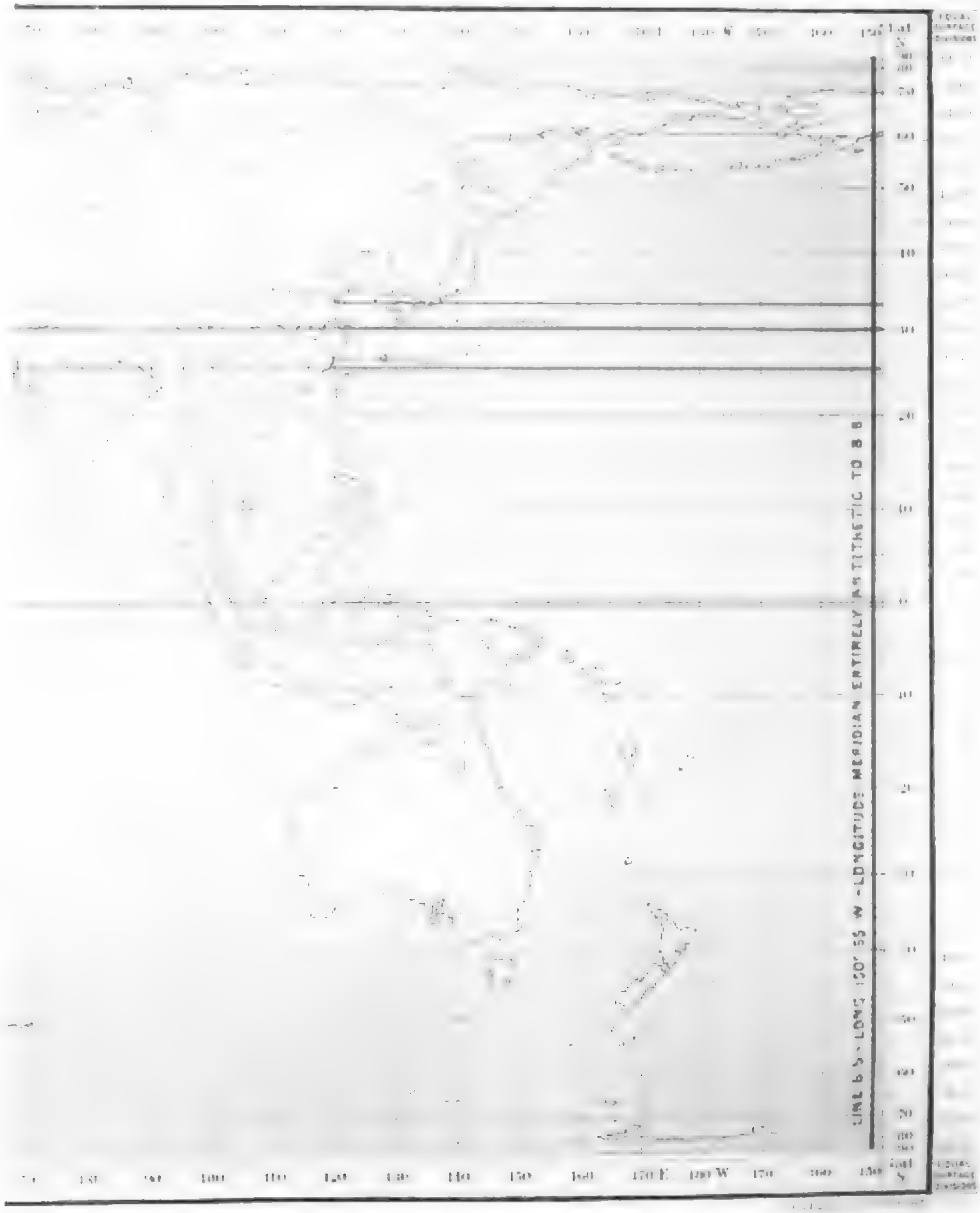
BURGH.

ADAPTED FROM THE CHARTS OF Mr. BUCHAN, SECY M.S.SCOT., FOR THIS EQUAL-SURFACE PROJECTION.

Plate 49



THE CENTRAL POINT OF ALL THE LAND SURFACE OF THE GLOBE, AS IT REVOLVES.



ATORY, EDINBURGH.

T PYRAMID PLATES

R. OBSERVATORY, EDINBURGH.

GREAT PYRAMID PLATES

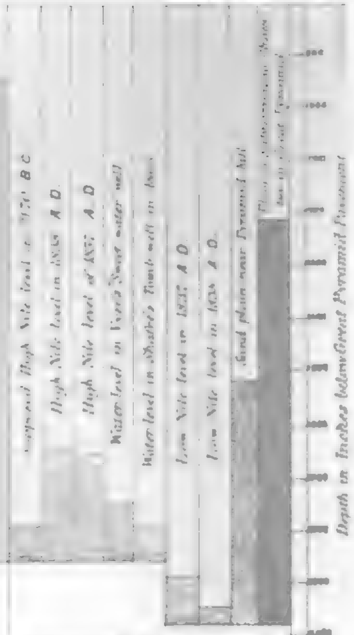
SUPPOSED TOMB OF KING CHEOPS, SUPHIS, SHOFU OR SHUFU; THE MEASURED DATA BEING CHIEFLY FROM HOWARD VYSE

VERTICAL SECTION

FROM SOUTH TO NORTH LOOKING WEST

VERTICAL SECTION

FROM WEST TO EAST LOOKING NORTH

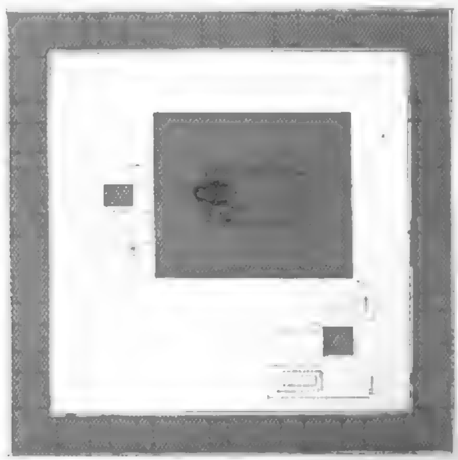


HYDRAULIC DATA

VERTICAL SECTION

FROM SOUTH TO NORTH LOOKING WEST

through the middle of trench of East side, to show the connecting bars of rock left in situ



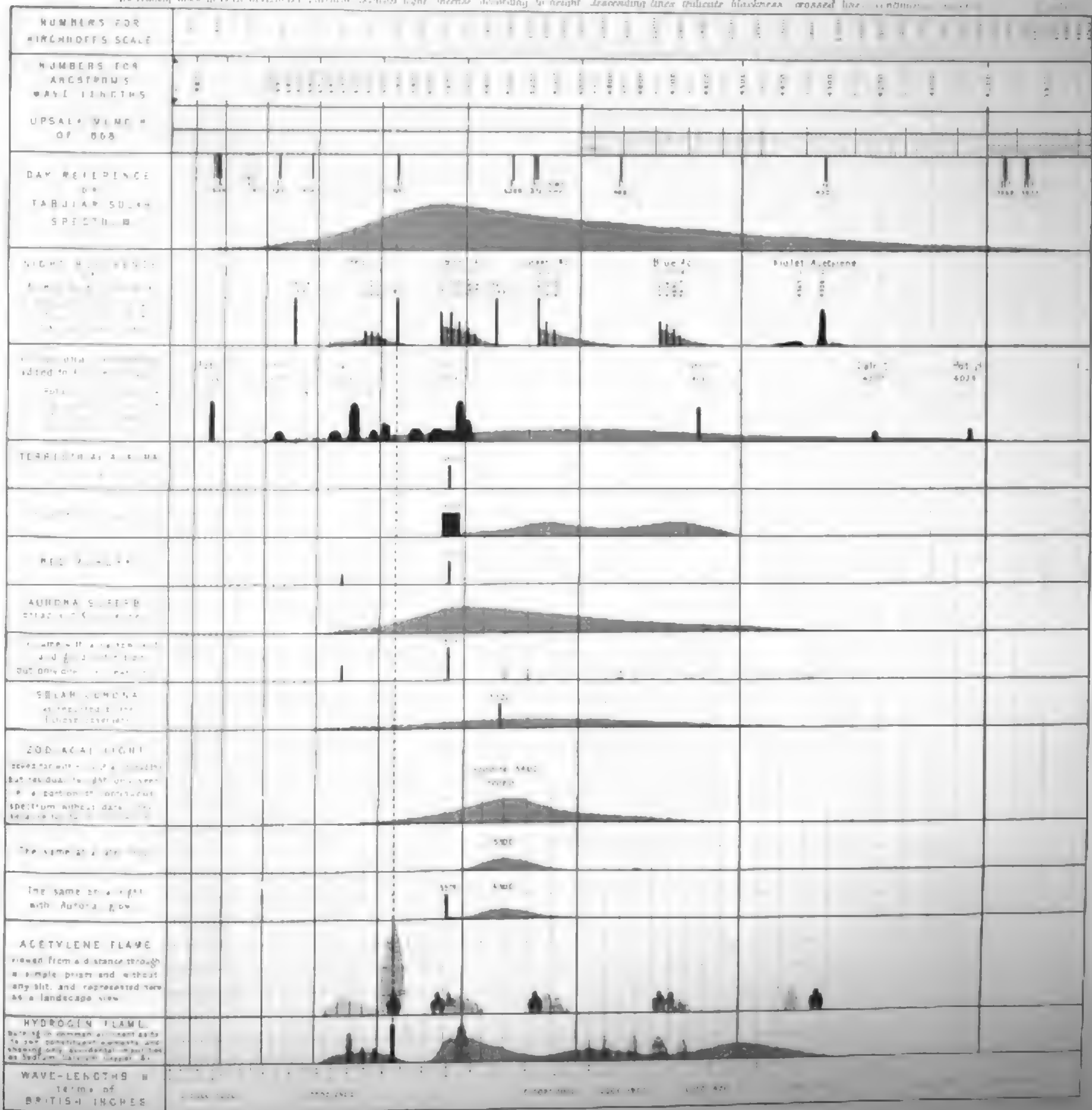
GROUND PLAN

Scale of British Inches 500th of Nature.

ROYAL OBSERVATORY, EDINBURGH.

AURORAL AND OTHER OPTIC SPECTRA UNDER SMALL DISPERSION

APPROXIMATELY REPRESENTED FROM EYE SKETCHES ONLY



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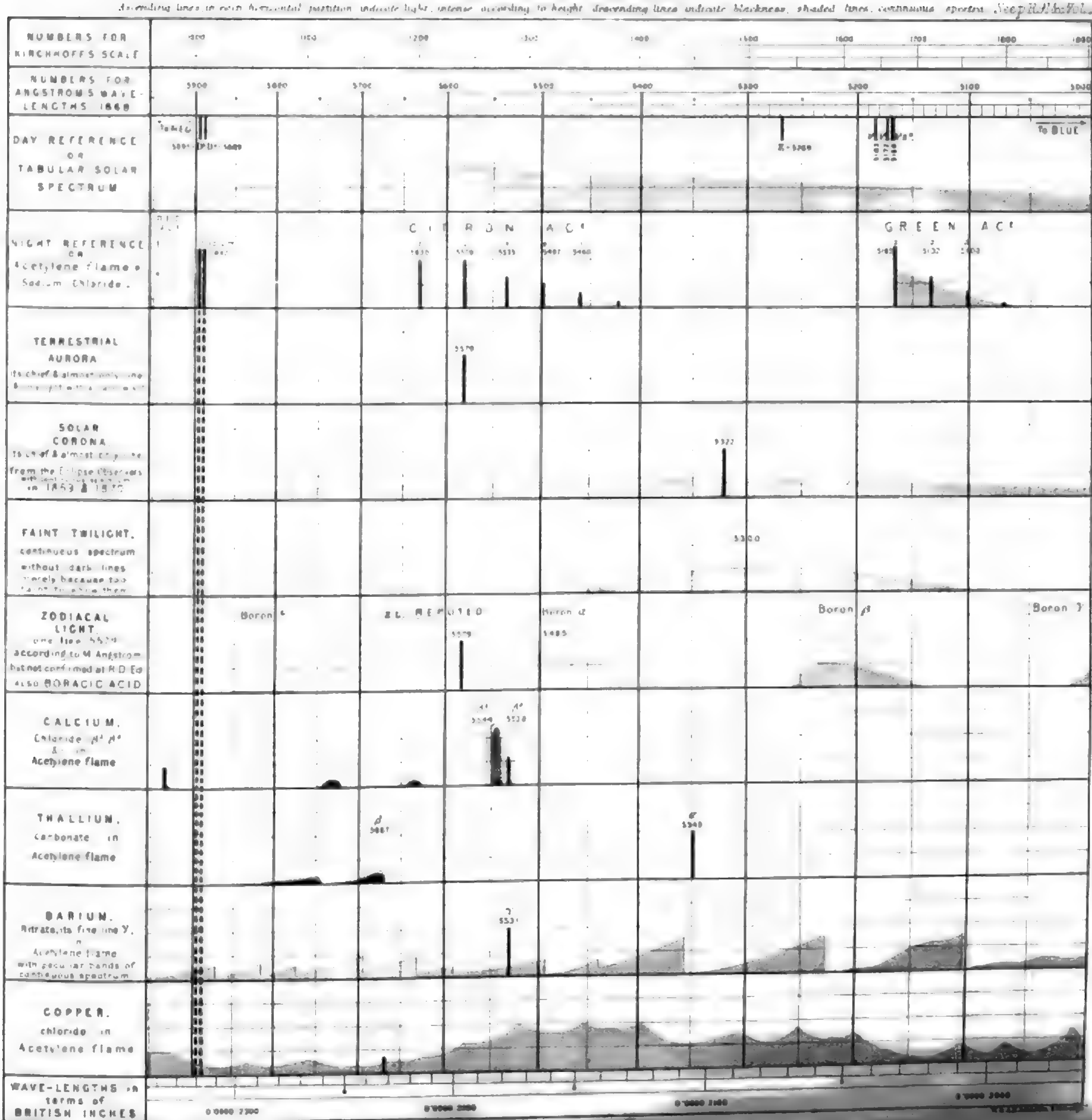
THE CITRON RANGE OF THE SPECTRUM, APPROXIMATELY.

REPRESENTED FROM EYE SKETCHES ONLY.

Ascending lines in each horizontal partition indicate light, intense according to height, descending lines indicate blackness, shaded lines, continuous spectra.



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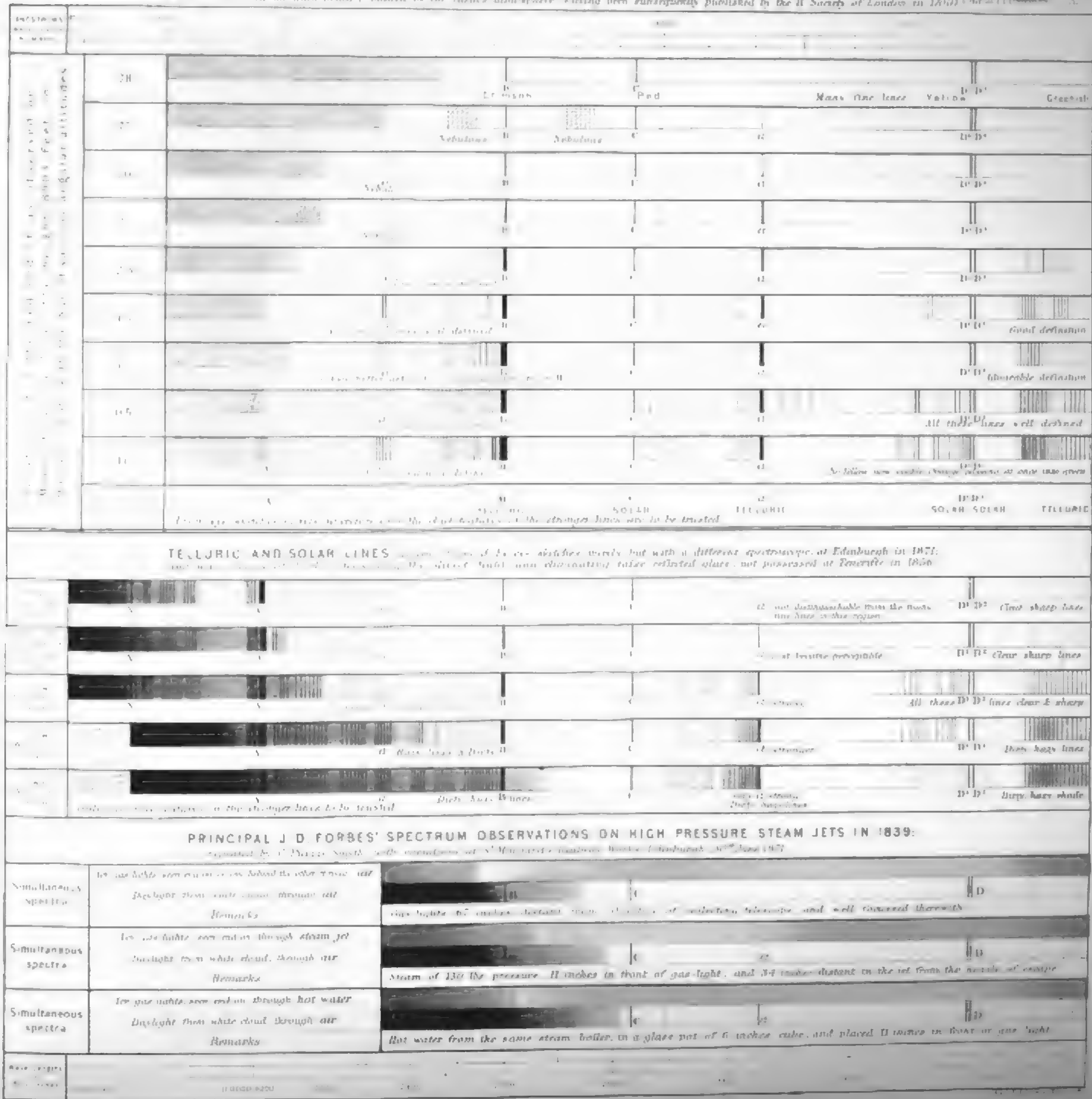
SOLAR FROM TELLURIC LINES IN THE SOLAR SPECTRUM IN THE YEAR 1856.



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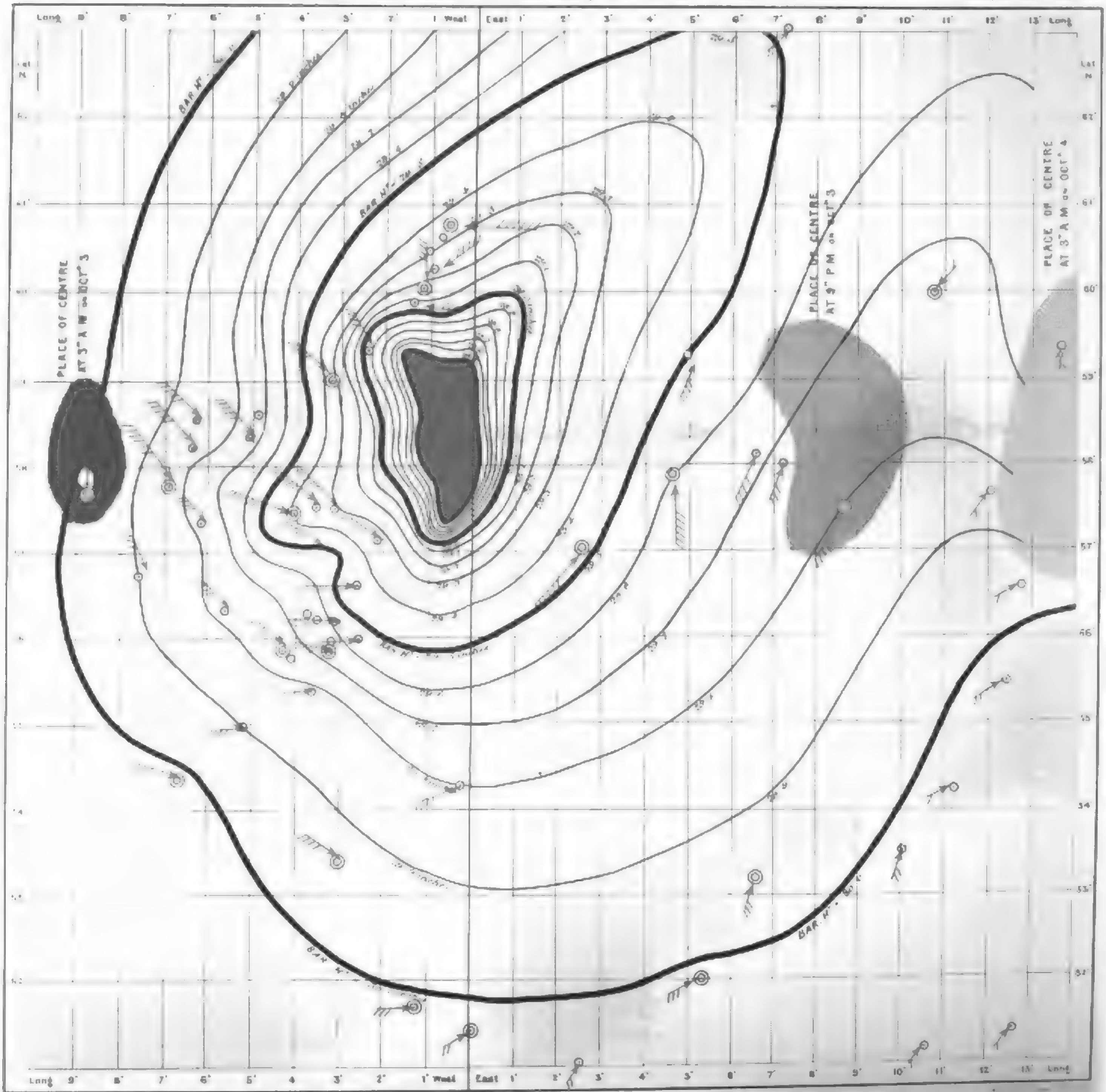
THE HYPERBOREAN STORM OF 2ND AND 3RD OCTOBER 1860, AT 9 A.M., GR. M.T., ON OCT. 3RD

with its march from W. to East during the 24 hours elapsing from [illegible]



The Black lines show the heights of the Barometer at 68° F. & Sea level. The red arrows the strength & direction of the wind; & the dots with circles round them the Stations employed; two concentric circles showing a superior quality of station.

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